

ADVANCED UNDERPINNING TECHNOLOGY

AGM's proven Underpinning Technology in many projects

The current underpinning technology to construct 100-150mm bored micropile requires tenants to be evacuated as it involves massive breaking of walls and digging up of foundations. A process that is both messy and cumbersome. On top of that, the underpinned pile must be structurally attached to the existing foundations which inadvertently involve enormous architectural and M&E repairs.

However, with the advent of AGM's proven track record using the patented "Pin-Hole Reverse Underpinning Technology" for the past 11 years, over 1300 units of cracked houses located in ex-mining lands, deep fills, soft alluvial coastal areas and peaty estates has been restored without recurring settlement.

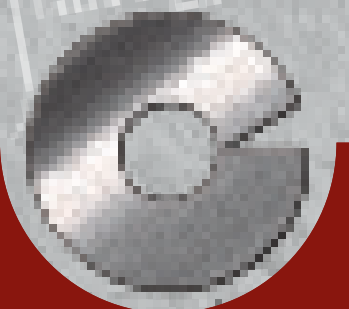
AGM underpinning hydraulic machines can drive piles at a minimum of 50mm from the wall/column's face. This enables high load transfer through the pile head by taking advantage of enhanced concrete shear stresses in the foundation pile cap or ground beam. We have a range of pile injection machines small enough to pass through a 2ft wide door and yet able to drive a length of 2.4m-3.0m pile which is just slightly shorter than the clear floor to ceiling height!

What should you expect?

- Economical rectification of building settlement
- Corrective uplift of tilted building
- Noise and vibration free
- No messy Work
- Immediate pre-loading of underpinning pile
- Pre-loading can be securely welded-off at pile head
- All underpinning pile is 100% pre-tested
- New innovative underpinning for pile foundations
- Rapid completion between a week to 2 months
- Environmental friendly.

BY ADVANCED GEOMECHANICS

www.advanced-geomechanics.com



“Advancing the future of underpinning”

THE COMPANY

ADVANCED GEOMECHANICS Sdn Bhd (AGM) is a local based company with international subsidiaries that specialise in innovative underpinning technology for building cracks, repairs and uplift of sinking foundations.

Foundation underpinning will usually involve structural, M&E's service diversion and interior finishes but AGM's "Pin-Hole Reverse Underpinning Technology" will considerably minimise these disruptions and repairs.

AGM'S SERVICES

- Pile injections for underpinning system.
- Hydraulic machines manufacturing.
- Franchising of our patented underpinning systems.



ADVANCED Group is multi-disciplined in geotechnical, civil and mechanical engineering, and therefore able to deliver unique engineering solutions to each project's demands. (Our Project Manager/ Lead Engineer will also drive the progression of the design through to final completion).

AGM is part of the ADVANCED Group that holds various patents in underpinning, pile injections and sheet piling technologies. ADVANCED Group is involved in research and development, design and manufacturing. We franchise and seek potential joint venture partners for the underpinning, hydraulic pile injection technology and manufacturing of very large section cold formed sheet piles.

INSTRUMENTATION

Advanced Geomechanics Sdn Bhd is a specialist in foundation underpinning works, sheet piling for slope stabilisation, jetties, basement excavations etc., and geotechnical instrumentations.

- Precise levelling monitoring using Leica NA3002.
- Pile Echo Tester PT002-Bluetooth PET (ASTM D5882-08).
- 12 set of RST vertical and horizontal tilt beams.
- Vertical settlement extensometer for complete substrata settlement analysis.
- Polchor slope indicator to detect slip in unstable slopes.

Why use patented “Pin-Hole Reverse Underpinning Technology”

- Accessible in confined spaces without demolishing walls
- Pin hole coring or minor floor hacking is involved
- Noise and vibration free
- Can be carried out safely even without tenants evacuation
- Piles can be driven from 50mm away the wall's face
- Underpinned pile can be pre-tested and preloaded
- Sinking and tilted buildings can be lifted up
- High capacity piles can be injected from 20t-350t
- Economical concrete, timber or pipe piles can be used
- Fast and early project completion targets
- Cost saving in architectural repairs after underpinning

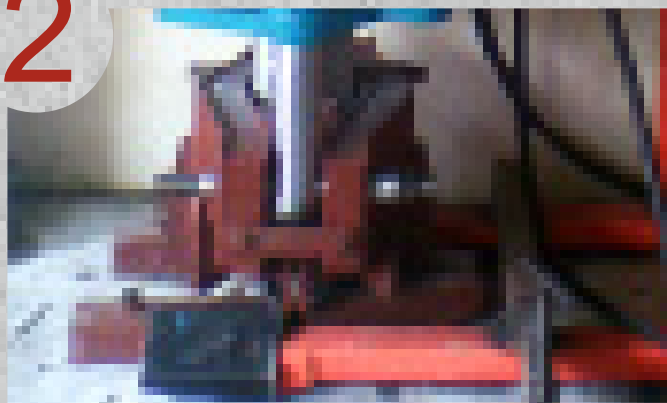
STEPS IN PIN HOLE UNDERPINNING TECHNOLOGY

1



Coring in the raft footing

2



Insertion of the pile head



3



Pile injection machine into confined spaces

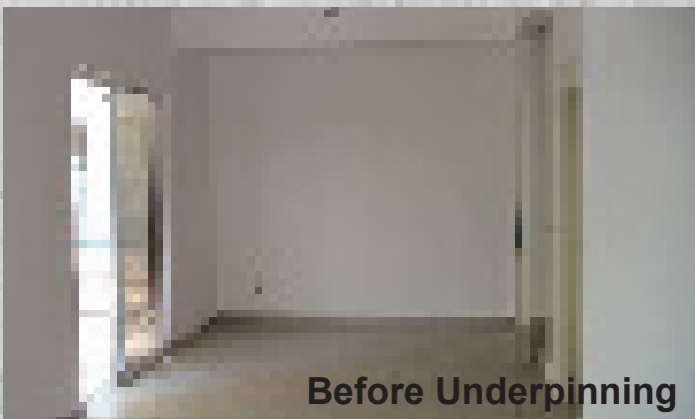
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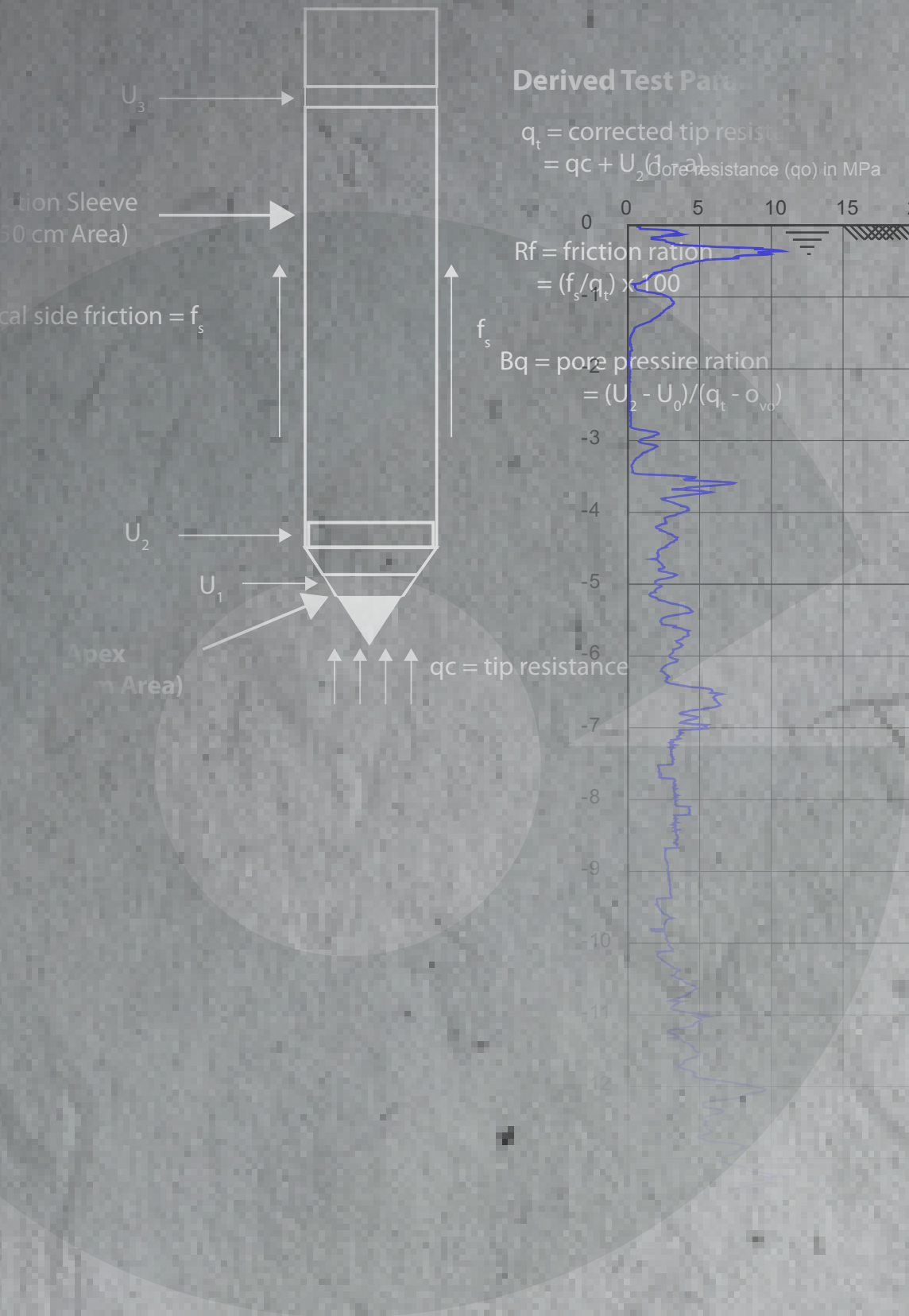
Preloading of underpinning pile and flowable cement grout is poured into the spaces in the pile head to form a rigid fixity with the foundation.



Uplifting to correct the settlement tilt of the building will require synchronised jacking of the underpinning piles prior to pile locked off.



Selective pinhole underpinning at weaker foundations without building uplift for non-distorted building settlement.

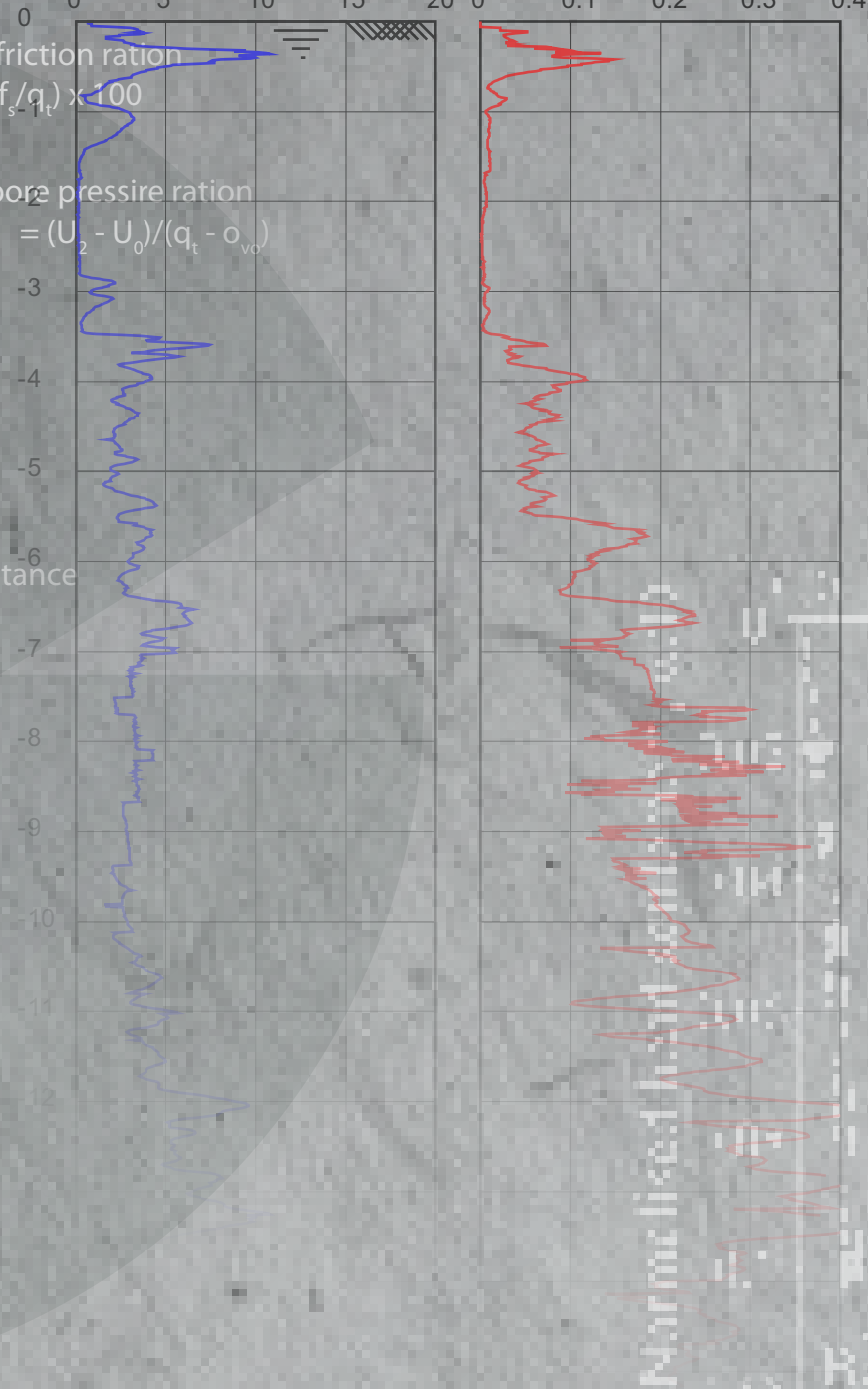


Derived Test Parameters

$$q_t = \text{corrected tip resistance} \\ = q_c + U_2(1 - a)$$

$$R_f = \text{friction ratio} \\ = (f_s / q_t) \times 100$$

$$B_q = \text{pore pressure ratio} \\ = (U_2 - U_0) / (q_t - \sigma_{v0})$$



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