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*Geotechnical
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major session
topics of
instrumentation
associated with:
soil structure
interaction,
monitoring

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landfills, and
monitoring
settlement and
stability; and field
data acquisition
The Geotechnical
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provides the tools
necessary for
fusing geological

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characterization
For Monitoring
and investigation
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with critical
analysis for
obtaining
engineering design
criteria. The
second edition
updates this
pioneering
reference for the
21st century,

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including
For Monitoring
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developments that
have occurred in
the twenty years
since the first
edition was
published, such
as: • Remotely
sensed satellite
imagery • Global
positioning
systems (GPS) •

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Use of the Internet
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a comprehensive

guide to a

complete

investigation:

study to predict

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Instrumentation
geologic
For Monitoring
conditions; test-
Field Performance
boring procedures;
various
geophysical
methods and when
each is
appropriate;
various methods to
determine
engineering
properties of

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materials, both laboratory-based and in situ; and formulating design criteria based on the results of the analysis. The author relies on his 50+ years of professional experience, emphasizing

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identification and description of the elements of the geologic environment, the data required for analysis and design of the engineering works, and procuring the data. By using a practical approach

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to problem solving,
this book helps
engineers consider
geological
phenomena in
terms of the
degree of their
hazard and the
potential risk of
their occurrence.
For thousands of
years, the

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underground has provided humans refuge, useful resources, physical support for surface structures, and a place for spiritual or artistic expression. More recently, many urban services

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have been placed underground. Over this time, humans have rarely considered how underground space can contribute to or be engineered to maximize its contribution to the sustainability of

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society. As human activities begin to change the planet and population struggle to maintain satisfactory standards of living, placing new infrastructure and related facilities underground may

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be the most
successful way to
encourage or
support the
redirection of
urban
development into
sustainable
patterns. Well
maintained,
resilient, and
adequately

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performing
For Monitoring
underground
Field Performance
infrastructure,

therefore,
becomes an
essential part of
sustainability, but
much remains to
be learned about
improving the
sustainability of
underground

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infrastructure itself.
For Monitoring
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At the request of
the National
Science
Foundation (NSF),
the National
Research Council
(NRC) conducted
a study to consider
sustainable
underground
development in the

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urban
For Monitoring
environment, to
Field Performance
identify research
needed to
maximize
opportunities for
using underground
space, and to
enhance
understanding
among the public
and technical

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communities of the
role of
underground
engineering in
urban
sustainability.
Underground
Engineering for
Sustainable Urban
Development
explains the
findings of

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researchers and
practitioners with
expertise in
geotechnical
engineering,
underground
design and
construction,
trenchless
technologies, risk
assessment,
visualization

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techniques for
geotechnical
applications,
sustainable
infrastructure
development, life
cycle assessment,
infrastructure
policy and
planning, and fire
prevention, safety
and ventilation in

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the underground.
For Monitoring
This report is
Field Performance
intended to inform
a future research
track and will be of
interest to a broad
audience including
those in the private
and public sectors
engaged in urban
and facility
planning and

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design,
For Monitoring
underground
Field Performance
construction, and
safety and
security.

Soil Mechanics in
Engineering
Practice
Advances in
Construction
Materials and
Sustainable

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For Monitoring
Instrumentation
Field Performance
and

Measurements
Guidelines for
Instrumentation
and
Measurements for
Monitoring Dam
Performance
Principles,
Installation and

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Reading
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*Soft Clay Engineering
and Ground*

*Improvement covers
the design and
implementation of
ground improvement
techniques as
applicable to soft
clays. This particular
subject poses major
geotechnical
challenges in civil
engineering. Not only*

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civil engineers, but planners, architects, consultants and contractors are now aware what soft soils are and the risks associated with development of such areas. The book is designed as a reference and useful tool for those in the industry, both to consultants and

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contractors. It also benefits researchers and academics working on ground improvement of soft soils, and serves as an excellent overview for postgraduates. University lecturers are beginning to incorporate more ground improvement topics into their curricula, and this

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*text would be ideal
for short courses for
practicing engineers.*

*It includes several
examples to assist a
newcomer to carry
out preliminary
designs. The three
authors, each with
dozens of years of
experience, have
witnessed and
participated in the
rapid evolvement of*

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Performance
ground improvement
in soft soils. In
addition, top-tier
professionals who
deal with soft clays
and ground
improvement on a
daily basis have
contributed,
providing their
expertise in dealing
with real-world
problems and
practical solutions.

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For Monitoring
Wall Performance
Very Good, No
Highlights or
Markup, all pages are
intact.

*GeoMeasurements by
Pulsing TDR Cables
and Probes examines
Time Domain
Reflectometry (TDR)
research and
provides information
on its use as a
robust, reliable, and
economical*

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TDR technology

*production tool.
Common uses for
TDR technology
include
telecommunications
and power industries,
but the text
examines
applications such as
measurement of
moisture of
unsaturated soils;
detection of fluids for
leak and pollution;*

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measurement of water levels for hydrological purposes; measurement of water pressures beneath dams; and deformation and stability monitoring of mines, slopes, and structures. Chapters discuss: basic physics of signal generation, transmission, and

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*attenuation along the
coaxial cable probe
designs and
procedures for
calibration as well as
the variation in probe
responses to changes
in water content and
soil mineralogy
variations in
waveform
characteristics
associated with
cable, deformation,*

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*cable calibration, and
installation
techniques for
metallic cables in
rock several cases
demonstrating the
use of TDR cables in
soil as well as
weathered and soft
rock a rationale for
the use of compliant
cable in soil the use
of metallic cable
(MTDR) and optical*

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*fiber (OTDR) to
monitor response of
structures
sensor/transducer
components,
connections from the
sensors to the TDR
pulser/sampler, and
system control
methods available
software for
transmission and
analysis of TDR
signatures The*

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diverse interest and terminology within the TDR community tends to obscure commonalities and the universal physical principles underlying the technology. The authors seek to crystallize the basic principles among the seemingly divergent specialties using TDR technology in

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geomaterials. By
examining varied
experiences,
GeoMeasurements by
Pulsing TDR Cables
and Probes provides
a synergistic text
necessary to unify
the field.

Geotechnical
Engineering
Handbook
Planning, Design,
Construction and

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*Operation of the
Underground Space
Underground Sensing
Geotechnical
Instrumentation for
Monitoring Field
Performance
Highway Subdrainage
Design*

**Innovative Techniques
in Instruction
Technology, E-
Learning, E-
Assessment and**

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Education is a collection of world-class paper articles addressing the following topics: (1) E-Learning including development of courses and systems for technical and liberal studies programs; online laboratories; intelligent testing using fuzzy logic; evaluation

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of on line courses in
comparison to
traditional courses;**

**mediation in virtual
environments; and
methods for speaker
verification. (2)**

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markup languages;
graphic design
possibilities; open**

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tablet-pcs;
personalization using
web mining
technology; intelligent
digital chalkboards;
virtual room concepts
for cooperative
scientific work; and
network technologies,
management, and

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architecture. (3)

Science and

Engineering Research

Assessment Methods

**including assessment
of K-12 and university
level programs;**

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auto assessments;

**assessment of virtual
environments and e-**

learning. (4)

Engineering and

Technical Education

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including cap stone
For Monitoring
design; virtual performance
laboratories;
bioinformatics;
robotics; metallurgy;
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modeling; statistical
mechanics;
thermodynamics;
information
technology;
occupational stress
and stress prevention;

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web enhanced courses;
and promoting
engineering careers.

**(5) Pedagogy including
benchmarking; group-
learning; active
learning; teaching of
multiple subjects
together; ontology;
and knowledge
representation. (6)**

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environment for
children; e-learning
tools for children;
game playing and
systems thinking; and
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write foreign
languages.

Underground
Engineering: Planning,
Design, Construction
and Operation of the
Underground Space
provides the author's

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**vast experience as both
an academic and
practitioner. It covers
Planning, Design,
Construction and the
Operation of
Underground
Structures. Targeted
at young professionals,
students and
researchers new to the
field, the book contains
examples, illustrations
and cases from diverse**

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**underground uses,
from roads to disposal
facilities. Sections
cover the history of the
field, upcoming
challenges, the
planning stage of the
subsurface use,
including financial
planning and
reliability forecasting,
site investigation,
instrumentation and
modeling, construction**

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techniques and
challenges, and more.
Young professionals in
this area will benefit
from the updated and
complete overview of
Underground
Engineering. Students
will find the examples
and cases particularly
didactic. Richly
illustrated, this book is
an excellent resource
for all involved in the

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**development of the
underground space.
Offers a complete
introduction to the
area, including
planning, design,
construction and the
operation of
underground
structures Assumes
little previous
knowledge from
readers Presents the
most recent techniques**

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and future technical
trends Richly
illustrated and packed
with examples to help
readers understand
the fundamentals of
the area

As mining operations
increase in scale and
mines go progressively
deeper, the
geotechnical input into
mine design is of
importance. This book

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**covers topics in
geotechnical
instrumentation and
monitoring, including
coverage of
groundwater,
displacement and
environmental
monitoring.**

**Advanced Analytics in
Mining Engineering
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for Slope Stabilization
Embankment Dam**

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**Instrumentation
Manual
Geotechnical
Instrumentation in
Practice
Handbook of
Geotechnical
Investigation and
Design Tables**
*This book
constitutes the
definitive
handbook to soil*

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mechanics,
For Monitoring
covering in great
Field Performance
detail such topics
as: Properties of
Soils, Hydraulic
and Mechanical
Properties of
Soils, Drainage of
Soils, Plastic
Equilibrium in
Soils, Earth
Stability and
Pressure of

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Instrumentation
*Slopes,
Foundations, etc.*
Field Performance

*A valuable
compendium for
those interested
in soil mechanics,
this antiquarian
text contains a
wealth of
information still
very much
valuable to
engineers today.*

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Karl von Terzaghi (1883-1963) was a Czech geologist and Civil engineer, hailed as the "father of soil mechanics." This book has been elected for republication due to its educational value and is proudly

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*republished here
with an
introductory
biography of the
author."*

*Monitoring is a
subject of
particular
importance to
underground
construction
works. It is often
a key risk*

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*mitigation
measure both for
the control of the
construction
process and the
protection of
existing assets
affected by
excavations. The
subject is treated
at the level of key
principles,
focusing on*

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*objective setting,
strategic planning
and the high level
specification of
monitoring
systems. It aims
to help avoid
problems, which
have in the past
arisen due to
omissions in
these areas. This
guide is*

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structured to
For Monitoring
Field Performance
reflect the key
stages in a
project. It starts
with objective
setting and then
addresses
requirements for
system planning,
specification,
design, operation
and
management. It

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also seeks to highlight the roles and responsibilities of the various stakeholders at each stage. Five illustrative case studies taken from a range of projects of different scales highlight the

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*critical role of
strategic and
wellplanned
monitoring
programmes in
the success of
any underground
construction
project.*

*This volume
details recent
global advances
in laboratory and*

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*field testing of
unsaturated soils.
Coverage
includes
mechanical,
hydraulic, and ge
o-environmental
testing and
applications of
unsaturated soil
monitoring to
engineering
behavior of geo-*

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Practice
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Investigation and
Testing —
Geotechnical
Monitoring by
Field
Instrumentation

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Pore Water
Pressure:
Piezometers
Measurement of
displacements
across a line:
Inclinometers
Geotechnical
Engineering
Investigation
Handbook,

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*International
Symposium, Oslo,
Norway, 23-26
September 2003*

**Geotechnical
instrumentation
is used for
installation,
monitoring and
assessment on**

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**any sizeable
project,
particularly in
urban areas,
and is used for
recording,
controlled
remedial work,
and safety. This
unique and up-
to-date book
deals with the
conceptual**

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**philosophy
behind the use
of instruments,
and then
systematically
covers their
practical use
Underground
Sensing:
Monitoring and
Hazard
Detection for
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Infrastructure
brings the
target audience
the technical
and practical
knowledge of
existing
technologies of
subsurface
sensing and
monitoring
based on a

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their
functionality. In
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environmental
and geo-
hazards in**

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platforms that
can enable fully
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global
measurements.
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will find a
comprehensive
exploration of
the future of**

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sensing that
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demands for
preemptive and
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underground
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and global
measurements.
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technologies
that are

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sensors, from
agriculture to**

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**geohazards
Besides giving
an historical
introduction to
embankment
dams the book
describes the
need for instru-
mentation,
planning
procurement
and installation
practices of**

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pressure,
surface and
internal
displacements,**

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and seismic
behaviour,
through
instrumentation
has been
described.
Collection and
processing of
data and their
use for back
analysis to
check stability**

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For Monitoring
various stages
Field Performance
of construction
and reservoir
filling have
been
suggested. In
addition to case
histories
quoted in
various
chapters, an
exclusive

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**chapter on
select case
histories has
been added
which describes
the
conventional
and latest
instruments
that are being
used and
methods
adopted for**

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monitoring and
analyses of
data.**

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Engineering
Geology
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ICCME 2020
Laboratory and
Field Testing of
Unsaturated**

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**Soils
Soil Testing,
Soil Stability
and Ground
Improvement
ENVIRONMENTAL
MONITORING
-Volume II**

*The Geotechnical
Engineering Handbook
brings together essential
information related to
the evaluation of*

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*engineering properties of
soils, design of
foundations such as
spread footings, mat
foundations, piles, and
drilled shafts, and
fundamental principles
of analyzing the stability
of slopes and
embankments, retaining
walls, and other earth-
retaining structures. The
Handbook also covers
soil dynamics and*

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foundation vibration to analyze the behavior of foundations subjected to cyclic vertical, sliding and rocking excitations and topics addressed in some detail include: environmental geotechnology and foundations for railroad beds.

*Geotechnical
Instrumentation for
Monitoring Field*

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Performance
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Field Performance

*John Wiley
& Sons*

*The definitive guide to
unsaturated soil— from
the world's experts on the
subject This book builds
upon and substantially
updates Fredlund and
Rahardjo's publication,
Soil Mechanics for
Unsaturated Soils, the
current standard in the
field of unsaturated
soils. It provides readers*

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with more thorough coverage of the state of the art of unsaturated soil behavior and better reflects the manner in which practical unsaturated soil engineering problems are solved. Retaining the fundamental physics of unsaturated soil behavior presented in the earlier book, this new publication places greater

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emphasis on the importance of the "soil-water characteristic curve" in solving practical engineering problems, as well as the quantification of thermal and moisture boundary conditions based on the use of weather data.

*Topics covered include:
Theory to Practice of
Unsaturated Soil
Mechanics Nature and*

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*Phase Properties of
Unsaturated Soil State
Variables for
Unsaturated Soils
Measurement and
Estimation of State
Variables Soil-Water
Characteristic Curves for
Unsaturated Soils
Ground Surface Moisture
Flux Boundary
Conditions Theory of
Water Flow through
Unsaturated Soils Solving*

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*Saturated/Unsaturated
Water Flow Problems
Air Flow through
Unsaturated Soils Heat
Flow Analysis for
Unsaturated Soils Shear
Strength of Unsaturated
Soils Shear Strength
Applications in Plastic
and Limit Equilibrium
Stress-Deformation
Analysis for Unsaturated
Soils Solving Stress-
Deformation Problems*

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*with Unsaturated Soils
Compressibility and Pore
Pressure Parameters*

*Consolidation and
Swelling Processes in*

Unsaturated Soils

Unsaturated Soil

Mechanics in

Engineering Practice is

essential reading for

geotechnical engineers,

civil engineers, and

undergraduate- and

graduate-level civil

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Instrumentation
*engineering students with
a focus on soil
mechanics.*
For Monitoring
Field Performance

*Proceedings of the 1st
GeoMEast International
Congress and Exhibition,
Egypt 2017 on
Sustainable Civil
Infrastructures*

*Field Instrumentation in
Geotechnical Engineering
Field Instrumentation for
Soil and Rock*

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Instrumentation

*Innovative Techniques in
Instruction Technology, E-
learning, E-assessment
and Education*

This publication
provides
introductory
technical guidance
for civil engineers,
geotechnical
engineers and
other professional
engineers and

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construction
managers
interested in field
explorations for
foundations of
buildings and
other
infrastructure.

Here is what is
discussed: 1.

INTRODUCTION

2. PUBLISHED

SOIL AND

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GEOLOGICAL
MAPS 3.
REMOTE
SENSING DATA
METHODS 4.
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AND TEST PITS
6. SAMPLING 7.
PENETRATION
RESISTANCE
TESTS 8.

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GROUNDWATER
MEASUREMENT
S 9.

MEASUREMENT
OF SOIL AND
ROCK
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NSTRUMENTATI
ON.

The first book on
the subject
written by a

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is a handy and comprehensive source of information for dam owners, engineers, and regulators about instrumentation and measurements for monitoring performance of all types of dams. It

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*the Geo-
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addresses the m
ulti-
disciplinary
topic of
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*environment,
one of the
fastest
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relevant and
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of research and
study within
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covers the
fundamentals of
geology and*

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*engineering
where the two
fields overlap
and, in
addition,
highlights
specialized
topics that
address
principles,
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paradigms of
the discipline,*

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operational
terms,
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as processes,
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implications. A
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of

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practitioners.
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Earthwork
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projects are
critical
components in
civil
construction
and often
require
detailed
management
techniques and
unique solution

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methods to address failures. Being earth bound, earthwork is influenced by geomaterial properties at the onset of a project. Hence, an understanding of the in-situ

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*soil properties
is essential.*

*Slope stability
is a common
problem facing
earthwork
construction,
such as
excavations and
shored
structures.*

*Analytical
methods for*

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*slope stability
remain critical
for researchers
due to the
mechanical
complexity of
the system.
Striving for
better
earthwork
project
managements,
the*

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*geotechnical
engineering
community
continues to
find improved
testing
techniques for
determining
sensitive
properties of
soil and rock,
including
stress-wave*

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based, non-destructive testing methods. To minimize failure during earthwork construction, past case studies and data may reveal useful lessons and information

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*to improve
project
management and
minimize
economic
losses. This
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This practical

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**handbook of
properties for soils
and rock contains,
in a concise
tabular format, the
key issues relevant
to geotechnical
investigations,
assessments and
designs in common
practice. In
addition, there are
brief notes on the
application of the**

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**tables. These data
tables are compiled
for experienced
geotechnical
professionals who
require a reference
document to
access key
information. There
is an extensive
database of
correlations for
different
applications. The**

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**book should
provide a useful
bridge between soil
and rock
mechanics theory
and its application
to practical
engineering
solutions. The
initial chapters
deal with the
planning of the
geotechnical
investigation, the**

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**classification of
the soil and rock
properties and
some of the more
used testing is
then covered. Later
chapters show the
reliability and
correlations that
are used to convert
that data in the
interpretative and
assessment phase
of the project. The**

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**final chapters
apply some of
these concepts to
geotechnical
design. This book
is intended
primarily for
practicing
geotechnical
engineers working
in investigation,
assessment and
design, but should
provide a useful**

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**supplement for
postgraduate
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and practical
aspects of the
subject and assess
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In this book, Dr.
Soofastaei and his
colleagues reveal how
all mining managers
can effectively deploy
advanced analytics in
their day-to-day

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operations- one business decision at a time. Most mining companies have a massive amount of data at their disposal. However, they cannot use the stored data in any meaningful way. The powerful new business tool- advanced analytics enables many mining companies to

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aggressively leverage their data in key business decisions and processes with impressive results.

From statistical analysis to machine learning and artificial intelligence, the authors show how many analytical tools can improve decisions about everything in the mine value chain, from

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exploration to
marketing. Combining
the science of
advanced analytics
with the mining
industrial business
solutions, introduce
the “Advanced
Analytics in Mining
Engineering Book” as
a practical road map
and tools for
unleashing the
potential buried in your

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company's data. The book is aimed at providing mining executives, managers, and research and development teams with an understanding of the business value and applicability of different analytic approaches and helping data analytics leads by giving them a business framework in

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which to assess the value, cost, and risk of potential analytical solutions. In addition, the book will provide the next generation of miners – undergraduate and graduate IT and mining engineering students – with an understanding of data analytics applied to the mining industry. By

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providing a book with chapters structured in line with the mining value chain, we will provide a clear, enterprise-level view of where and how advanced data analytics can best be applied. This book highlights the potential to interconnect activities in the mining enterprise better.

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Furthermore, the book explores the opportunities for optimization and increased productivity offered by better interoperability along the mining value chain – in line with the emerging vision of creating a digital mine with much-enhanced capabilities for modeling, simulation,

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and the use of digital
twins – in line with
leading “digital”
industries.

Environmental
Monitoring theme is a
component of
Encyclopedia of
Environmental and
Ecological Sciences,
Engineering and
Technology
Resources in the
global Encyclopedia of

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Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias.

The Theme on Environmental Monitoring is largely concerned with strategies in the preparation of environmental impact assessments, as well as in many

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circumstances in which human activities carry a risk of harmful effects on the natural environment.. All monitoring strategies and programmes on environment have reasons and justifications which are often designed to establish the current status of an environment or to

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establish trends in environmental parameters. The content of the Theme provides the essential aspects and a myriad of issues that are great relevance to our world with respect to environmental monitoring. These two volumes are aimed at the following five major target audiences:

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University and College
Students Educators,
Professional
Practitioners,
Research Personnel
and Policy Analysts,
Managers, and
Decision Makers and
NGOs

This complete book on
the use of
geotechnical
instrumentation for the
monitoring of civil

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Leverage Advanced Analytics in Mining Industry to Make Better Business Decisions
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