MULTIURETHANES
Suppliers of grouting materials, equipment and engineering support services

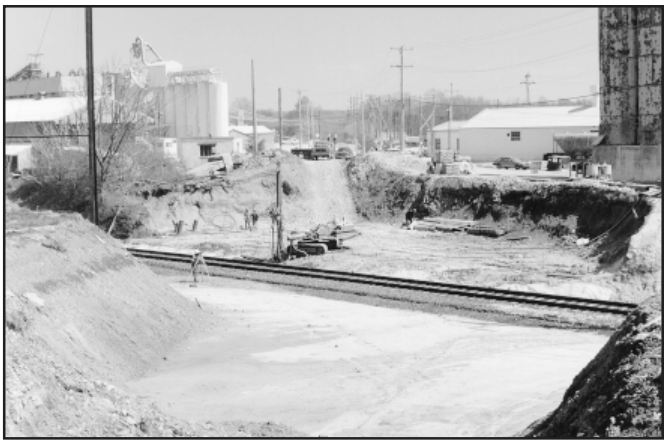
CEMENT GROUTING PRODUCTS

CONVENTIONAL CEMENT GROUTS

- Ordinary Portland cements are acceptable for grouting large fissures and voids.
- Blaine Fineness of ordinary Portland cements
  $>3,500$, or 35 m^2 surface area per kg.
- High early strength Portland cements are recommended for most grouting projects due to their finer particle size.
- Blaine Fineness of high early strength Portland cements
  $>5,000$, or 50 m^2 surface area per kg.
- High-range water-reducing admixtures (superplasticizers) disperse cement particles, increase fluidity and facilitate the placement of low water:cement ratio grouts.
- Bentonite, used in relatively small dosages, reduces grout bleed, increased grout stability and improves grout yield.
- Thixotropic agents are used to obtain rapid gelation when placing cement grouts into water-filled or flowing water conditions.
- Stabilizing agents are used to increase grout stability and improve grout resistance against premature pressure filtration.
- Retarders facilitate grouting in warm temperature conditions or when long pot life is required
- Accelerators provide reliable curing performance when grouting during cold weather conditions or when flash-set cement grouts are required.
- Type C Flyash is used as a low cost bulk filler to save on cement cost and to improve thixotropic performance of cement grouts during underwater placement.
- Silica fume improves grout stability and reduces permeability of the cured grout.

MICROFINE CEMENT GROUTS

- Microfine or ultrafine cement is suited for grouting in rock, soil and concrete structures.
- Blaine Fineness of Microfine cement
  $>9,000$, or 90 m^2 surface area per kg.
- Microfine cement is used for permeation grouting, foundation consolidation grouting, and construction of curtain walls and subsoil water-barriers in soils where stable, conventional cement grouts cannot penetrate.
- Microfine cement grout formulations may include superplasticizers, bentonite, silica fume and accelerators to suit various site conditions.



A large soil stabilization project was undertaken to allow bridge reconstruction on unstable ground beneath an active railway line adjacent to an operating limestone plant based on engineering recommendations from technical specialists of **MULTIURETHANES**

Sleeve pipes installed beneath masonry walls of an old fortification originally constructed in the early 1800's; scope of work utilized microfine cement grouts to reduce permeability within masonry structure.

WATERPROOFING • CRACK INJECTION • CONCRETE RESTORATION • SEWER REHABILITATION • WATER CUT-OFF •

PRESSURE GROUTING • CEMENT GROUTING • SOIL STABILIZATION •

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