

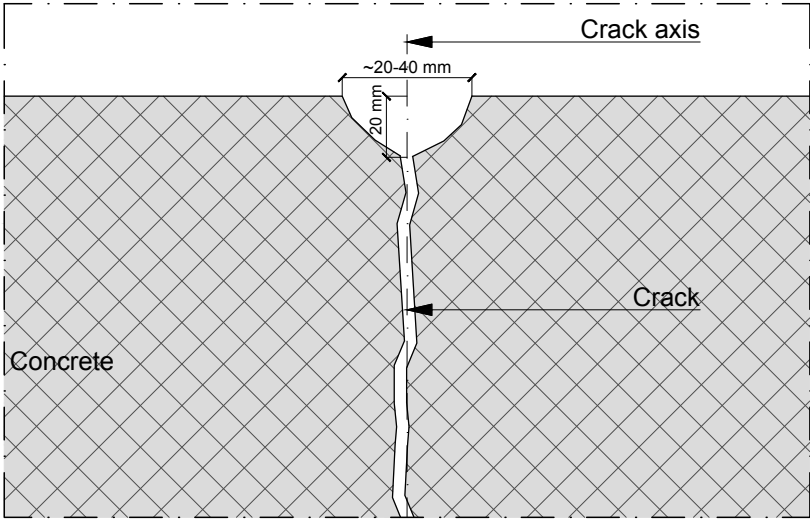


INJECTION SYSTEMS



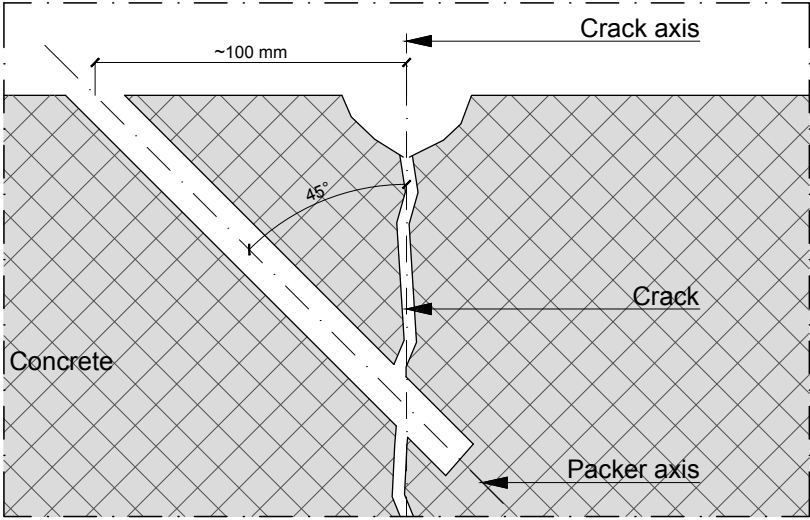
MECHANICAL PACKER INJECTION

Phase 1
OPENING OF CRACK



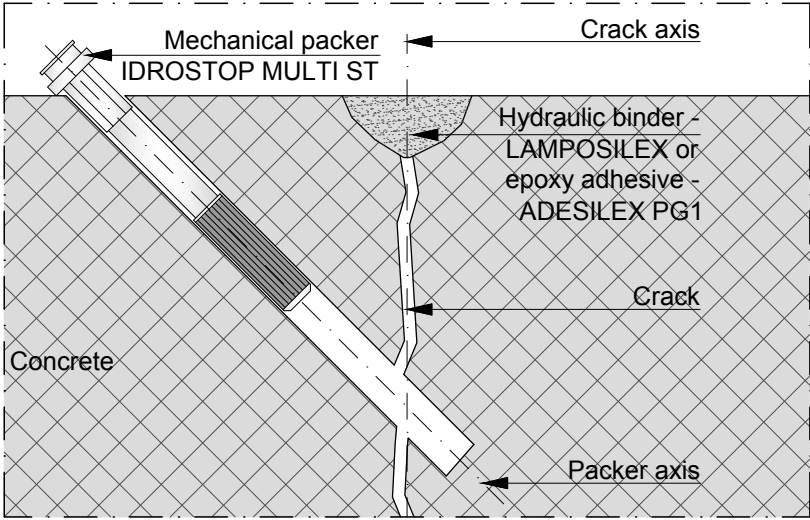
MECHANICAL PACKER INJECTION

Phase 2
DRILLING OF HOLE,
CLEANING OF HOLE AND
CRACK SURFACE



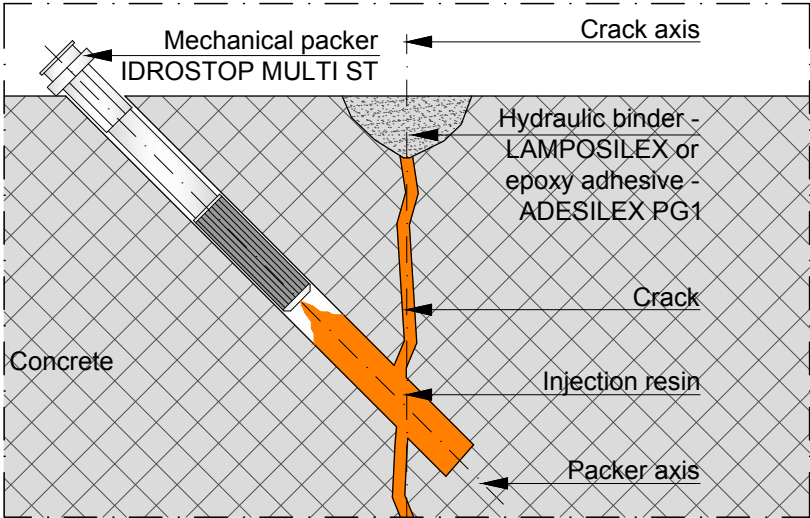
MECHANICAL PACKER INJECTION

Phase 3
POSITIONING OF PACKER
AND SEALING OF CRACK



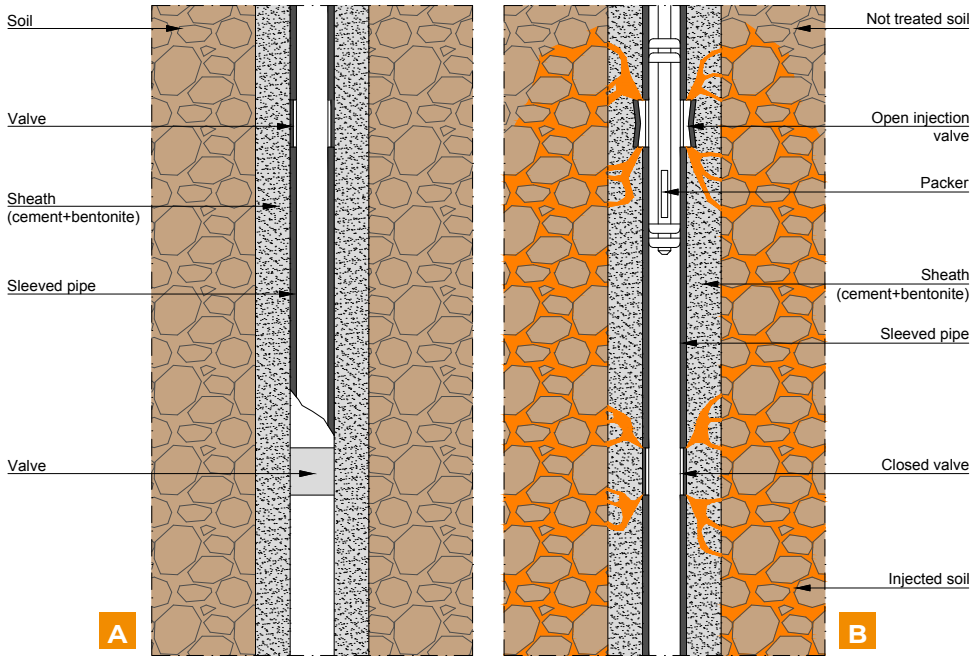
MECHANICAL PACKER INJECTION

Phase 4
INJECTION



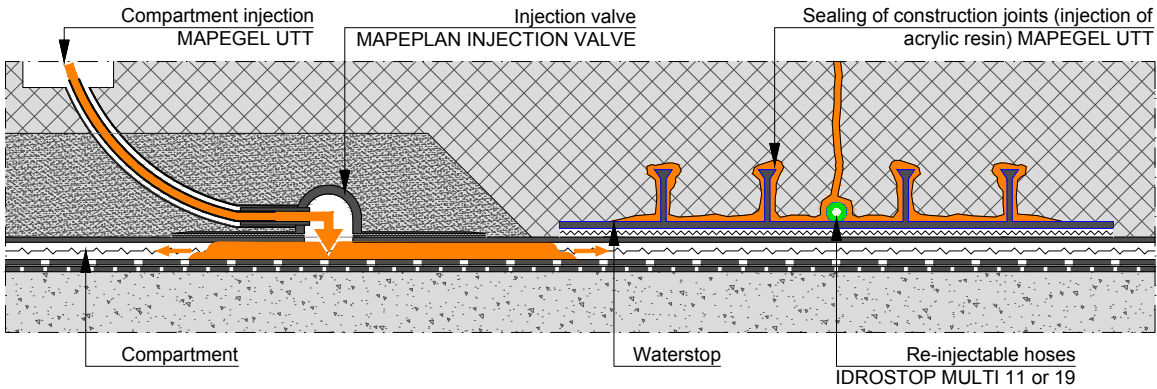
SLEEVED PIPE INJECTION

Injection phases
A - BOREHOLE DRILLING, POSITIONING OF SLEEVED
PIPE, REALIZATION OF SHEATH
B - INJECTION







WATERPROOFING ELEMENTS
REPLACEMENT AND JOINTS SEALING

Acrylic resin injection (with valve) inside compartments realized with synthetic waterproofing membrane; replacing waterstop and sealing joints with acrylic resins injection (using re-injectable hoses).



| | | FILLING OF CAVITY | CONCRETE INJECTION | | | TBM INJECTION | | COMPARTMENT INJECTION | RE-INJECTABLE HOSES INJECTION |
|---------------|--------------|----------------------|--------------------|--------------------------------|---------------|---------------|----------------------|--------------------------|-------------------------------------|
| rock | | | STRUCTURAL | WATERPROOFING | CERTIFICATION | PRE-GROUTING | OVERLEAF SEGMENTS | | |
| <div>10</div> | | | | | | | | | |
| <div>✓</div> | | | <div>✓</div> | CE (EN 1504-5) | | <div>✓</div> | | | |
| <div>✓</div> | | | <div>✓</div> | CE (EN 1504-5) | | <div>✓</div> | | | |
| <div>✓</div> | | | <div>✓</div> | | | <div>✓</div> | | | |
| <div>✓</div> | <div>✓</div> | | <div>✓</div> | CE (EN 1504-5) | | <div>✓</div> | | | |
| <div>✓</div> | <div>✓</div> | | <div>✓</div> | BS 6920:2014 | | <div>✓</div> | | | |
| <div>✓</div> | | | <div>✓</div> | CE (EN 1504-5) | | <div>✓</div> | | | |
| <div>✓</div> | | | <div>✓</div> | CE (EN 1504-5) | | | <div>✓</div> | <div>✓</div> | |
| <div>✓</div> | | | <div>✓</div> | CE (EN 1504-5) | | <div>✓</div> | | | |
| <div>✓</div> | <div>✓</div> | | | | | <div>✓</div> | | | |
| <div>✓</div> | <div>✓</div> | | | | | <div>✓</div> | | | |
| | <div>✓</div> | <div>✓</div> | <div>✓</div> | CE (EN 1504-5) | | <div>✓</div> | <div>✓</div> | | |
| | <div>✓</div> | | | | | <div>✓</div> | <div>✓</div> | | |
| | <div>✓</div> | <div>✓</div> | <div>✓</div> | | | <div>✓</div> | <div>✓</div> | | |
| <div>✓</div> | | | <div>✓</div> | CE (EN 1504-5) BS 6920:2014 | | <div>✓</div> | <div>✓</div> | <div>✓</div> | |
| <div>✓</div> | | <div>✓</div> | | CE (EN 1504-5) | | | | | |
| <div>✓</div> | | | | | | <div>✓</div> | | | |
| <div>✓</div> | | | | | | <div>✓</div> | | | |
| <div>✓</div> | | | | | | <div>✓</div> | | | |
| <div>✓</div> | <div>✓</div> | | | | | | <div>✓</div> | | |
| <div>✓</div> | <div>✓</div> | | | | | | | | |
| <div>✓</div> | <div>✓</div> | | | | | | | | |

| EQUIPMENT | COMPATIBILITY |
|--|--------------------------------------|
| IDROSTOP MULTI 11 (PVC re-injectable hoses) | injection resins |
| IDROSTOP MULTI 19 (PVC re-injectable hoses) | micro-fine cements |
| IDROSTOP MULTI ST (mechanical packer, different sizes available) | injection resins, chemical injection |

| LEGEND | | | |
|---|-----------------------------|---|--------------------------------|
| X | dry condition |  | pressurized water inflow |
|  | surface damp, water leakage |  | water saturated soils |
|  | water inflow | M | soil mechanical re-compression |

MAPEI UTT

Underground Technology Team

UTT TECHNICAL ASSISTANCE PROVIDES:

- Great technical skills based on deep knowledge of products, production phases and construction systems;
- Assistance during construction and design phases, for a perfect focus on the correct products and technical solutions;
- Global intervention, 24 hours a day and 365 days a year;
- Production optimization and consequent costs reduction.

THE WORLD OF UTT

- SHOTCRETE TECHNOLOGY
- MECHANIZED TUNNELING PRODUCTS
- DRILLING AND GROUND CONSOLIDATION PRODUCTS
- INJECTION SYSTEMS
- WATERPROOFING SYSTEMS
- TUNNEL MAINTENANCE, RENOVATION AND COATING PRODUCTS

HEAD OFFICE
MAPEI S.p.A.
Via Cafiero, 22 - 20158 Milan
Tel. +39-02-37673.1
mapei.com
mapei@mapei.it

