

New Baltimore Landslide – Evolution of Instrumentation

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In 1940, the Pennsylvania Turnpike was constructed mostly along the path of the original alignment of the old South Penn Railroad and as a result, passed through the Borough of the New Baltimore and the Allegheny Mountains. The original construction reactivated an ancient landslide, referred to as the “New Baltimore Slide” that had occurred in the geologic past due to undercutting of the mountain slope by the Raystown Branch of the Juniata river that lies in the valley beneath the Turnpike. This slide zone eventually extended to 800 feet wide, 1,500 feet upslope of the roadway, with an average of 60 feet thick overburden sliding along a weathered clayey siltstone bedrock defined as the failure plane for over 70 years.

Historical records indicate that this slide moved 13 feet in 1940. Within 20 years (until 2015), active movements of the slide were close to 10 inches/year, with peak movements of 2 inches/month in the spring season. Design of instrumentation and implementation was the crucial part of the design of remediation for the landslide. This presentation will focus on the evolution of instrumentation in the last two decades for the monitoring of landslides, data transfer tools, and accuracy and limitations of instrumentation.

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