

Tunnel Boring Machine Rescue Shaft

Edmonton, Alberta, Canada

Keller assisted the City of Edmonton in the excavation and recovery of a Tunnel Boring Machine (TBM).



The project

One of the City of Edmonton's Tunnel Boring Machines (TBM) was tunneling around the Mill Woods area of Edmonton in a zone of wet sands and silts. The TBM was unable to successfully tunnel through the poor collapsible materials and seized during the operation.

The challenge

The location of the TBM was under a major arterial road in Edmonton, requiring road closures and working in tight access adjacent to live traffic. The TBM was seized in a zone of poor collapsible materials. The critical interlock between secant elements would be difficult to achieve with conventional drilling and temporary casing and since the tunnel would continue to be required after retrieval and repair of the TBM, no damage to the completed portions was allowed. Keller's design needed to accommodate two opening portals at the bottom of the shaft for the tunnel.

The solution

The general contractor worked with the City of Edmonton to arrange traffic accommodations and a safe work area. The City of Edmonton constructed a bulkhead in the completed section of the tunnel that could not be damaged. Keller installed a temporary concrete guide wall at the surface to ensure accurate placement and interlock of each secant element of the circular shaft. A temporary segmental casing system was used to advance each secant element to the required design depth.

Project facts

Owner(s)

City of Edmonton

Keller business unit(s)

Keller

Main contractor(s)

Lorac Construction

Engineer(s)

Keller
Right Six Consulting Inc.

Solutions

Support of excavation

Markets

Infrastructure
Tunnels and shafts

Techniques

Secant or tangent (contiguous) piles

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