

CAPABILITY STATEMENT 15—BUILDING BRIDGES

Investigation, Specification, Construction Support, Testing and Verification of Bridge Footings

BUILDING BRIDGES ON A SOLID FOUNDATION

A lot of bridges cross water courses, which are frequently areas where deep, soft soils are present. Increasing vehicle loads and sizes mean that today's bridges are becoming more heavily loaded than ever.

Piling is frequently used to support bridges in areas where soft or weak ground precludes the use of shallow footings. Bridge support piles will frequently be carrying compression, tension and lateral loads. These load interactions can become complicated and require careful geotechnical consideration, particularly where deep soft soils are present.

In some areas, the use of shallow footings (with significant cost savings) can be realised when combined with ground improvement techniques other than piling.

In addition to supporting the structure, careful consideration is also required regarding the stability and settlement of approach fill embankment which can be very high, resulting in high, widespread loads on soft soils. This can lead to large settlements as well as possible slope instability.



WHAT ARE THE STEPS INVOLVED?

A good bridge foundation design is not limited to a specification on a piece of paper but includes construction quality assurance and testing to make a 'closed loop', confirming that the design assumptions were correct. The steps involved are as follows:

- Investigation and parameter derivation, taking into account the likely range of pile sizes and loads during the investigation
- Footing design taking into account the constraints of the project (e.g. loads, allowable settlements, remote location, aggressive environments)
- Ground improvement/footing/pile specification
- Review of proposals from contractors and assistance in pricing or specification
- Construction support
- Pile testing
- Verification reporting



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WHAT CAN WE DO FOR YOU?

We know what is required from each stage of the bridge foundation design process, from the initial investigation through to the close-out report. We believe that close interaction with the structural designers is key to successful and effective foundation design and analysis, which invariably involves iterations between the structural and geotechnical designs. We work with the design team, in their offices as required, and make ourselves available in a timely fashion to progress the foundation design in conjunction with the structural design.

We have worked on bridge foundation projects for Main Roads WA, local governments, mining companies and private developers and we are familiar with the design approaches taken in each area.

We also have close relationships with expert testing companies for static, dynamic and pile integrity testing of piles.

We can handle the geotechnical engineering aspects of your bridge foundation project all the way through, including obtaining quotes, arrangement of testing, quality assurance and issuing of verification reports.

We also visit sites during construction of the foundations to provide construction support to the foundation contractor and ensure that the design assumptions are borne out in the real world of dirt and rock on site. We provide advice in consultation with the project team (including the contractor) to ensure that your bridge foundation project is implemented suc-



BRIDGE FOUNDATION DESIGN AND VERIFICATION

Galt can help. Give us a call and we can discuss your needs.

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