



Railway foundation material: Laboratory investigation

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Project focus

Factors influencing measured railway foundation modulus

- Net normal stress - cyclic train loading, confining stress, stress history
- Matric suction - material type, soil physical state
- Laboratory test method



Cyclic simple shear



Cyclic hollow cylinder

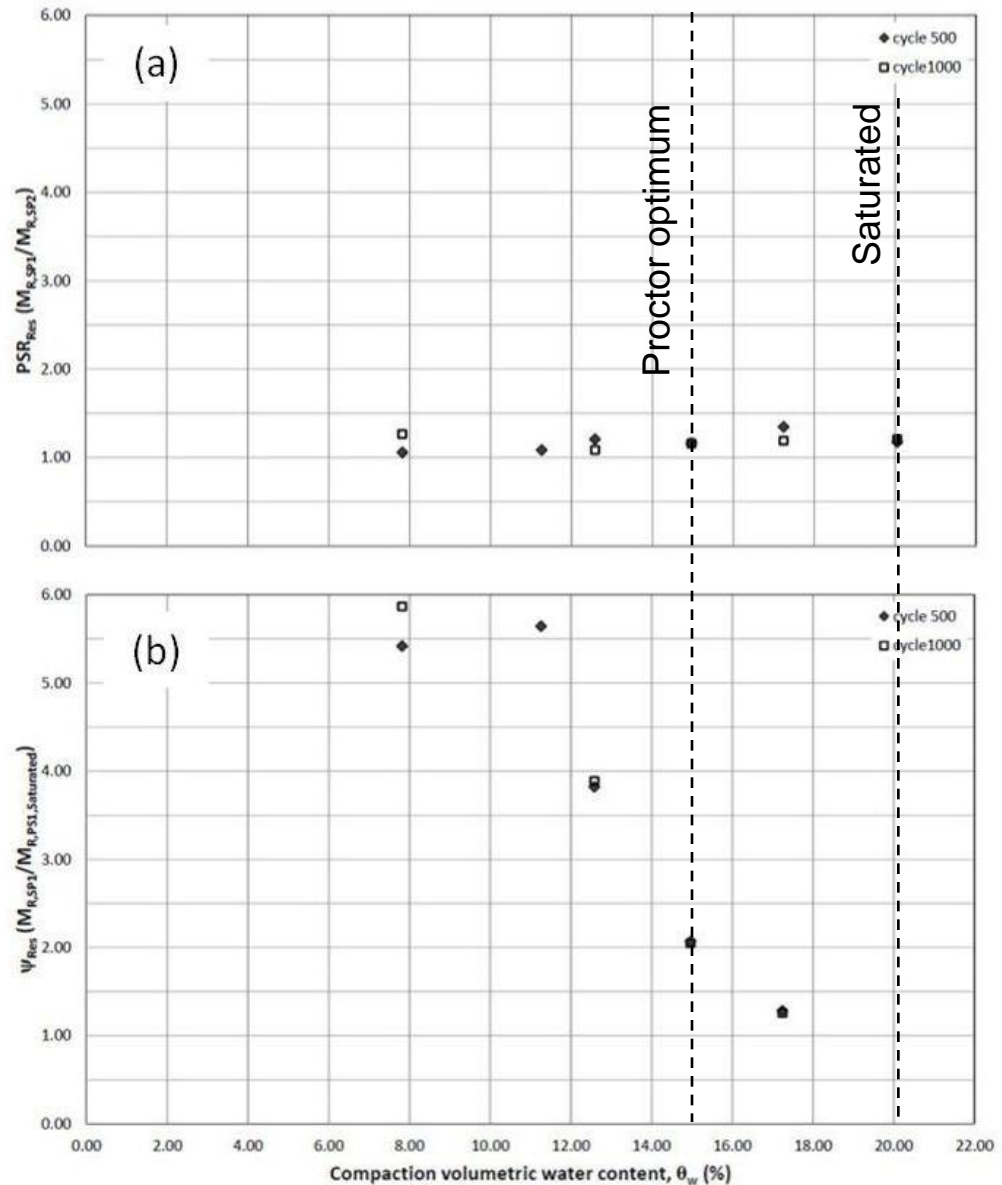


Cyclic triaxial

Preliminary results

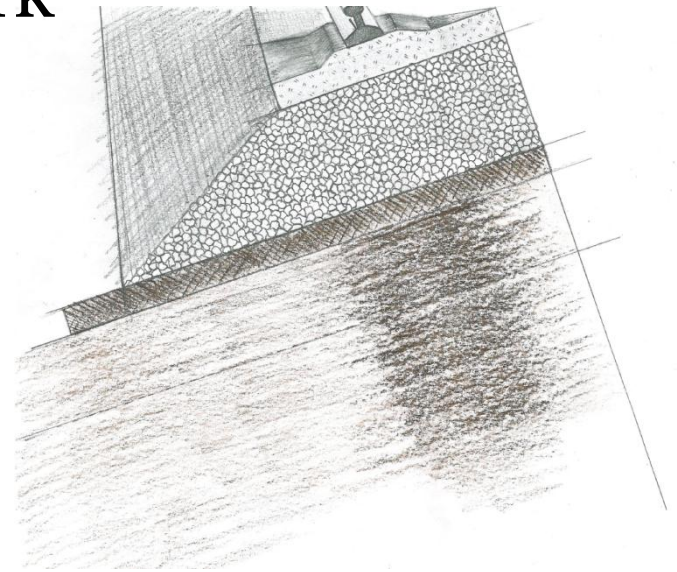
a) Principal stress rotation (constant train speed zones) resulted in approximately 20% lower M_R irrespective of water content (suction)

b) Matric suction cause significant change in measured M_R compared to saturated conditions, up to 5.5 times



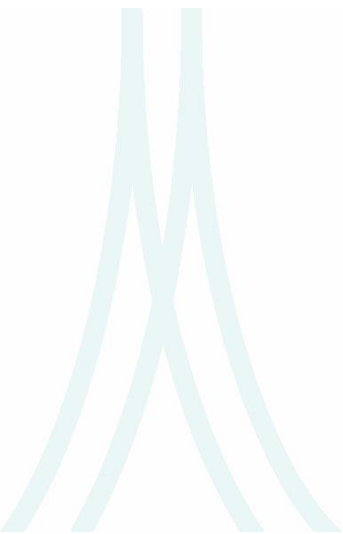
Ongoing work

- Cyclic triaxial testing
- Cyclic simple shear results analysis
- Analysis of strain development
- Analysis of anisotropy
- Comparing laboratory tests methods
- Unsaturated soil mechanics framework for practical use and evaluation of results
- Application: Track foundation design, management and risk evaluation





Thank you



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