

GHERG Equipment Inventory

Notation

Geotechnical and geomechanical: GTHydrological and hydrogeological: HT

Geophysical: GP

Soil physical and (geo)chemical analytics: PC

Miscellaneous: M

LABORATORY EQUIPMENT	GT	НТ	GP	PC	M
Fully automated dynamic and static triaxial testing system (x2)	√				
Large scale constant stiffness direct shear system	✓				
Fully automated direct shear test apparatus (x3)	✓				
Ring shear test apparatus	✓				
Oedometers: 2x fully automated 1D consolidation machine 3x standard 1D consolidation machine	✓				
 Hydraulic conductivity (permeability) apparatus: Flexible wall (triaxial) permeability test (x16) Constant and falling head permeability test 	√	√		√	
Vane shear apparatus	✓				
Atterberg limits apparatus (liquid and plastic limits, shrinkage)	✓				
Automatic compactors (standard, modified and CBR compaction)	✓				
Particle density and water absorption testing apparatus	✓				
Electromechanical sieve shaker and sets of standard sieves	✓				
Hydrometer	✓				
Slake durability apparatus	✓				
Pressure extractor		✓		✓	
Tensiometer (pF-meter) (x3)		✓		✓	
Dissolved oxygen meter				✓	
pH meter				✓	
EC meter				✓	
Advanced pressure volume controller	✓	✓			
Hall Effect local strain transducers	✓				
Load cells, LVDTs, pressure cells and pore water pressure transducers					✓
Camera equipped with time lapse photo capturing software for particle image velocity (PIV) analysis					✓



Frames equipped with dial gauges (x12) Developed apparatus with 12 cells for long term consolidation Cool room Drying ovens High temperature furnace Hot plate Balances (x5) equipped with auto data logging capability Ultrasonic bath Mechanical mixer Comparator (profile projector) Rock and soil crushers/grinders (x2) Cutting tools (bandsaw, chainsaw, drop saw) Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT FIELD EQUIPMENT Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood Infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water temperature loggers Water temperature loggers	LABORATORY EQUIPMENT	GT	нт	GP	РС	M
Cool room Drying ovens High temperature furnace Hot plate Balances (x5) equipped with auto data logging capability Ultrasonic bath Mechanical mixer Comparator (profile projector) Rock and soil crushers/grinders (x2) Cutting tools (bandsaw, chainsaw, drop saw) Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Water level loggers Water temperature loggers Water temperature loggers FIELD EQUIPMENT Water temperature loggers Water temperature loggers FIELD EQUIPMENT Water temperature loggers FIELD EQUIPMENT Water temperature loggers FIELD EQUIPMENT FIELD EQUIPMENT FIELD EQUIPMENT Seismic equipment: Multicale seepage gauge Water temperature loggers Water temperature loggers	Frames equipped with dial gauges (x12)					✓
Drying ovens High temperature furnace Hot plate Balances (x5) equipped with auto data logging capability Ultrasonic bath Mechanical mixer Comparator (profile projector) Rock and soil crushers/grinders (x2) Cutting tools (bandsaw, chainsaw, drop saw) Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water temperature loggers Water temperature loggers V V Water temperature loggers Drill cutters	Developed apparatus with 12 cells for long term consolidation					√
High temperature furnace Hot plate Balances (x5) equipped with auto data logging capability Ultrasonic bath Mechanical mixer Comparator (profile projector) Rock and soil crushers/grinders (x2) Cutting tools (bandsaw, chainsaw, drop saw) Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water temperature loggers Water temperature loggers Water temperature loggers FIELD EQUIPMENT Water temperature loggers Water temperature loggers	Cool room					✓
Hot plate Balances (x5) equipped with auto data logging capability Ultrasonic bath Mechanical mixer Comparator (profile projector) Rock and soil crushers/grinders (x2) Cutting tools (bandsaw, chainsaw, drop saw) Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water temperature loggers Water temperature loggers V J J J J J J J J J	Drying ovens					✓
Balances (x5) equipped with auto data logging capability Ultrasonic bath Mechanical mixer Comparator (profile projector) Rock and soil crushers/grinders (x2) Cutting tools (bandsaw, chainsaw, drop saw) Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water level loggers Water temperature loggers V V V V V FIELD EQUIPMENT Water temperature loggers Water temperature loggers	High temperature furnace					✓
Ultrasonic bath Mechanical mixer Comparator (profile projector) Rock and soil crushers/grinders (x2) Cutting tools (bandsaw, chainsaw, drop saw) Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Multiscale seepage gauge Water level loggers Water temperature loggers V V V V V V V V V V	Hot plate					✓
Mechanical mixer Comparator (profile projector) Rock and soil crushers/grinders (x2) Cutting tools (bandsaw, chainsaw, drop saw) Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water level loggers Water temperature loggers Drill cutters	Balances (x5) equipped with auto data logging capability					✓
Comparator (profile projector) Rock and soil crushers/grinders (x2) Cutting tools (bandsaw, chainsaw, drop saw) Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Fermeability packer Borehole camera Multiscale seepage gauge Water level loggers Water temperature loggers V V V V V V V V V V V V V	Ultrasonic bath					✓
Rock and soil crushers/grinders (x2) Cutting tools (bandsaw, chainsaw, drop saw) Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water level loggers V V V V V V V V V V V V V	Mechanical mixer		✓		✓	
Cutting tools (bandsaw, chainsaw, drop saw) Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water level loggers Drill cutters	Comparator (profile projector)					√
Diamond drill (coring) machine Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water level loggers V V V V V V V V V V V V V	Rock and soil crushers/grinders (x2)					✓
Hydraulic jacks Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Fermeability packer Borehole camera Multiscale seepage gauge Water level loggers Drill cutters	Cutting tools (bandsaw, chainsaw, drop saw)					√
Sample extruder Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water level loggers Water temperature loggers Drill cutters	Diamond drill (coring) machine					✓
Brown coal dryer Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water level loggers V V V V V V V V V V V V V	Hydraulic jacks					✓
Water deioniser FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water level loggers V V V V V V V V V V V V V	Sample extruder					✓
FIELD EQUIPMENT GT HT GP PC M Seismic equipment: Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer Permeability packer Borehole camera Multiscale seepage gauge Water level loggers Drill cutters	Brown coal dryer					√
Seismic equipment: • Multichannel analysis of surface waves (MASW) testing • Crosshole testing Hood infiltrometer V V V Permeability packer Borehole camera Multiscale seepage gauge Water level loggers V V V Drill cutters	Water deioniser					✓
 Multichannel analysis of surface waves (MASW) testing Crosshole testing Hood infiltrometer ✓ Permeability packer Borehole camera ✓ Multiscale seepage gauge ✓ Water level loggers ✓ Drill cutters 	FIELD EQUIPMENT	GT	нт	GP	РС	M
Permeability packer Borehole camera Multiscale seepage gauge Water level loggers Water temperature loggers Drill cutters	Multichannel analysis of surface waves (MASW) testing			✓		
Borehole camera Multiscale seepage gauge Water level loggers Water temperature loggers Drill cutters	Hood infiltrometer	✓	✓		✓	
Multiscale seepage gauge ✓ ✓ Water level loggers ✓ ✓ Water temperature loggers ✓ ✓ Drill cutters	Permeability packer	✓	✓		✓	
Water level loggers ✓ Water temperature loggers ✓ Drill cutters	Borehole camera	✓	✓			
Water temperature loggers ✓ ✓ Drill cutters	Multiscale seepage gauge	✓	✓			
Drill cutters	Water level loggers		✓		√	
	Water temperature loggers		✓		√	
Sample extruder ✓	Drill cutters					✓
	Sample extruder					✓