

RESTEK

Matlock Bath Ground Stabilisation

August 2016

Subsidence

Following a survey of Matlock Bath Memorial toilet block foundations, we found ground conditions at a depth of 1.9 meters to be soft un-compacted soil, easily dug out with high tree root content.

Our trial injection with dyes at two locations approximately 4.5 below ground level demonstrated that there were voids intersected at 2.7 and 3.3 meters with post injection probes showing material transport through the grit stone retaining wall, almost immediately upon commencing the injection procedure at 2.7 and 3.3 intersections, this indicated washout from loose deposits behind the retaining wall likely to be when the river was flowing at high levels.

Approximately 140 kilos of dye were injected representing about 0.75m³ of potential resin to be injected to each location with a target minimum bearing capacity of 262kN/m² to stabilise and consolidate the loose under-laying soils from further wash out subsidence.

We determined that the rear corner of the building foundations had been affected by two factors.

Our trial digs revealed high tree root activity causing localised subsidence and cracked masonry still visible on the external and internal walls. Loose un-compacted soils washed out behind the retaining wall likely caused from the river at high flow during the winter months.



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Injection

There were five locations that required stabilising via a pressure injection system with the use of our structural resin injection *Rockstab*.

We intersected the footings with a combination of injections both through the retaining wall and from ground level to the perimeter along three metres.

Based on the test foundation information, we allowed for 1,460 kilos of resin to stabilise the building to prevent further washout from loose un-compacted soils. This filled all voids below ground level and compacted the soft under laying soils to form a solid mass that both stabilised the foundations and the riverbank from further wash out.

Process

We began with marking out lance patterns around foundation / retaining wall to five locations with centers adopted and adjusted as required to intersect footings at mid-section.

Lances were then drilled into the underlying soils before we installed a combination of 13mm high pressure bores into the end of the lance's ensuring a vent was installed at end of the run prior to injection being carried out.

When the resin had cured, we remove all lances and vents to enable the following trades to install the new drainage runs that had previously run alongside the footings.

Rockstab Resins

Rockstab resins are 2-component, phthalate free, injection grouts with high compressive strength when cured. When injected through a specially designed 2-component injection head with static mixer, *Rockstab* grouts will cure into either a hard foam, a very hard foam or a very hard plastic, depending on the type of *Rockstab* used. Faster reaction times can be set by using an accelerator.

Fields of Application:

- Rock consolidation
- Grouting of injection anchors
- Fixing Rock Bolts
- Filling of large voids/cracks/crevasses

- ADR free transport
- Phthalate free resins, REACH compliant.
- Solvent free.
- Choice of different expansion ratios and compressive strengths.
- User friendly: easy mixing ratio: 1/1 (5% tolerance is acceptable).
- Reaction and setting times can easily be controlled by use of an optional accelerator.

