

Blenheim Road Deviation, Christchurch

Client

City Solutions, Christchurch City Council.

Project

The Blenheim Road deviation leads traffic from Blenheim Road to Moorhouse Avenue, away from the previous overbridge to Deans Avenue. A reinforced-earth embankment and overbridge were constructed to take the deviation over the existing main trunk railway line.

Due to loose sand and silt in the upper 10 m of the foundation soils, significant settlement (up to 300 mm) was predicted under the overbridge abutments. Therefore a key factor driving design for this project was to ensure vertical clearance between the overbridge and railway would satisfy operational requirements for the lifetime of the structure. To mitigate this settlement risk, an extensive preloading program was developed, which generated settlement of up to 200 mm.

Liquefaction was also a significant issue for the project, as the seismic vulnerability of the existing overbridge was a major reason for the deviation project. Liquefaction and settlement risk at the abutments was mitigated using vibro-replacement (gravel columns). Gravel columns were a very cost effective solution when compared to conventional piled abutment options.

Services provided

- Geotechnical investigation and reporting
- Embankment settlement prediction
- Assessment of settlement imposed on adjacent buried services
- Design and performance monitoring of preload programme
- Mitigation of settlement imposed on adjacent shopping centre
- Design and supervision of gravel column ground improvement
- Tender design for reinforced earth embankment.



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