

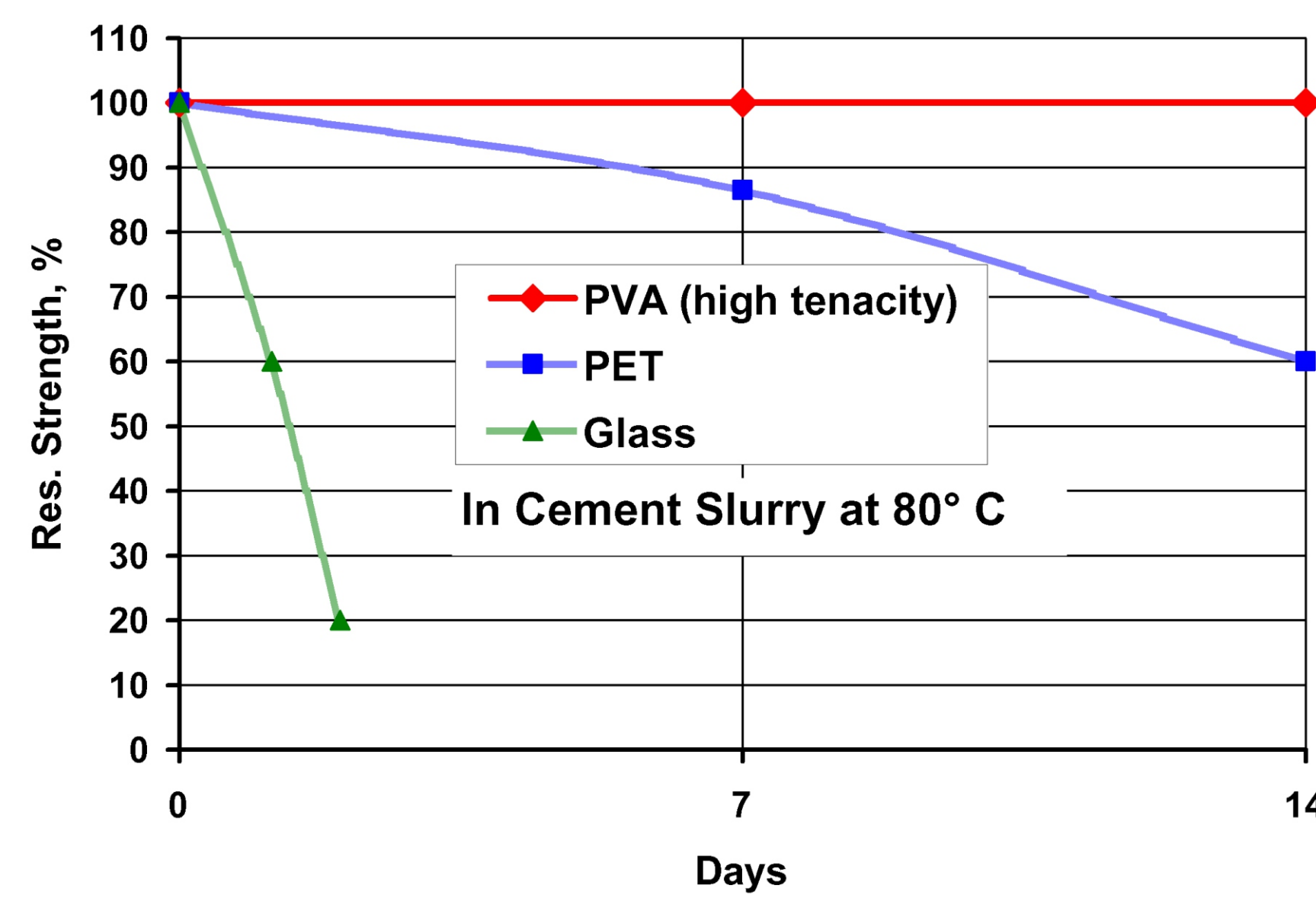
Geosynthetic Reinforcement of High-Alkaline Soils: Basics and Two Typical Projects

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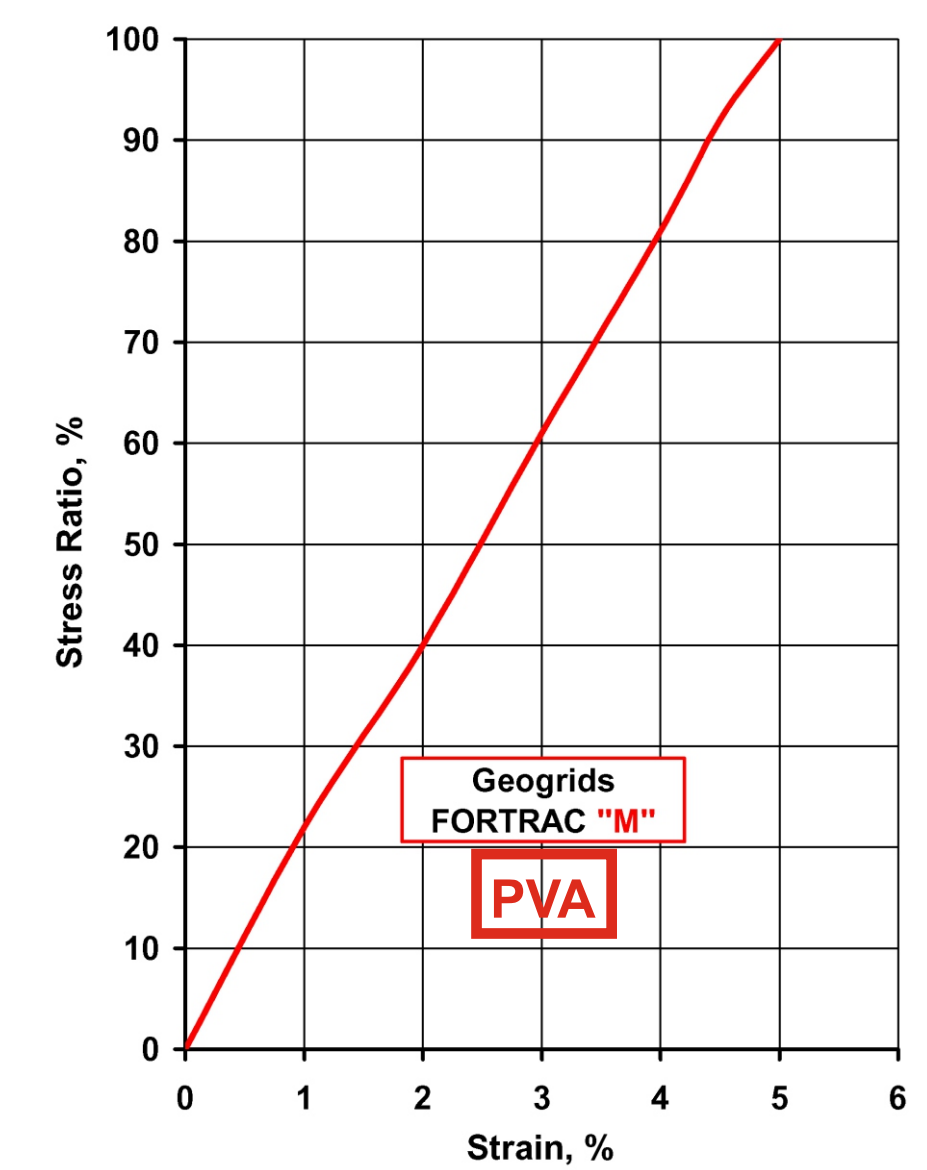
• Two main possibilities to improve the mechanical behaviour of cohesive soils to use them as fill material for construction purposes:

- “chemical” improvement or stabilization by cement / lime
- “mechanical” stabilization using appropriate reinforcing geosynthetics
- Combining these techniques:
 - synergetic effect by reinforcing lime / cement stabilized soils by
 - appropriate geosynthetic reinforcement

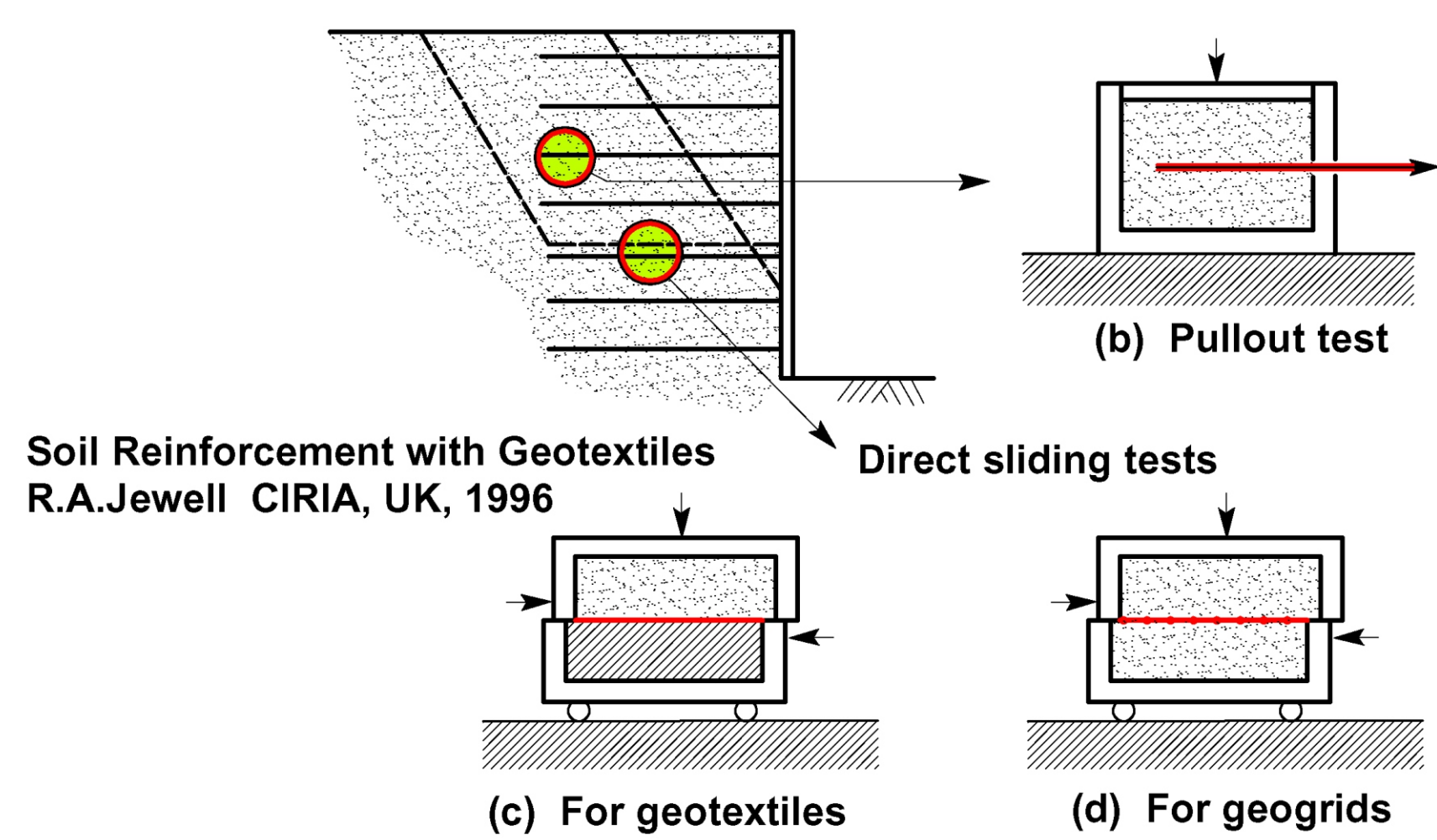
Durability of PVA in high-alkaline medium



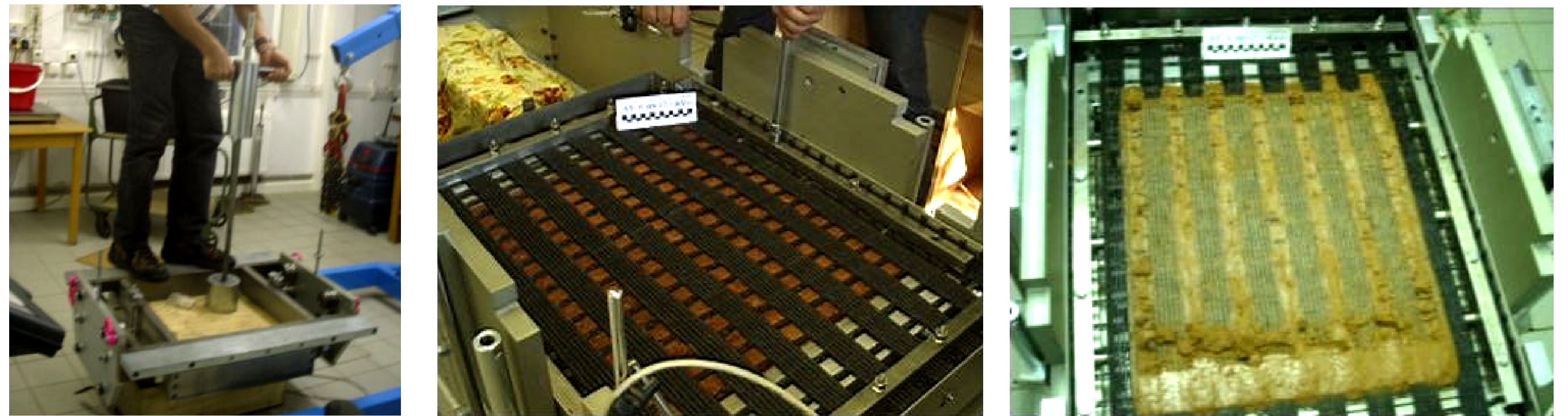
FORTRAC M: stress-strain behaviour



Geosynthetic reinforcement: interaction with soil



Interaction tests in the shear mode: geogrid FORTRAC M and stabilised clay

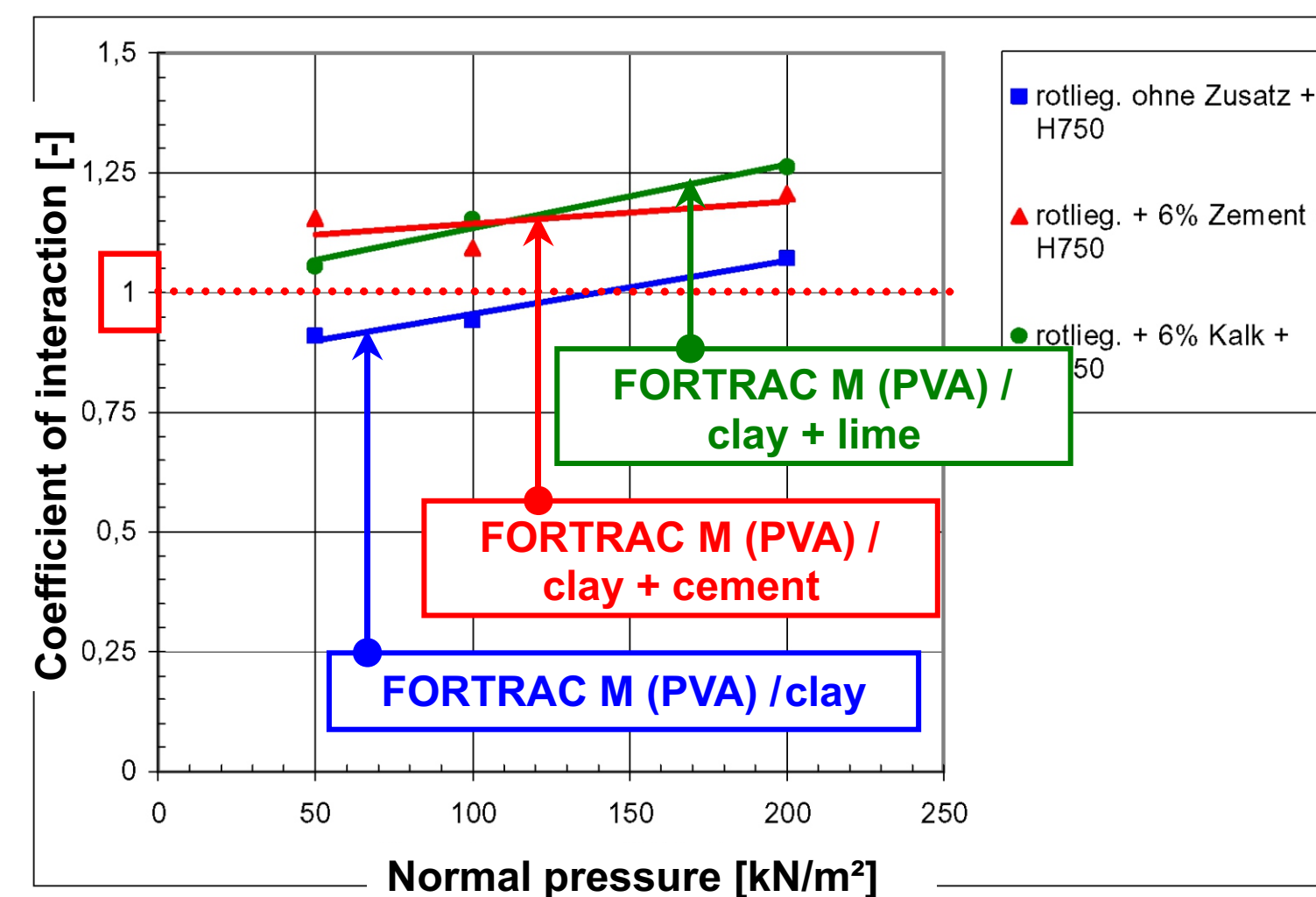


Coefficient of interaction (CI)

$$CI = \frac{\text{shear strength soil / soil}}{\text{shear strength geogrid / soil}}$$

CI shear mode CI pull-out mode
 CI >= 1.0 → no negative interface effects, “perfect bond”

Coefficient of interaction in shear mode

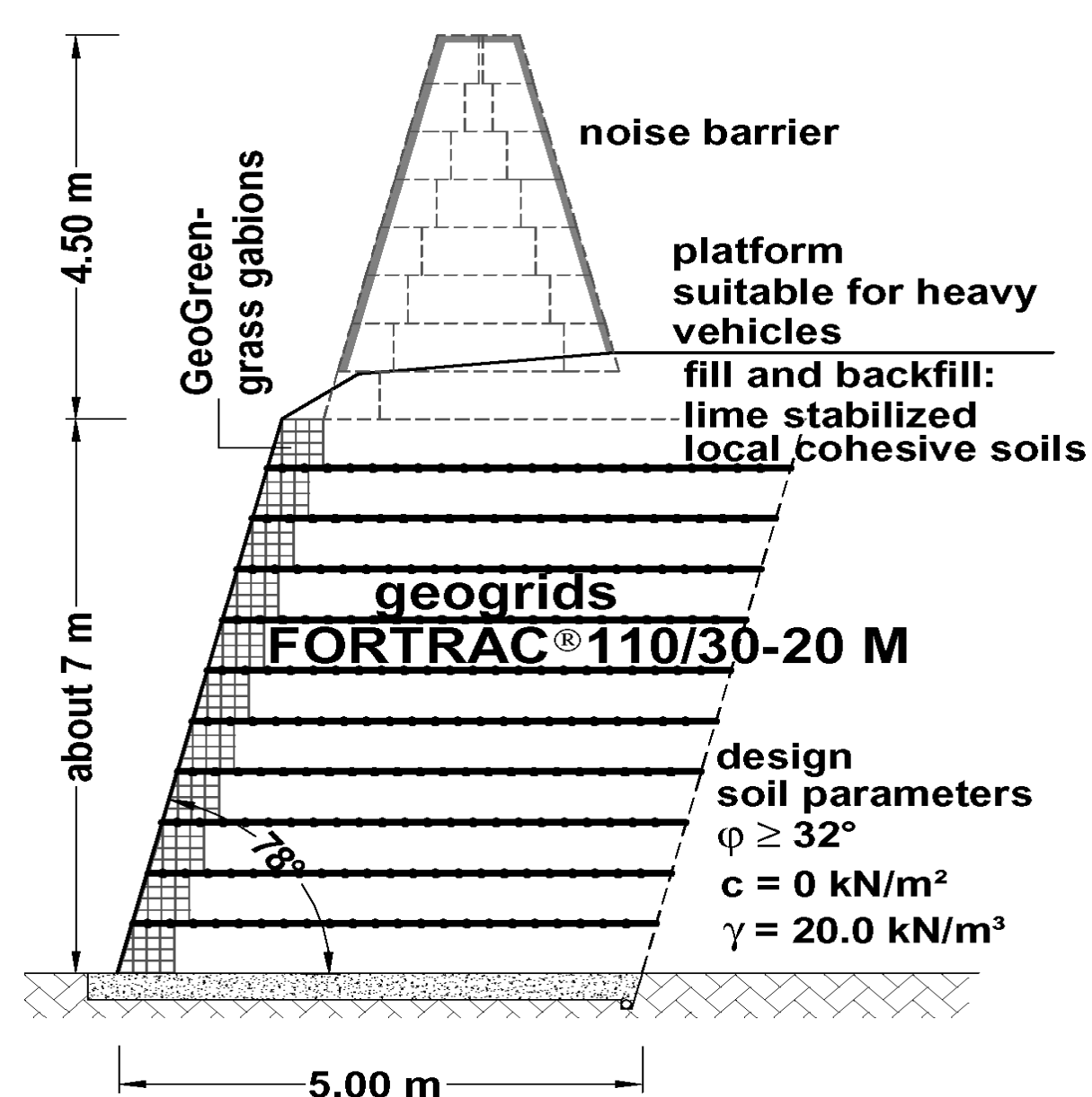


Coefficient of interaction in shear mode between geogrid FORTRAC 750 M and cement / lime stabilised clay

- Always > 1.0 de facto no interface, “perfect bond”
- Even better than in non-stabilised clay
- Nearly stress-independent

Similar results in the pull-out mode!

Retaining wall Unterkaka, Germany, 1997



Railroad embankment on piles, Büchen, German Rail (DB), 2003

