

Jacking pipe and IJS considerations for a 2500 mm ID micro tunnel at a 140 m curve radius in Vancouver

This paper discusses the design, manufacturing and execution aspects of the micro tunnel pipe used on a design-build project in Vancouver Canada in 2019. The project comprises a 2500 mm (98 in) inner diameter reinforced concrete pipe that has to be jacked along a 280 m long alignment next to a railway line below groundwater in sandy gravel with cobbles and boulders. Placement of the shafts and alignment optimizations led to an S-curved alignment with a 140 m tight curve radius just after the drive shaft, transitioning into a straight line and back into a curve to hit the reception pit. The structural design of the pipe is discussed as well as specific manufacturing aspects, including the challenges posed by the fact that the pipe is shipped from overseas. Among others, the executional aspects include the discussion of pipe length determining factors like pressure transfer and alignment details. The paper concludes with the analysis of measurement values of the applied real time structural monitoring system.