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Dynamic properties of frozen silty soils with different coarsegrained contents subjected to cyclic triaxial loading

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1	Dynamic properties of frozen silty soils with different coarse-grained contents
2	subjected to cyclic triaxial loading
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12	Abstract:
13	In cold seismic regions, the dynamic properties of frozen silty soils with different coarse-grained
14	contents have great influence on the stability of core-wall dam in hydraulic engineering subjected to
15	seismic/repeated loading. In order to investigate their dynamic behaviors, the materials were prepared
16	with silty soils incorporating different percentages of coarse grains, and the mass ratios of coarse
17	particles to silty soils for the samples are 0%, 20%, 40%, 60% and 80%, respectively. A series of cyclic
18	triaxial compression tests at the temperature of -6°C were carried out with 1.0Hz frequency by
19	employing the modified MTS-810 apparatus with confining pressures ranging from 0.3 to 4.0MPa.
20	Laboratory results demonstrate that the coarse-grained contents have great effect on the static and
21	dynamic behaviors of frozen soil mixtures. With the increasing coarse-grained contents, the static
22	strength first decreases to a smaller value and then increases slightly. When subjected to cyclic loading,
23	the resilient modulus increases all the time, whereas the damping ratio presents conversely a decreasing
24	tendency. As the loading cycles increase, the accumulative plastic strain presents an accelerating

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