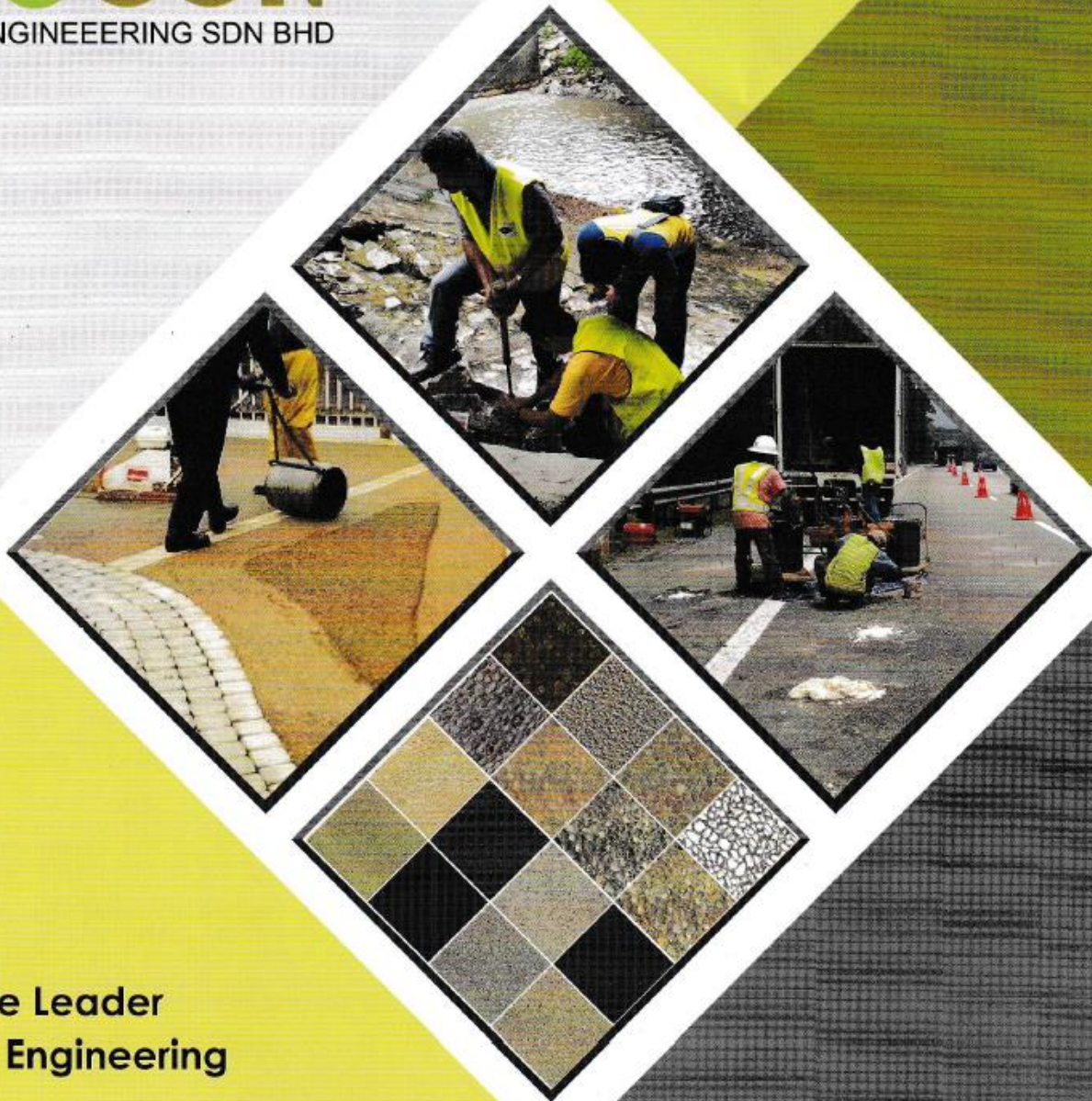


GEOCON

GEOCON ENGINEERING SDN BHD



**Nationwide Leader
In Ground Engineering**

COLLABORATION PARTNER



**'NATIONAL INNOVATION, INTERNATIONALLY ACCLAIMED'
'Innovative Research Through Industrial Driven Solution'**

ABOUT US

Geocon Engineering Sdn Bhd established since 2011 introducing advanced and innovative systems of Geo-Polymeric Injection (polyurethane foam injection) techniques for Ground Engineering. We have, since our inception, successfully treated over 50 sites or areas varying from small domestic applications to large commercial, industrial, civil and highway or road projects.

All our works are planned, supervised and executed by our own experienced personnel.

GROUND TREATMENT AND REMEDIATION USING POLYURETHANE INJECTION SYSTEM

*OUR EXPERTISE AND SOLUTIONS

- ❖ Soil settlement
- ❖ Void filling and cavities
- ❖ Concrete slab uplifting and re-alignment
- ❖ Soil densification and compaction
- ❖ Increase ground bearing capacity
- ❖ Reduce seepage and migration of contaminated ground water

*INNOVATIVE SOLUTIONS AND BENEFITS

- ❖ No excavation required
- ❖ Constant structural support
- ❖ Strengthens weak soils
- ❖ Filling-up cavities and void area (Underground)
- ❖ No mess - Clean structural resin injection
- ❖ No water or moistures
- ❖ Less noise
- ❖ Minimal disruption (No need to vacate or move furniture, machineries etc.)
- ❖ Fast and cost-effective - Permanent or temporary solution.
- ❖ Green technology (Environmental friendly)
- ❖ Better solutions compare to conventional grouting works
- ❖ a local innovation derived from global technologies



UPLIFTING, RE-SUPPORTING AND REMEDIATION

Polyurethane foam injection method is a unique technique to re-support and uplift existing concrete slabs, roads and even buildings. The slab lifting technique was first introduced since it was the first area of application in 2009. It is fast, economical and minimise disruption to the existing structures, hence it does not affect the client's daily activities.

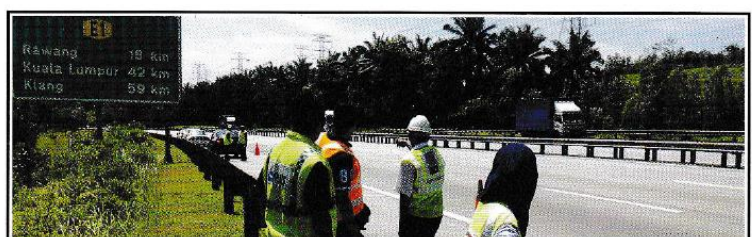
Experienced personnel inject the appropriate PU foam/resins through tiny drill holes, immediately below the slab or foundation. The components consist of polyol and isocyanate blends that are control-injected with hydraulic pump injectors, specifically designed to adapt to critical ground conditions and tight headroom. The admixture then expands and re-establishing the slab platform and provide structural support. The curing time is immediate providing a strong, stable and long lasting material which is environmentally sustainable.

The compaction of subgrade is found to be very effective down to 500 mm into the foundation soil. Continued injection provides uplifting to fractional tolerances and the spreading of the material is control at 2 m diameter surrounding one drill point. The movement of the surface during uplifting is controlled and monitored precisely using laser levels. The results are immediate and permanent.

ARTIFICIAL POLYURETHANE ROOTS SUPPORT SYSTEM

PU foam injection is a fast and cost effective technique which can also provide alternative solution to piling and underpinning by introducing permanent steel rod installation for structural and foundation support. With its buoyancy ability, the PU foam/resin provides additional frictional resistance to the ground and floating capabilities.

The structural support provides bearing at considerable depths with the injection and expansion of PU foam/resin through permanent hollow steel injection rod, installed at predetermined depths. The expanding foam/resin compacts the surrounding soil until the strength is achieved and it can no longer resist the counter force of the existing structure.



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POLYURETHANE FOAM SPECIFICATION AND DATA SHEET

Description	Value	Unit
Unit weight of the PU foam/resin, γ	0.8 – 1.5	kN/m ³
Stiffness modulus, E	10,000 - 15,000	kN/m ²
Poisson's ratio, ν	0.3	-
Compressive strength, σ_{PU}	2.2 - 16	MPa
Permeability, k (non porous)	1×10^{-12}	m/s
Composite compressive strength, σ_{MS}	200 – 800	kN/m ²
Core density, ρ_{PU}	85 - 160	kg/m ³
Acidity as HCL	Less than 0.6	%
Viscosity @ 25°C	170 - 250	MPas
Water absorption	0.33	%
Storage temperature	15 - 25	°C
Shelf life	6 months	month

INJECTION PRESSURE SPECIFICATION

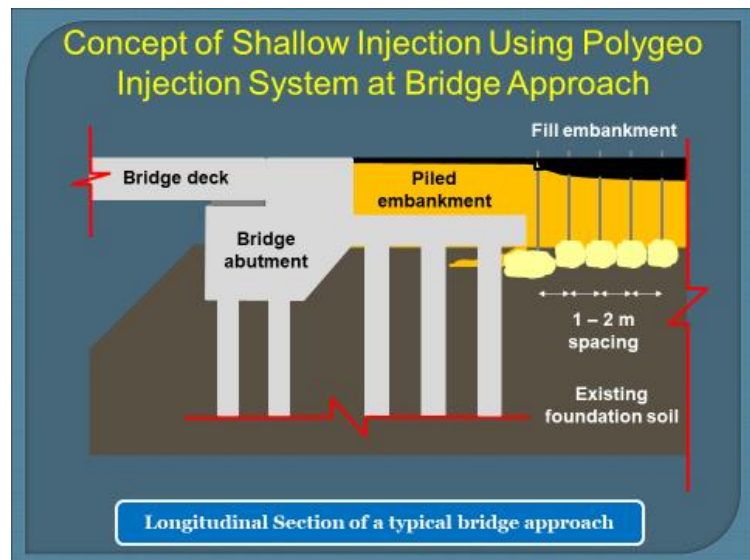
Description	Pressure (PSI)	Pressure (kPa)
Void/cavity filling	500 - 800	3,450 – 5,515
Soil strengthening and compaction	800 – 1,200	5,515 – 8,275
Hydrofracturing and frictional resistance	1,200 – 1,500	8,275 – 10,345
Compensation and uplifting	1,500 – 2,000	10,345 -13,790



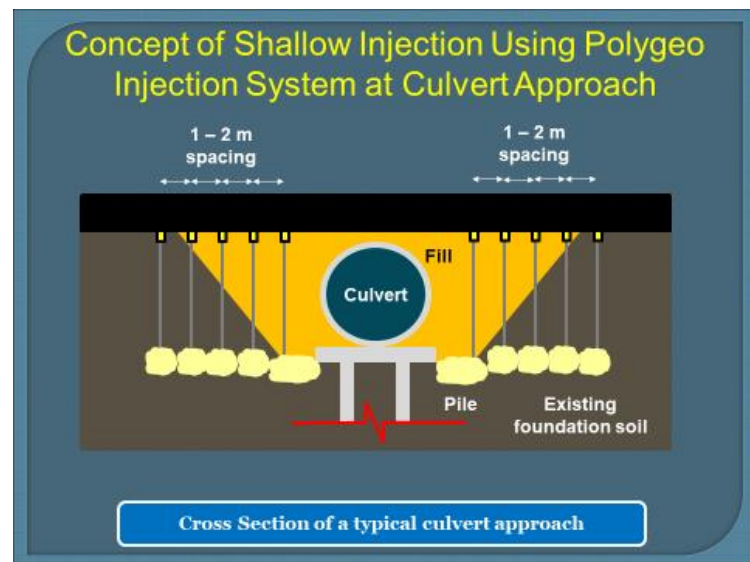
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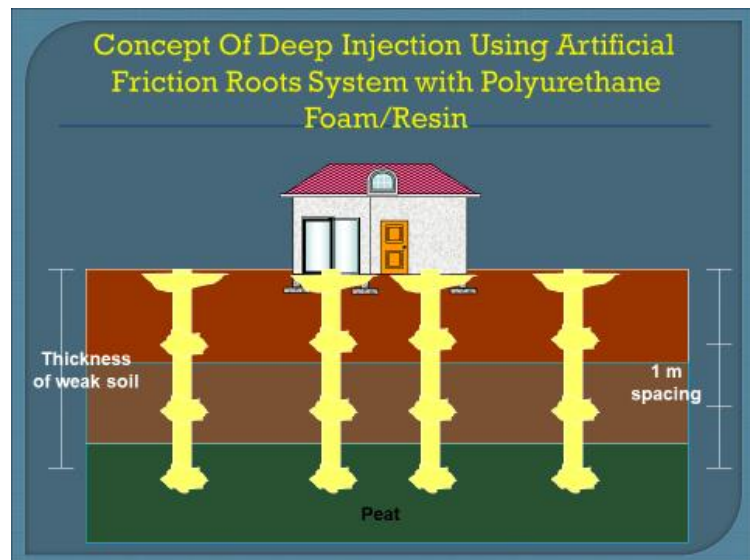
BRIDGE APPROACH REHABILITATION TECHNIQUE



CULVERT APPROACH REHABILITATION TECHNIQUE



STRUCTURAL AND GEOTECHNICAL SUPPORT SYSTEM



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For further enquiries, kindly contact our Sales & Marketing Department

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OUR CLIENTS



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