Utilization of stabilised clay

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Use of soft clay in protection barriers

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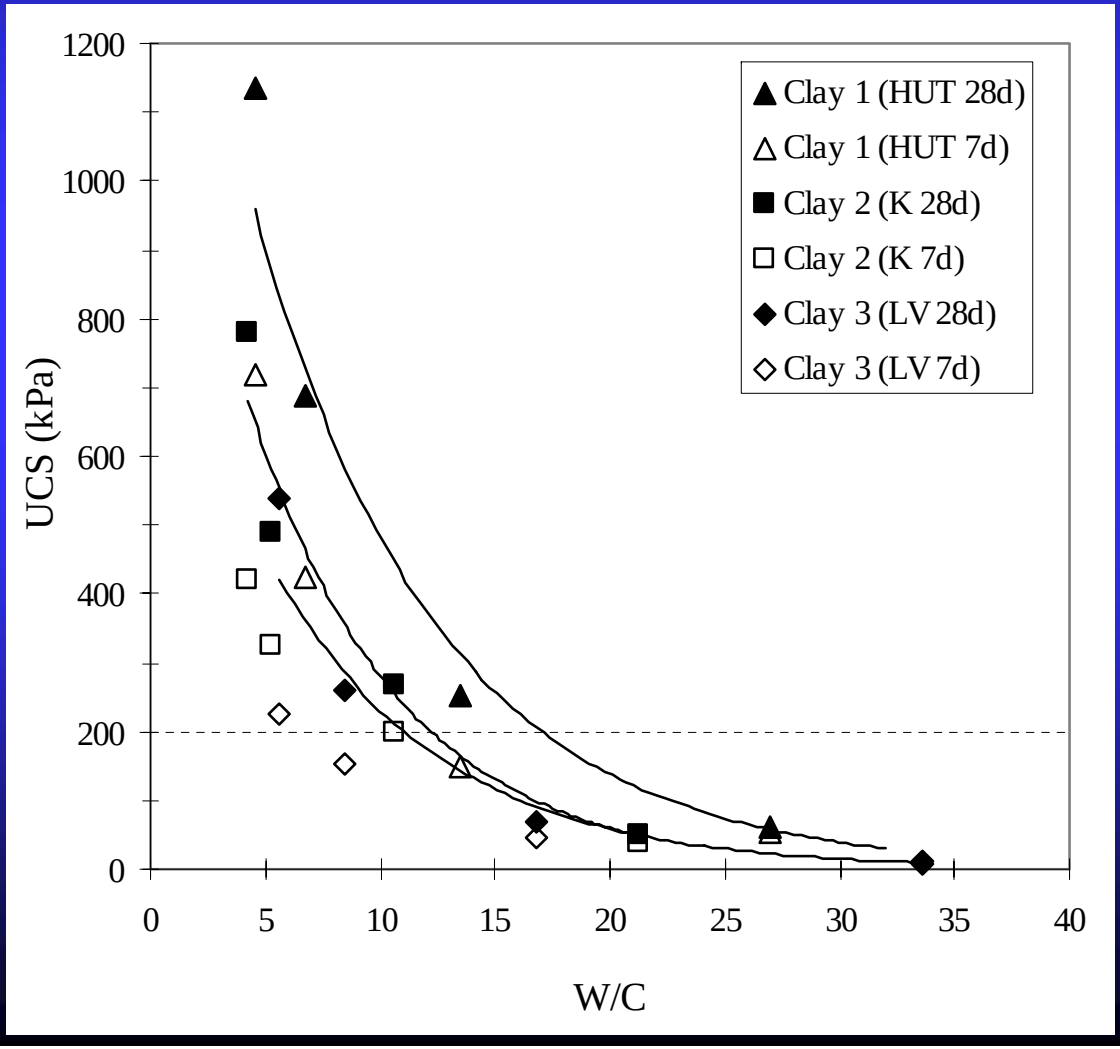
Aims: declare the prerequisities of Finnish clays for protection barriers in constructional and functional points of view

- stiffness
- permeability
- adaptable only if the binder content is small (costs)

In order to minimize the number of variables, only cement was used

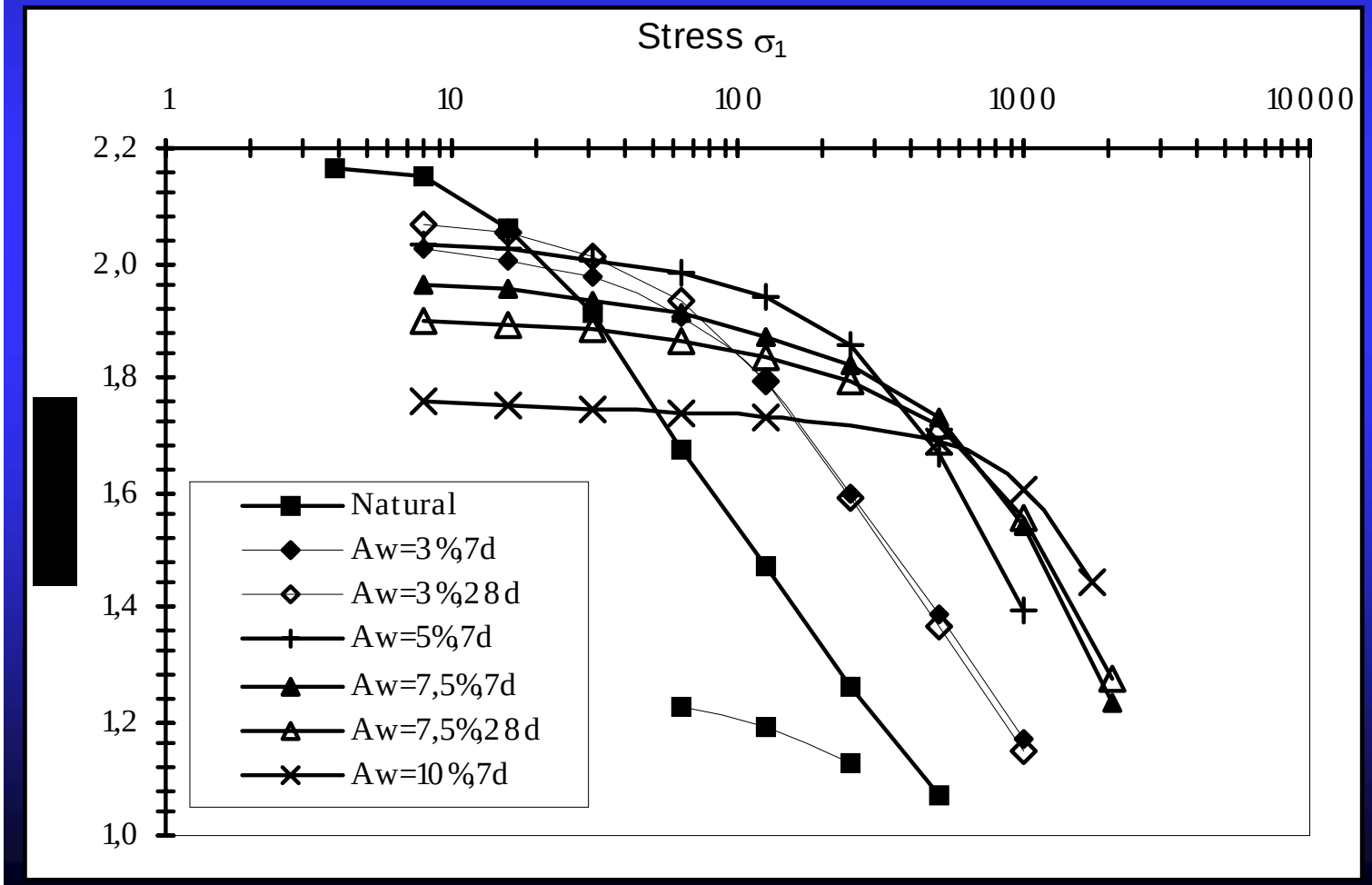
Strength:

Water and organic content strongly affect the strength:

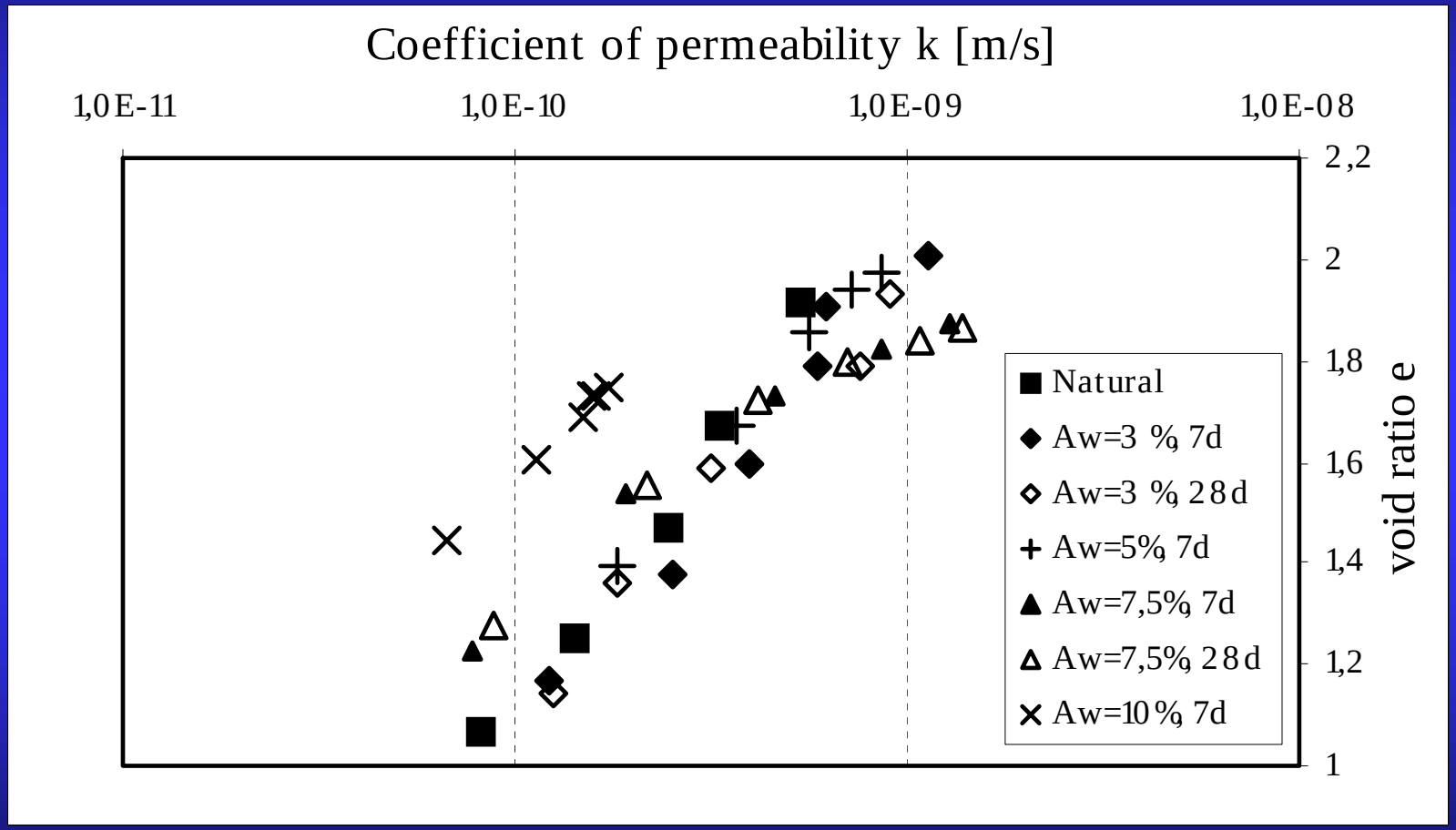


Settlement:

Increasing amount of cement:
*** decreases void ratio**
*** increases ”preconsolidation pressure”**



Permeability, Otaniemi clay (HUT):



- No major differencies between natural and low-cement samples
- Permeability of high-cement samples considerably lower

Conclusions:

- **Stiffness:** Workability requirement UCS > 100 kPa achieved with small amount of cement if the water content not too high
- **Settlement:** Stabilization causes “overconsolidation” in clay, no major effect on the compression index
- **Permeability:**
  - decreases during mixing (from natural state)
  - may increase with small amounts of cement (Clay 2) or remains about as the same as at the remolded state (Clay 1)
  - may decrease from the natural and disturbed state (Clay 3, oganic)
  - decreases with increasing cement content