

Subject Index

A-B

Area ratio, 15
 ASTM Committee D-18, 1
 ASTM standards
 C 403: 229
 D 653: 166
 D 2573: 1, 5, 8, 52, 106, 183, 321, 335, 341
 D 4698: 1
 Atterberg limits, 267
 Autonomous Seafloor Strength Profiler, 354
 Blast-furnace slag, 220

C

Cements, marine clay improved, 220
 Centrifuge tests, 209
 Clays (*See also* Marine sediments; Testing)
 anisotropy, 30-32, 82, 88, 166, 267
 carbonate, 339
 dynamic moduli, 193
 elliptical failure criterion, 88
 Gault, 212
 geotechnical data, table, 76
 liquidity index, 293
 minerals, 220
 model, physical, 209
 overconsolidation, 33-38, 71, 306
 plasticity, 13, 150, 293, 339
 remolding, 166
 sensitivity, 117, 166, 233
 shear rate, 46, 117
 shear strength, undrained (*See* Shear strength)
 shear stress distributions, 15
 static moduli, 193
 strain softening, 150
 strength anisotropy, undrained, 30-32, 82, 88, 166, 267
 strength relationships, vane and compressive, 32-36

stress, effective, 131
 stresses, horizontal, 71
 stresses, yield, 27, 71
 Cone penetration tests
 Autonomous Seafloor Strength Profiler, 354
 during centrifuge flight, 209
 comparison with other methods, 247, 293, 306, 339
 relative preference for, 56
 Constitutive equation, 131
 Core tests, 354
 Cylinder shear testing, 131

D

Deep mixing method, 220
 Dilatometers, 247
 Drilling, offshore, 46, 220, 318, 339
 Dynamic moduli, 193

E-F

Elliptical failure criterion, 88
 Failure, progressive, 150
 Field vane testing (*See also* Testing)
 comparison with laboratory results, 233, 293, 306
 comparison with other in-situ results, 247, 293, 306, 354
 corrections, 242-243
 design and experience with a commercial unit, 318, 339
 friction errors, 104
 future research and development recommendations, table, 7
 installation methods, 104
 instrumentation, 318
 overview, 1
 Fills, test, 267
 Finite-element analysis, 150
 Foundations, 277
 Friction errors, 104

I-L

Insertion effects, 18-21, 54, 117
 Lateral stress at rest, coefficient of, 339
 Lime reaction capacity, 220
 Liquidity index, 293

M

Marine sediments (*See also* Clays; Shear strength)
 anisotropy, 30-32, 82, 88, 166, 267
 Bombay, 277
 Hiroshima Bay, 220
 James Bay, Quebec, 233
 Mexico, Gulf of, 166, 293
 Mississippi Fan, 166
 Osaka Bay, 131, 220
 Pacific, North, 166, 361
 Rhode Island Sound, 362
 Rio de Janeiro soft, 104
 Santa Barbara Channel, 306
 sensitivity, 117, 166
 Sepetiba, Brazil, 267
 Tokyo Bay, 220
 Minerals, clay, 220
 Mixing, deep, 220

O

Ocean-bottom testing (*See* Testing; Marine sediments)
 Ocean soil (*See* Clays; Marine sediments)
 Offshore drilling, 46, 220, 318, 339
 Overburden, 306
 Overconsolidation, 33-38, 71, 306

P

Penetrometers, cone
 Autonomous Seafloor Strength Profiler, 354
 centrifuge flight, use during, 209
 comparison with other methods, 247, 293, 306, 339
 relative preference for, 56
 Perimeter ratio, 18
 Piezocone tests, 247, 293
 Plasticity, 13, 150, 293, 339
 Portland cement, 220
 Preconsolidation pressure, 306.
 Pressuremeters, 247
 Progressive failure, 150

R

Rest period, 13, 15
 Rod-soil friction, 104
 Rotation rates, 13, 53, 117

S

Screw-plate apparatus, 247
 Sensitivity of clays, 117, 166, 233
 SHANSEP (stress history and normalized soil engineering properties)
 correlation with other methods, 196, 293, 306
 definition, 33
 usage, 56
 Shear rate, 46, 117
 Shear strength (*See also* Testing)
 cement, marine clay improved, 220
 undrained clay
 anisotropy, 30-32, 82, 88, 166, 267
 Autonomous Seafloor Strength Profiler, 354
 during centrifuge flight, 209
 low strain, 193
 measurement factors, 13, 117
 micromorphological aspects, 182
 normalized, 293
 offshore, 46
 residual/remolded, 166
 Skempton relationship, 348
 stresses, in-situ and yield, 71, 267
 vane and field strengths, correlation of, 82-85
 Shear stresses
 clays
 distributions in, 15
 effective, 131
 horizontal, 71
 yield, 27, 71
 vanes, rectangular, distributions in, table, 90
 Shear testing (*See* Testing)
 Silt (*See* Clays; Marine sediments)
 Site investigation, 293
 Slag, blast furnace, 220
 Sliding block analysis method, 277
 Soil stabilization, 220
 Soils (*See also* Clays)
 carbonate, 339
 instrumentation (*See* Test apparatus; Vane types)
 mechanics, 13, 150

progressive failure, 150
 properties, 46, 306
 Stability analysis (*See* Testing)
 Stabilization, soil, 220
 Standards
 ASTM C 403: 229
 ASTM D 653: 166
 ASTM D 2573: 1, 5, 8, 52, 106, 183, 321, 335, 341
 ASTM D 4698: 1
 national standards, comparison of, table, 319
 offshore application of onshore test standards, 318
 standard field vane test, 14
 Static moduli, 193
 Strain-rate effects, 13, 53, 117
 Strain softening, 150
 Stresses
 effective, 131
 horizontal, 71
 lateral, at rest, coefficient of, 339
 yield, 27, 71

T

Test apparatus (*See also* Vane types)
 Autonomous Seafloor Strength Profiler, 354
 commercial in-situ vane, 318
 cylinder shear, 131
 deep mixing cement, 220
 dilatometers, 247
 field vane, 104
 offshore vane, 46
 penetrometers, cone (*See* Penetrometers, cone)
 pressuremeters, 247
 screw-plate, 247
 Test fills, 267
 Testing (*See also* Shear strength)
 calibration, 104
 cement, marine clay improved, 220
 centrifuge, 209
 core, 354
 correlation factors, 71, 104
 design criteria, 46
 field and laboratory tests, comparisons, 117, 233, 293, 306
 friction errors, 104
 future research and development recommendations, table, 7
 history, 46, 182
 in-situ and core, comparison of results, 354
 in-situ methods rated, table, 248
 insertion effects, 18–21, 54, 117
 installation methods, 104
 laboratory (*See also* Triaxial testing)
 ASTM D 4698: 1
 effective stress, 131
 micromorphological aspects, 182
 land
 ASTM D 2573: 1, 5, 8, 52, 106, 321, 341
 miniature vane, 209, 293, 306
 offshore, 46, 220, 318, 339
 overview, 1
 penetration
 cone (*See* Cone penetration tests)
 ASTM C 403: 229
 piezocone, 247, 293
 questionnaire, 46
 remolding, 166
 reviews, 13, 46
 SHANSEP (stress history and normalized soil engineering properties), 33, 56, 196, 293, 306
 shear, cylinder, 131
 standardization
 ASTM D 2573: 1, 5, 8, 52, 106, 183, 321, 335, 341
 ASTM D 4698: 1
 national standards, comparison of, table, 319
 offshore application of onshore test standards, 318
 recommendations, table, 6
 standard field vane test, 14
 Torvane, 339
 triaxial (*See* Triaxial testing)
 vane and field strengths, correlation, 82–85, 288
 vane results compared with other in-situ results, 247
 Torvane, 339
 Triaxial testing
 on anisotropically reconsolidated specimens, 233
 correlation with other methods, 293, 306, 339
 with cyclic loading, 193
 reliability of, 277

V

Vane borer, 104, 277
 Vane insertion effects, 18–21, 54, 117
 Vane rotation rates, 13, 53, 117

Vane strength, 117

Vane types

 diamond shaped, 88

 Dolphin, 51

 friction eliminator, 106

 Fugro, 50, 318, 339

 McClelland, 50

 miniature, 209, 293, 306

 rectangular, 88

 shape effects, 88, 117

 standard, 14

 triaxial, 193, 280, 293, 306, 339

 vane borer, 104, 277

Y

Yield stresses, 27, 71