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**Title:** 8 railway tracks, 900 trains a day, piled buildings and an S-curve microtunnel

**Theme:** Trenchless Design and Construction, Emerging Technologies, New Products and Pipe Materials

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**Abstract:** Switzerland's public transport system strongly relies on the punctuality of trains, since even short delays of only minutes on one of the densest railway networks in the world have direct impact on multiple other railway connections. Since 2000, the total railway traffic volume increased by 60% requiring continuous expansion and optimization of the railway network, which, due to the dense population and infrastructure, often require underground construction. Secondary underground infrastructure like the sewer in this case study need to be relocated and in the variable geology of rubble, clayey and silty sands and hard moraine, larger adjacent buildings are founded on piles which radically limit the corridor to relocate a sewer. The boundary conditions showed microtunneling to be the most suitable technology for this case, but the originally straight alignment of the 1600 mm inner diameter reinforced concrete sewer pipeline lead directly through the pile foundation of the nearby grocery store. This made a realignment necessary, resulting in a 257 m long S-curve with a curve radius down to 200 m and pipe lengths of 3 m crossing 8 railway tracks in a depth of 11 - 13 m. To accomplish this, the Jackcontrol Hydraulic Joint and the Real Time Monitoring System of jacking forces was chosen to maintain high jacking loads and ensure the structural integrity of the pipes despite the large joint deviation angles.