

### PROJECT OVERVIEW

RBA were commissioned by AmcoGiffen to undertake the civil and geotechnical design works for the stabilisation of a Network Rail retaining wall in Greenock. The wall supports the twin track Gourock to Glasgow main lines at a height of 6m above ground level. Inspection reports had highlighted some extensive shear movements in the wall at a height of 1-2m above GL. The scope of work undertaken included:

### Analysis of Retaining Wall

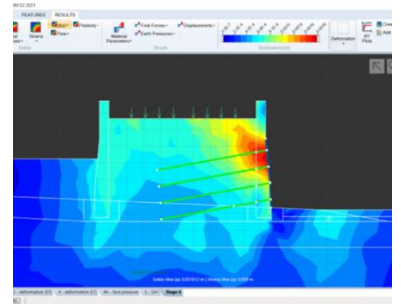
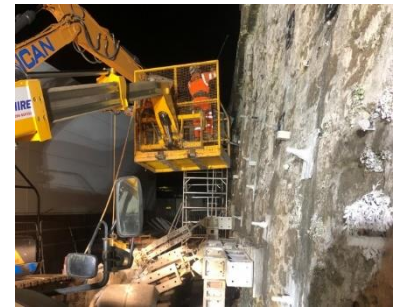
The design required a solution which would fit within the 1m NR maintenance corridor. There was no historical information on the wall, and coring showed that the wall was heavily voided. A finite element analysis model was constructed to represent the wall and known properties, and the design parameters and loadings adjusted until a mode of movement immediately prior to failure and in line with the movements observed, was achieved.

### Design of Temporary Propping System

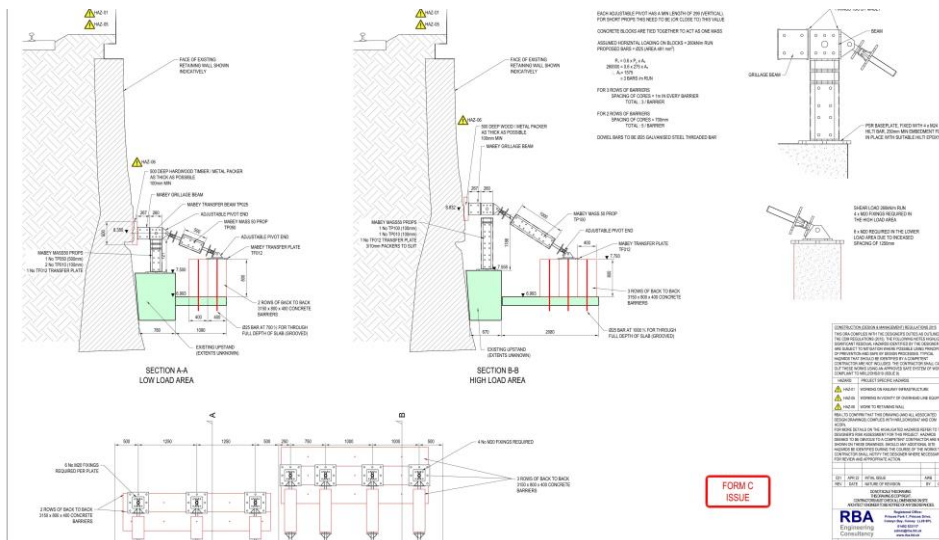
During the design phase, unexpected movements occurred in the wall which resulted in a requirement to design and install temporary propping within a 7-day period. RBA designed and detailed the temporary propping system utilising Mabey components, to achieve a mass restraint utilising easily sourced components.

### External Works

- RBA designed a grid installation of soil nails, along with a grouting specification and installation procedure. This included a detailed monitoring procedure and staging which reflected the poor quality of the wall, the position and actions of the temporary works and the limited access at the site.
- Once the soil nails had been installed, the wall was completed with a 300mm thick dry sprayed concrete finish which was designed to spread the loading from the soil nails whilst ensuring maximum support to the full face of the stone retaining wall. RBA prepared detailed layout drawings and details for approval and construction, including monitoring regimes.
- Once the works went to site, RBA continued their involvement, providing attendance, review of monitoring during key installation activities and advising the Contractor as required.



- wall monitoring points locations



### Services Snapshot

- GI Specification
- Retaining Wall Analysis
- Finite Element Analysis
- Temporary Works Design
- Soil Nailing Design
- Sprayed Concrete Works
- On call site support