

The Challenge of Navigating Long Tunnels

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Abstract : One of the concerns that employers and contractors have in creating long tunnels is that when the excavation is completed, the tunnel will be exited in the correct position according to designed, the deviation of the tunnel from its path can have many costs for the employer and the contractor, lack of correct calculations by the surveying engineer or the employer and contractors lack of importance to the surveying team in guiding the tunnel can cause the tunnel to deviate from its path and this deviation becomes a disaster. But employers are able to make the right decisions so that the tunnel is guided with the highest precision if they consider some points. We are investigating two tunnels with lengths of 12 and 18 kilometers that were dug by Tunnel boring machine machines to transfer water, how the contractor's decision to control the 12 kilometer tunnel caused the most accuracy of one centimeter to the next part of the tunnel will be connected. We will also investigate the reasons for the deviation of axis in the 18 km tunnel about 20 meters. Also we review the calculations of surveyor engineers in both tunnels and what challenges there will be in the calculations and teach how to solve these challenges. Surveying calculations are the most important part in controlling long tunnels.

Keywords : UTM, localization, scale factor, traverse

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