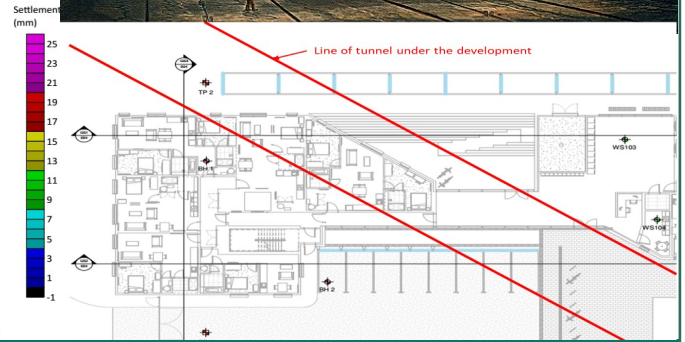
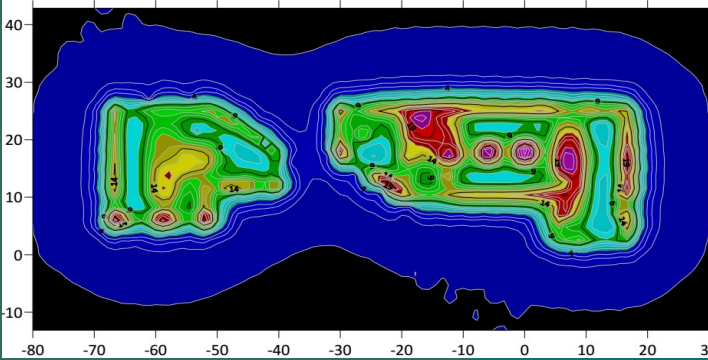




Contours of Total Calculated Settlement



CASE STUDY

Wapping Tunnel Build-over Impact Assessment

THE PROJECT

The development of two multi-storey developments over an historic railway tunnel.

THE PROBLEM

To assess the increased ground loading on the tunnel lining. This required a 3D ground movement and stress analysis.

REMEDY'S SOLUTION

Working closely with the structural engineer Remedy modeled the ground response to the imposed building loading regime to assess the impact of the new development on the historic tunnel lining.

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Tunnel Build-over Impact Assessment

Remedy Geotechnics undertook an assessment of the impact of construction of two multi-storey developments on the lining of the historic Wapping railway tunnel in Liverpool. In addition the anticipated building settlements were calculated to demonstrate that a ground bearing raft foundation could be used for the developments, as opposed to going to the expense of piling the structures and bridging over the tunnel.

The Wapping tunnel is located at what was the western end of the Liverpool and Manchester Railway, the worlds first city to city passenger railway. Engineered by George Stephenson the railway opened in 1830.

The crown of the tunnel is located only 6m below ground level and concern had been expressed that the weight of the new developments might cause damage or even collapse of the tunnel lining.

The ground beneath the site comprised a highly variable thickness of Made Ground

overlying around 4m of Glacial Till which rested on sandstone of the Helsby Formation.

Remedy carried out a 3D elastic analysis of the distribution of foundation bearing pressures through the ground to the location of the top of the tunnel. A maximum increase of around 40kPa on the tunnel lining was calculated which proved to be acceptable. The 3D analysis also yielded the distribution of raft settlement (see above) which confirmed both total and differential settlement would be within allowable tolerances for the two new developments.

Contact Remedy Geotechnics - we'll give you an answer every time.

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