Subject Index

A

ABAQUS, 514
Accelerated load test facility, 72
Accelerometer, 444
three-dimensional, 214
Aggregate base, 167, 514
Airport pavement, 429, 444
Air temperature monitoring, 144
American Association of State Highway and Transportation Officials (AASHTO), 95, 499
Artificial neural networks, 297, 484, 514
Asphalt concrete, 129, 144, 297
comparison between back-calculated and laboratory measured moduli for, 161
frequency dependency, 365
full depth, 413
modulus, 470, 514
overlay, 429, 444
seismic pavement analysis, 346
Asphalt, hot mix, 23, 59, 72
Asphalt mixtures, 297
Asphalt shoulders, 281
Asphalt, stripping in, 313
Asphalt, surface, 113
ASTM standards, 161
D 4602, 3
D 4694, 3
D 4695, 3
D 4748, 313
D 5858, 3
Axle loads, cumulative equivalent single, 95

B

BALM, 470
Base damage index, 514
Bearing capacity measurements, 457
BKGREEN, 383

C

California bearing ratio, 175, 189
subgrade, 214
Cement, portland, concrete, 59, 246, 398
jointed pavements, 231
parameters, 267
shoulder, 281
Coefficient of variation, 129
Concrete pavement
continuously reinforced, 281
jointed, 231, 281, 313
jointed reinforced, 281
parameters, 267
portland cement, 59, 231, 246, 398
portland cement shoulder, 281
Cone penetrometer, 214
Cracking, 95
Crack performance, 231
Creep modulus, 365
Cumulative equivalent single axle loads, 95
Cyclic loading, 429

D

Danish Road Institute, 457
Deflection basins, 113, 429, 484, 514
Deflection standards
D 4602, 3
D 4694, 3
D 4695, 3
Deflectograph, high speed, 457
Deflectometer, falling weight, 23, 214, 514
airfield pavement, 444
application to portland cement concrete pavement, 59
comparison with high speed deflectograph, 457
comparison with seismic pavement analyzer, 327
comparison with small scale devices, 41
deflection basin measurement with, 484
dispersion analysis, 297
jointed concrete pavements, 231
layer moduli determination with, 161, 365
loading duration differences with, 470
Loadman portable, 175
Long Term Pavement Performance program, 281
overlay design, 413
pavement deterioration prediction, 95
random error effects, 267
rigid pavement, 246, 398
seasonal monitoring, 113-144, 246, 499
WesTrack experiment, 72
Deflectometer, rolling dynamic, 429
Deflectometer, rolling weight, 444, 457
Deformation, relationship with pavement stiffness, 327
Delamination, 313
Deterioration detection, 313
Deterioration prediction, 95
Dispersion analysis, 297
Distinct element method, 14
Distress mechanisms, 23
Doppler effect, 457
Drop tester, 41
Dynaflect method, 327, 383
Dynamic analysis, 413
Dynamic cone penetrometer, 175, 189
instrumented, 214
Dynamic slab-ground theory, 413

533
NONDESTRUCTIVE TESTING OF PAVEMENTS

E
Elastic materials, 14
Elastic modulus, 144, 189, 246, 267
D 5858, 3
Portland cement concrete, 398
Elastic solid foundation, 267
Elastic stiffness modulus, 41
EVERCALC, 129, 175, 327, 365
Extreme value theory, 327

F
Falling weight deflectometer (See Deflectometer, falling weight)
Falling weight impulse load device
D 4694, 3
Fatigue cracking, 484
Federal Highway Administration, 3, 14, 281
Finite element method, 14, 470, 514
Flexible pavement, 113, 129, 484, 499, 514
Foundation assessment, 41
Freeze-thaw effects, 113, 129, 144
Frequency dependence, 365
Frequency response spectra, 429
Frost penetration, 144

G
Granular bases, 113, 175
nonlinear property, 161
Granular materials, 14
unbound, 41
Ground penetrating radar, 23, 313

H
Hankel transform, 297
Hot mix asphalt, 23, 59, 72
Humboldt soil stiffness gauge, 175

J
Jointed concrete pavements, 231, 281
Jointed pavement, 429

L
Laser-based high speed deflectograph, 457
Laser Doppler sensor system, 457
Layer coefficient, structural, 59
Layered elastic theory
D 5858, 3
Layer properties, rigid, 267
Layer thicknesses, 313, 346
estimation, 23
method of equivalent thicknesses, 14
Life prediction, flexible pavement, 484
Linear elastic theory, 14
Load cell, 214
Loading, cyclic, 429
Loading duration effects, 470
Loading dynamic, 398
Loading frequency, 413
Loading, random, 327
Load level effects, 246
Loadman portable falling weight deflectometer, 175
Loads, cumulative equivalent single axle, 95
Load test facility, accelerated, 72
Load transfer efficiency, 231, 281
Load, wheel, 444, 457
Long Term Pavement Performance program, 113, 246, 281
Canada, 144
Minnesota, 129
United States, 144

M
Maintenance Control Index, 95
Mechanistic-empirical design, 129
Method of equivalent thicknesses, 14
Models and modeling
exponential, subgrade modulus, 144
Hankel transform-based forward model, 297
pavement deterioration prediction, 95
pavement remaining life prediction, 484
seasonal changes, 499
MODULUS, 327, 514
Modulus-stress relationship, 161
Moisture content monitoring, 129, 144, 499
Monte Carlo simulation, 484
Multiple regression analysis, 95

N
National Cooperative Highway Research Program, 3
Neural networks, artificial, 297, 484, 514
Nonlinear backcalculation, 14
NUS-BACK, 267

O
Overlay design, 59, 413, 499

P
Penetration index, 175
Penetration rod, 189
Penetrometer, dynamic cone, 175, 189
instrumented, 214
Plate test devices, 41
Poisson's ratio, 214, 365
Profiling, continuous, 429
 profilometers, 95
R

Radar, ground penetrating, 23, 313
Radio waves, pavement characterization with, 313
Recycling, cold in place, 59
Rehabilitation, 313, 346
  recycling, cold in place, 59
  strategies, 514
  strategy selection, 23
Research and development, highway, 3
Resilient modulus, 72, 161, 175, 499
Rod length, penetrating, 189
Roughness, 95
Rutting, 95, 346, 484

S

SAPSI-M, 365
Seasonal monitoring program, 113, 129, 145, 246, 499
Seed moduli, 389
Seismic dynamic cone penetrometer, 214
Seismic pavement analyzer, 214, 327, 346
portable, 346
Shape factor, 514
Shear load transfer, 231
Short Kernel Method, 297
Shoulder, pavement, 281
SHRP, 346
  LTPP, 113, 281
Signal processing techniques, 23
Skin-friction resistance, 189
Slab-ground method, dynamic, 413
Slab-on-grade, 246
Slab on layer, 267
Small-scale devices, 41
Solar radiation, 144
Static estimation, 383
Stiffness, 175, 231, 327
  soil gauge, 175
Stress dependency, 161
Stress Wave Analysis Package, 297
Stripping, 313
Subgrade base characterization, 175
Subgrade California bearing ratio, 214
Subgrade dumping, 398
Subgrade layers, 72, 113
Subgrade modulus, 144, 246, 267, 413, 499, 514
Subsoils strength evaluation, 189
Subsurface condition evaluation, 23, 41, 129
Subsurface layer moduli, 297, 365
Surface wave measurements, 297, 346, 383

T

Tensile strain, 365
Tensile test, 14
Texas Mobile Load Simulator, 346
Time-history deflections, 297, 398
Timoshenko-type slab, 413
Transducers, 41
Transverse crack characterization, 231

V

Velocity, testing, rolling dynamic deflectometer, 429
Vibration, 327
Void analysis, 231, 281, 313

W

WesTrack, 72
Wind speed, 144
Winkler foundation, 267, 398

Y

Young’s modulus, 413