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## NUMERICAL ANALYSIS OF THE INTERACTION BETWEEN ADJACENT TUNNELS

### **Summary:**

*This paper deals with the numerical investigation of the interaction between two adjacent tunnels using Plaxis 3D software. The numerical investigation considered the effect of the twin tunnels configuration (horizontal, vertical, or inclined alignment), the spacing between the two tunnels, the excavation sequence, and the soil's constitutive model*

*The results indicated that the maximum settlement decreases as the spacing between the two tunnels increases and beyond the spacing of three times the tunnel diameter, the maximum settlement of the twin tunnels becomes similar to that of a single tunnel.*

*The vertical tunnels alignment resulted in ground surface movement greater than that of the horizontal alignment. Furthermore, when the upper tunnel is excavated first, the obtained ground settlement is higher than that when the lower tunnel is excavated first. For inclined tunnels, their behavior was found to be between horizontal and vertical tunnel configurations.*

### **Key words:**

*Twin tunnels, Plaxis 3D, numerical analysis, ground movements, tunnel excavation*

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