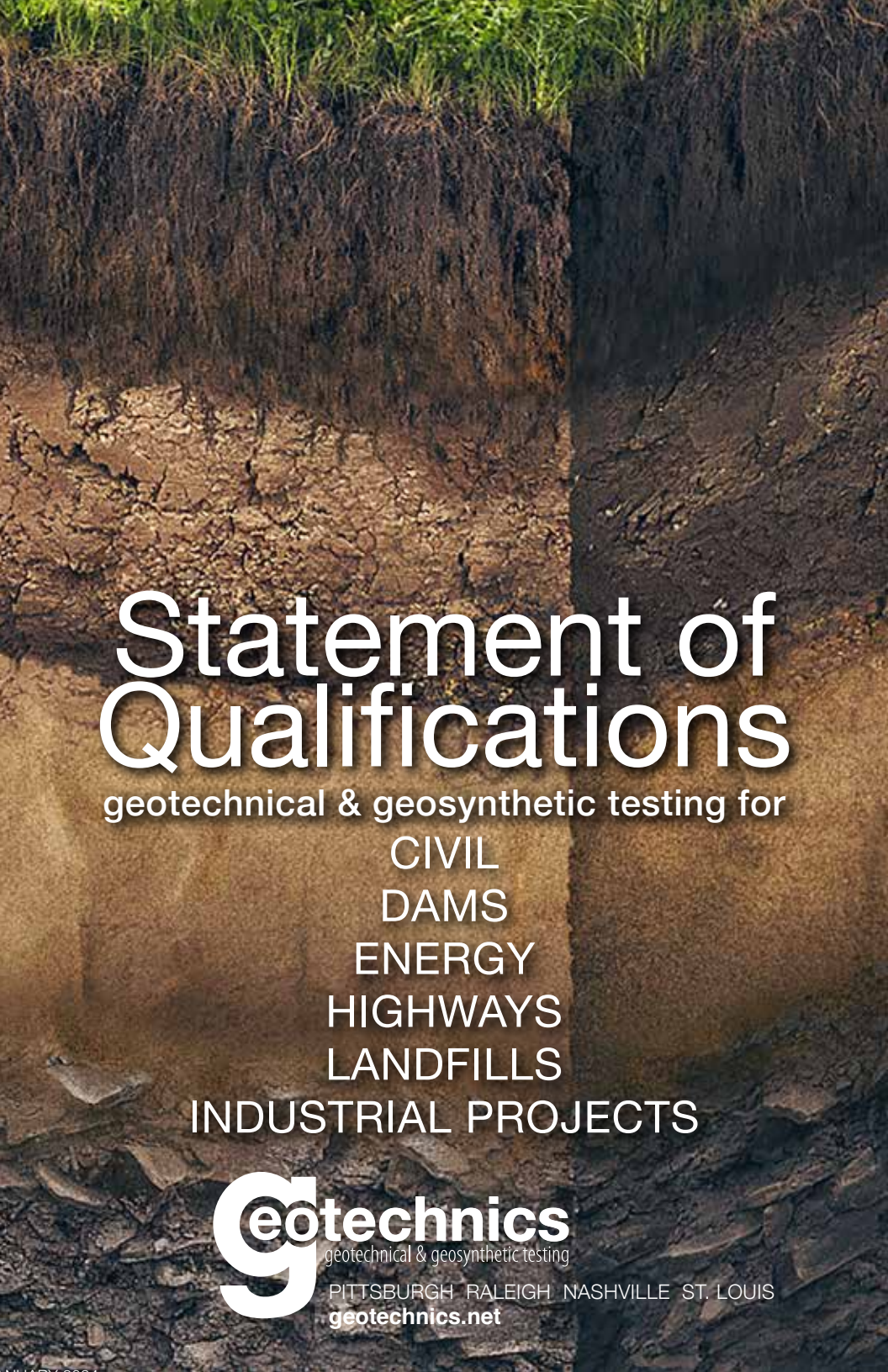

Statement of Qualifications
geotechnical & geosynthetic testing for
CIVIL
DAMS
ENERGY
HIGHWAYS
LANDFILLS
INDUSTRIAL PROJECTS
geotechnics
geotechnical & geosynthetic testing
PITTSBURGH RALEIGH NASHVILLE ST. LOUIS
geotechnics.net

ge•o•tech•nics
[jēō'tekniks]

Geotechnics is the application of scientific methods and engineering principles, to the acquisition, interpretation and use of knowledge, of materials of the Earth's crust and earth materials for the solution of engineering problems.

It is the applied science of predicting the behavior of the Earth and its various materials towards making the Earth more habitable to human activities.

Statement of Qualifications

Geotechnics is a multilocation independently accredited testing laboratory that is nationally recognized for providing high quality geotechnical, and geosynthetic, laboratory and field services throughout the United States. Our staff is extremely experienced and committed to our clients' needs and schedules while focusing on all aspects of quality. Geotechnics has extensive capabilities and experience that have contributed to the design and construction of thousands of engineering and construction projects.

Geotechnics has operations in the following locations:

Pittsburgh Headquarters
544 Braddock Avenue
East Pittsburgh, PA 15112
412.823.7600

Nashville Facility
13 Industrial Park Drive Suite 500
Hendersonville, TN 37075
615.590.7695

Raleigh Facility
2200 Westinghouse Boulevard, Suite 103
Raleigh, NC 27604
919.876.0405

St. Louis Facility
550 Axminister Drive
Fenton, MO 63026
636.600.0440

Quality Accreditations

Geotechnics facilities are routinely site audited and accredited by the following nationally recognized agencies for geotechnical and geosynthetic testing:

- The American Association of State Highway and Transportation Officials (AASHTO)
- Geosynthetics Accreditation Institute - Laboratory Accreditation Program (GAI -LAP)
- The United States Army Corps of Engineers (COE)
- Cement and Concrete Reference Laboratory (CCRL)

Geotechnics has participated in the AASHTO Proficiency sample-testing program for nearly 40 years to assure that quality testing is maintained. While some labs are accredited to perform a few specific tests, we are honored to be consistently audited and accredited to perform the highlighted test methods for each of the nationally recognized agencies on the following pages.

NQA-1 Compliant

The Geotechnics testing laboratory is recognized as being in compliance with NQA-1-1994 Edition Quality Assurance Requirements for Nuclear Facility Applications. We are pleased that our quality system meets NQA-1 requirements.

Capabilities

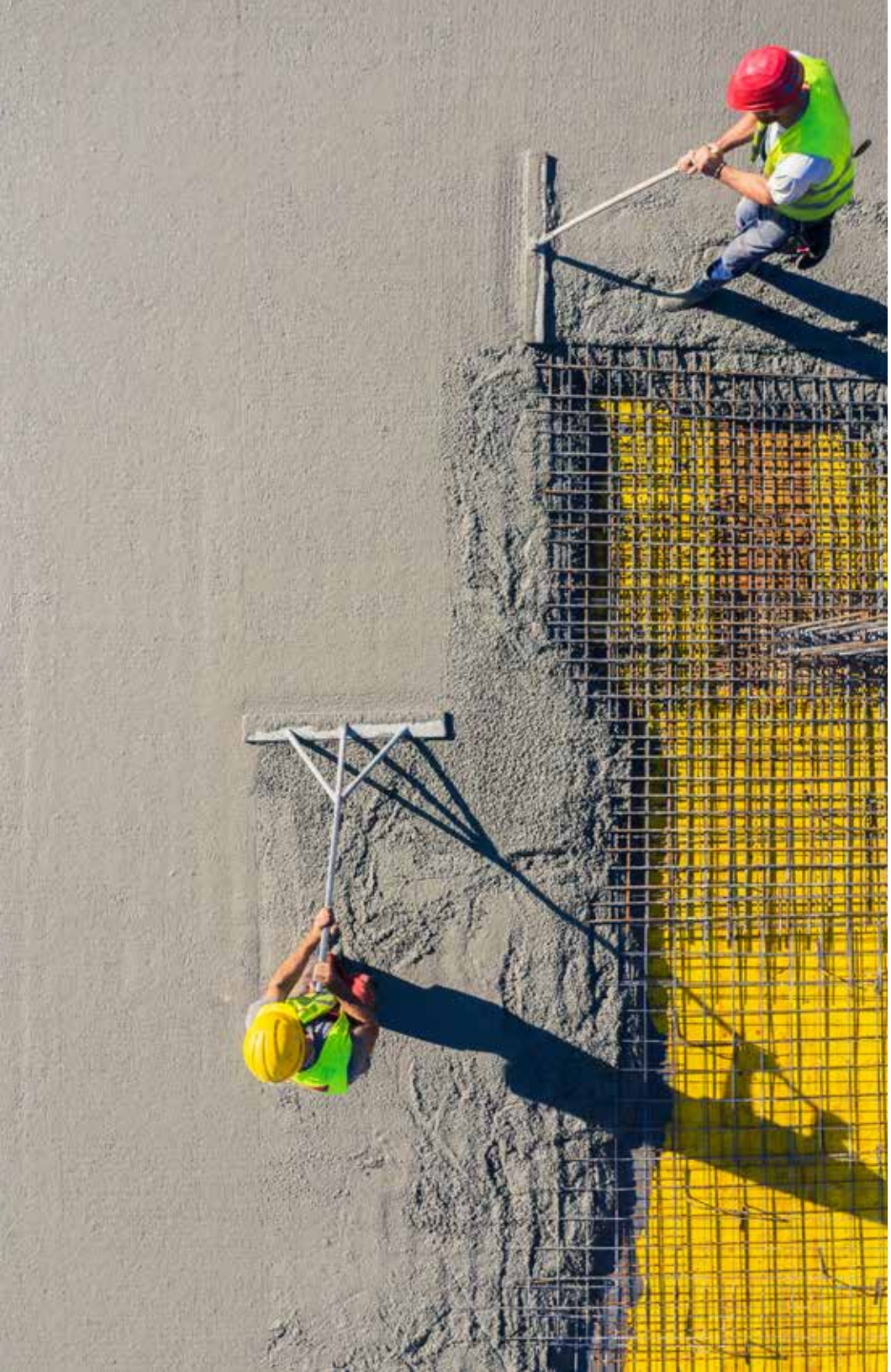
Our geotechnical laboratories routinely provide high-quality, responsive testing services for projects ranging in scope from a few samples with basic classification and compaction tests to several hundred samples with a complex series of consolidation, strength and permeability tests.

The following is a general guide to the types of tests that we perform:

Classification
Density Testing
Permeability
Triaxial Testing
Consolidation
Direct Shear
Swell Potential
Corrositivity Testing
Concrete
Rock
Grout
Slurry
Soil Mix Designs
Soil Stabilization
Thermal Conductivity
Direct Simple Shear
Unconfined Compreession

In our geosynthetic laboratory we perform tests on the following materials. In addition, we perform in-plant sampling.

Geomembranes
Geonets
Geocomposites
Geotextiles
Geogrids
Geosynthetic Clay Liners



Geotechnics has extensive experience providing field services in concert with our clients on various types of projects. Our soils, concrete, and geosynthetic liner technicians have been utilized on a full-time or part-time basis to help relieve our client's field scheduling concerns. They are trained to work in various site conditions including mining, coal ash and nuclear facilities.

Geotechnics services include the following:

Borehole logging and sampling
Construction observation and documentation
In place density testing
Mobile concrete lab
Roller Compacted Concrete
Concrete sampling and coring
Plate Load Testing
In-Situ CBR Testing
Rock Anchor Pull Out Testing
Double Ring Infiltrometer
Boutwell Testing
Construction observation of synthetic liner systems
Observing the installation of various gas collection systems

The following tables represent our overall corporate testing capabilities along with the designated test methods.

Soils

Description	Test Methods
Soils	
ASTM/ Classification Testing	
USCS Classification	ASTM D2487
Visual Description	ASTM D2488
Moisture Content	ASTM D2216 - AASHTO T265
Particle Size Sieve Analysis	ASTM D6913/D422 - AASHTO T88
Hydrometer Analysis	ASTM D422/D7928/ - AASHTO T88
Percent Passing #200 by Washing	ASTM D1140
Multi Point Atterberg Limits	ASTM D4318 – AASHTO T89/T90
Shrinkage Limits of Soils	ASTM D4943
Specific Gravity	ASTM D854 – AASHTO T100
Organic Content by Loss on Ignition	ASTM D2974 – AASHTO 267
Soil Fertility	NA
Density Tests	
Standard Proctor	ASTM D698/T99
Modified Proctor	ASTM D1557/T180
Oversize Correction	ASTM D4718/T224
Bulk Density of Shelby Tubes	ASTM D7263
Relative Density Using Vibratory Table	ASTM D4253/D4254
Moisture Density of Soil Cement Mixtures	ASTM D558 - AASHTO T134
Wetting and Drying of Compacted Soil-Cement Mixtures	ASTM D559
Freeze/Thaw of Compacted Soil-Cement Mixtures Unconfined Compression	ASTM D560
Permeability	
Flex Wall Permeability, various diameters	ASTM D5084
3”- 4” Diameter Rigid Wall Permeability On Sands	ASTM D2434 – AASHTO T215
6”-12” Diameter Rigid Wall Permeability On Aggregates	ASTM D2434 – AASHTO T215
Strength Testing	
California Bearing Ratio (CBR)	ASTM D1883/6 – AASHTO T193
Resilient Modulus	AASHTO T307 – ASTM D7369
Unconfined Compression, Peak & Stress Strain Plot	ASTM D2166 – AASHTO T208
Unconfined Compression of Molded Soil Cement Cylinders	ASTM D1633
Vane Shear	ASTM 4648

Soils	
Direct Shear Testing	
Peak Direct Shear, 2.5” Shear Box	ASTM D3080 – AASHTO T236
Residual Direct Shear, 2.5” Shear Box	U.S. Army Corps
Direct Simple Shear	ASTM D6528
Peak Direct Shear, 12” Shear Box	ASTM D3080
Triaxial Testing	
Unconsolidated Undrained Triaxial–UU, 3” & 4” Diameter	ASTM D2850 – AASHTO T296
Consolidated Undrained Triaxial, CU, 3” & 4” Diameter	ASTM D4767 – AASHTO T297
Consolidated Drained Triaxial, CD, 3” diameter	ASTM D7181
Consolidation & Swell	
One Dimensional Consolidation	ASTM D2435 – AASHTO T216
One Dimensional Swell/Settlement	ASTM D4546
Expansion Of Soils, Submerged - Heated	PTM 130
Expansion Index of Soils	ASTM D4829
Corrosion Testing	
Minimum Resistivity	AASHTO T288, PTM-133
Soil Chlorides	AASHTO T291
Soil Sulfates	AASHTO T290
Soil ph for Corrosion Testing	ASTM D4972/G51 – AASHTO T289
Thermal Conductivity	ASTM D5334
Soil Dispersion Testing	
Crumb Test	ASTM D6572
Pinhole Test	ASTM D4647
Double Hydrometer	ASTM D4221

PROJECT EXPERIENCE: ALLIGATOR RIVER BRIDGE REPLACEMENT

SPANNING THE GATOR

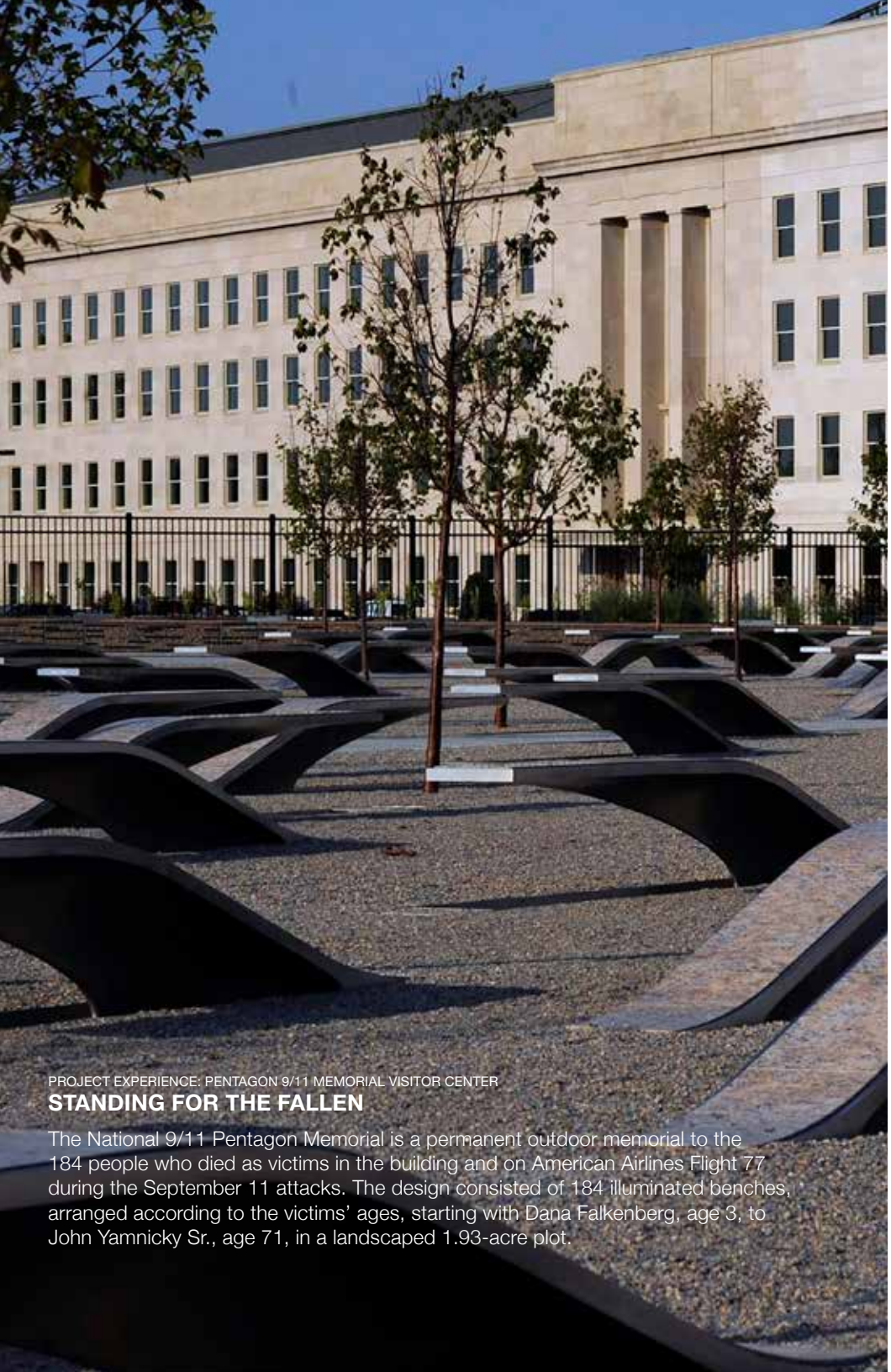
The deteriorating Lindsay C. Warren bridge was a 60 year-old, two-lane swing-span bridge becoming increasingly difficult and expensive to maintain. A $110 million grant is funding the replacement, a critical bridge to North Carolina's popular Outer Banks and part of an important hurricane evacuation route.

Aggregates

Description	Test Methods
Particle Size	ASTM C136 – AASHTO T27
Material Finer Than #200 Sieve	ASTM C117 – AASHTO T11
Insoluble Residue in Carbonate Aggregates	ASTM D3042
Clay Lumps and Friable Particles in Aggregates	ASTM C142
LA Abrasion	ASTM C535/C131
Specific Gravity of Coarse Material	ASTM C127
Soundness, 5 Cycles	ASTM C88
Angularity	ASTM D2488
Specific Gravity of Fine Material	ASTM C128
6"-12" Diameter Rigid Wall Permeability, Under Load	ASTM D2434 – AASHTO T215
Bulk Density Aggregates	ASTM C29
Slake Durability	ASTM D4644
Flat & Elongation	ASTM D4791
Organic Impurities in Fine Aggregates	ASTM C40
Total Evaporable Moisture Content of Aggregates by Drying	ASTM C566
Standard Practice for Reducing Samples of Aggregates	ASTM C702
Fractured Particles	ASTM D5821

Rock

Description	Methods
Point Load	ASTM D5731
Unconfined Compression, Method C, Peak Only	ASTM D7012
Unconfined Compression, Method D, Young's Modulus	ASTM D7012
Unconfined Compression, Method D, Poisson's Ratio	ASTM D7012
Slake Durability	ASTM D4644
Durability of Rock by Freeze Thaw	ASTM D5312
Split Tensile	ASTM D3967
Direct Shear, Various Sizes	ASTM D5607
Bulk Specific Gravity of Rock	ASTM C127
Preparation of Rock Core Specimens	ASTM D4543
Durability of Rock	ASTM D5240
Soundness	ASTM C88



PROJECT EXPERIENCE: PENTAGON 9/11 MEMORIAL VISITOR CENTER

STANDING FOR THE FALLEN

The National 9/11 Pentagon Memorial is a permanent outdoor memorial to the 184 people who died as victims in the building and on American Airlines Flight 77 during the September 11 attacks. The design consisted of 184 illuminated benches, arranged according to the victims' ages, starting with Dana Falkenberg, age 3, to John Yamnicky Sr., age 71, in a landscaped 1.93-acre plot.

Concrete & Grout

Description	Methods
Unconfined Compression on Concrete Cylinders	ASTM C39
Density, Absorption and Voids in Hardened Concrete	ASTM C642
Unconfined Compression on Grout Cube	ASTM C109
Split Tensile Strength	ASTM D3967
Making & Curing Concrete Test Specimens	ASTM C31
Density, Yield & Air Content of Concrete	ASTM C138
Slump of Hydraulic Cement Concrete	ASTM C143
Sampling Freshly Mixed Concrete	ASTM C172
Air Content of Concrete	ASTM C231
Water Storage Tanks	ASTM C511
Capping Cylindrical Concrete Specimens	ASTM C617
Temperature of Concrete	ASTM C1064
Un-Bonded Caps	ASTM C1231
Expansion and Bleeding	ASTM C940
Setting of Hydraulic Cement & Grout by Vicat Needle	ASTM C191
Flow of Grout	ASTM C 939
Flow Table	ASTM C230
Unconfined Compression on Grout Cube	ASTM C 109
Wetting and Drying of Compacted Soil-Cement Mixtures	ASTM D559
Freeze/Thaw of Compacted Soil-Cement Mixtures	ASTM D560
Unconfined Compression Concrete Core	ASTM C42

PROJECT EXPERIENCE: WINDY GAP RESERVOIR

MINDING THE GAP

The $27 million channel around Windy Gap has been called the linchpin of the Upper Colorado River. The project will restore about 50 acres of riverside habitat and create about 15 acres of wetlands. When it opens to the public — possibly as early as the summer of 2026 — it is expected to earn Gold Medal status for anglers.

Geotechnics has extensive experience with slurry walls, soil mixing, and sludge stabilization often encountered on industrial sites. Our experience includes preparing and testing site materials blended with various add-mixtures, such as fly ash, bottom ash, bentonite, cement and kiln dusts in varying proportions to optimize the strength, workability and economics.

Geotechnics has been involved with numerous slurry wall designs throughout the United States, from material selection to laboratory testing. Our experience also includes characteristic testing with various types of Bentonite blends mixed with the site soils. We have also performed QA/QC services in the field for the construction of slurry walls. The field services involved the documentation of the material quantities along with compliance with the project specifications. We also perform general classification testing on select impacted soils to help determine the appropriate remediation or containment measures.

Soil Mixing and Slurries

Description	Methods
Marsh Funnel Viscosity of Clay for Construction Slurries	ASTM D6910
Mud Balance/Density of Bentonite Slurries	ASTM D4380/API
Slurry pH	ASTM D4972
Paint Filter	EPA SW846/9095
Unconfined Compression, Peak Only	ASTM D2166/D1633
Unconfined Compression, Stress/Strain Plot	ASTM D2166
Flex Wall Permeability	ASTM D5084

Geosynthetics

Description	Methods
GM Destructive Seams	ASTM D6392, D7408, D7747, D7749, D413, D751, D6214
Geomembranes	
Thickness	ASTM D5199, D5994, D1593, D751, D374
Density	ASTM D1505, D792
Melt Flow Index	ASTM D1238
Carbon Black Content	ASTM D1603, D4218
Carbon Black Dispersion	ASTM D5596
Tear Resistance	ASTM D1004 Die C
Puncture Resistance	ASTM D4833
Tongue Tear	ASTM D751, D5884
Tensile Properties	ASTM D6693
Grab Tensile	ASTM D751, D7004
Strip Tensile	ASTM D882, D7003
Asperity Height	ASTM D7466
Dimensional Change	ASTM D1204
2% Secant Modulus	ASTM D5323
R-GM Adhesion	ASTM D6636
Tensile Strength Wide Strip Testing	ASTM D4885
Geonets & Geocomposites	
Mass per Unit Area	ASTM D5261
Thickness	ASTM D5199
Density	ASTM D1505, D792
Melt Index	ASTM D1238, Con. E
Carbon Black Content	ASTM D1603 D4218
Tensile (MD)	ASTM D7179
Transmissivity	ASTM D4716
Ply Adhesion	ASTM D7005, D413, F904
Compression	ASTM D6364

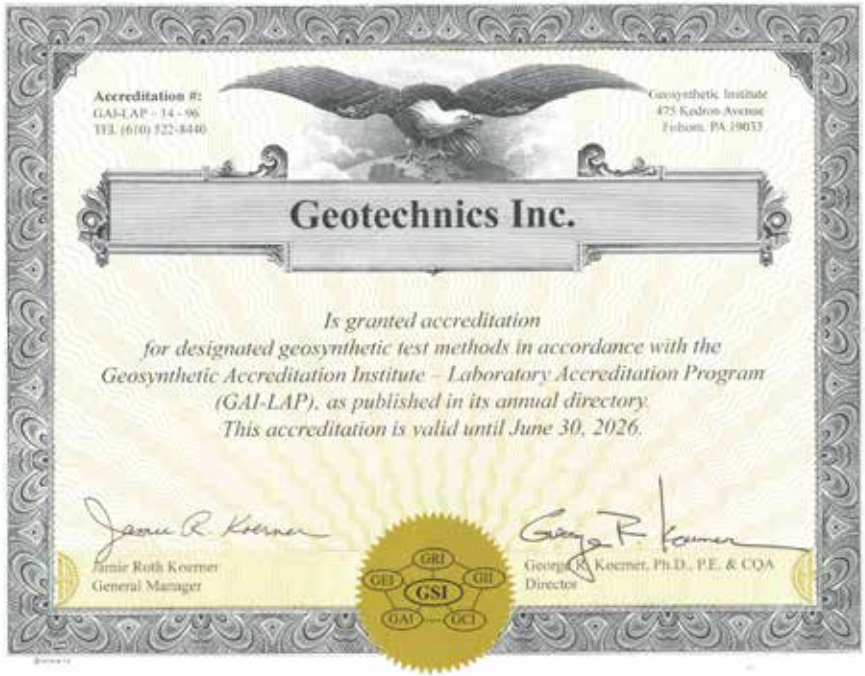
Description	Methods
Geotextiles	
Mass per Unit Area	ASTM D5261
Thickness	ASTM D5199
Grab Strength	ASTM D4632
Wide Width Tensile	ASTM D4595
Strip Tensile	ASTM D5035
Trapezoidal Tear	ASTM D4533
Sewn Seam	ASTM D4884
Puncture Resistance	ASTM D4833
CBR Puncture	ASTM D6241
Mullen Burst	ASTM D3786
Permittivity	ASTM D4491
Apparent Opening Size (AOS)	ASTM D4751
Yarn Tensile	ASTM D2256
Hydraulic Conductivity Ratio (HCR)	ASTM D5567
Geosynthetic Clay Liners	
Bentonite Mass per Unit Area	ASTM D5993
Peel Strength (MD)	ASTM D6496
Tensile Strength	ASTM D6768
Swell Index	ASTM D5890
Fluid Loss	ASTM D5891
Index Flux or Permeability	ASTM D5887
Compatibility Flux	ASTM D6766
Interface Friction	
Geosynthetic to Geosynthetic	ASTM D5321
Geosynthetic to Soil	ASTM D5321
GCL Internal Shear	ASTM D6243
GCL to Geosynthetic	ASTM D6243
GCL to Soil	ASTM D6243

Quality Assurance Program

For your project, nothing is more important than accurate data. That's why our Quality Assurance Program has been customized to meet the various requirements of the accrediting agencies. We are extremely committed to quality and are directly involved with ASTM along with various national quality programs. Our Quality Assurance program helps to assure that the work performed by Geotechnics is of the highest professional standards and specifically meets the requirements of our clients.

The table below outlines our Quality Management System accreditations.

Description	Methods	Accreditations
Quality Management Systems		Since
Geotechnical		
Pittsburgh Facility		
Overall Quality System	ASTM R18	1996
Overall Quality System	ASTM D 3740	2011
Concrete	ASTM E 329	2011
Concrete	ASTM C1077	2011
Aggregates	ASTM E 329	2011
Aggregates	ASTM C1077	2011
Raleigh Facility		
Overall Quality System	ASTM R18	2003
Overall Quality System	ASTM D 3740	2017
Concrete	ASTM E 329	2021
Nashville Facility		
Overall Quality System	ASTM R18	2017
Overall Quality System	ASTM D 3740	2017
St. Louis Facility		
Overall Quality System	ASTM R18	2022
Geosynthetics		
Overall System	GAI-LAP	1996



SCOPE OF GAI-LAP ACCREDITATION

D413, D751, D792, D882,Dl004, D1204, D1505, D1593, D1603, D2256, D3786, D4218, D4491, D4533, D4595, D4632, D4716, D4751, D4833, D4884, D4885, D5035, D5199, D5261, D5321, D5323, D5567, D5596, D5884, D5887, D5890, D5891, D5993, D5994, D6214, D6241, D6243, D6364, D6392, D6496, D6636, D6693, D6766, D6768, D7003, D7004, D7005, D7179, D7408, D7466, D7747, D7749, F904

AASHTO ACCREDITED

CERTIFICATE OF ACCREDITATION

AASHTO

Geotechnics, Inc.

in

East Pittsburgh, Pennsylvania, USA

has demonstrated proficiency for the testing of construction materials and has conformed to the requirements established in AASHTO R 18 and the AASHTO Accreditation policies established by the AASHTO Committee on Materials and Pavements.

The scope of accreditation can be viewed on the Directory of AASHTO Accredited Laboratories (aashtoresource.org).

Jim Tymon,
AASHTO Executive Director

Matt Linneman,
AASHTO COMP Chair

This certificate was generated on 02/11/2026 at 12:27 PM Eastern Time. Please confirm the current accreditation status of this laboratory at aashtoresource.org/aap/accreditation-directory

AASHTO ACCREDITED

CERTIFICATE OF ACCREDITATION

AASHTO

Geotechnics, Inc.

in

Hendersonville, Tennessee, USA

has demonstrated proficiency for the testing of construction materials and has conformed to the requirements established in AASHTO R 18 and the AASHTO Accreditation policies established by the AASHTO Committee on Materials and Pavements.

The scope of accreditation can be viewed on the Directory of AASHTO Accredited Laboratories (aashtoresource.org).

Jim Tymon,
AASHTO Executive Director

Matt Linneman,
AASHTO COMP Chair

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AASHTO ACCREDITED

CERTIFICATE OF ACCREDITATION

AASHTO

Geotechnics, Geotechnical, Geoenvironmental and Geosynthetics Laboratories, Inc.

dba

Geotechnics, Inc.

in

Raleigh, North Carolina, USA

has demonstrated proficiency for the testing of construction materials and has conformed to the requirements established in AASHTO R 18 and the AASHTO Accreditation policies established by the AASHTO Committee on Materials and Pavements.

The scope of accreditation can be viewed on the Directory of AASHTO Accredited Laboratories (aashtoresource.org).

Jim Tymon,
AASHTO Executive Director

Matt Linneman,
AASHTO COMP Chair

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AASHTO ACCREDITED

CERTIFICATE OF ACCREDITATION

AASHTO

Geotechnics Testing, Inc

dba

Geotechnics, Inc.

in

St. Louis, Missouri, USA

has demonstrated proficiency for the testing of construction materials and has conformed to the requirements established in AASHTO R 18 and the AASHTO Accreditation policies established by the AASHTO Committee on Materials and Pavements.

The scope of accreditation can be viewed on the Directory of AASHTO Accredited Laboratories (aashtoresource.org).

Jim Tymon,
AASHTO Executive Director

Matt Linneman,
AASHTO COMP Chair

This certificate was generated on 02/11/2026 at 12:29 PM Eastern Time. Please confirm the current accreditation status of this laboratory at aashtoresource.org/aap/accreditation-directory

MTC
MATERIALS TESTING CENTER

USACE CERTIFICATE
OF
LABORATORY VALIDATION

ERDC

Geotechnics, Inc.
544 Braddock Avenue
East Pittsburgh, PA, United States
Tyler Volpe
(412) 823-7600

has demonstrated, by abbreviated audit of its AASHTO accreditation, or by inspection of required records, equipment, procedures, facilities, and/or final reports, its proficiency to perform testing of construction materials, as established by the quality standards of AASHTO R 18 guidance and the requirements of the applicable ASTM standards.

THIS USACE CERTIFICATE OF LABORATORY VALIDATION IS ACCURATE AS OF ITS DATE AND TIME OF GENERATION:
12 MAR 2026 AT 16:48 HOURS

ALL METHODS LISTED ON THIS CERTIFICATE OF VALIDATION WILL EXPIRE ON 04/16/2027

PLEASE CONFIRM THE CURRENT VALIDATION STATUS OF THIS LABORATORY USING THE SEARCH FEATURE ON OUR PUBLIC WEBSITE: https://mtc.erdc.dren.mil

Chad A. Gartrell, PE, Director
USACE Materials Testing Center
Vicksburg, Mississippi, USA

SCOPE OF USACE ACCREDITATION
PITTSBURGH

Aggregates
C29, C40, C88, C117, C127, C128, C131, C136, C142, E329, C535, C566, C702, C1077, D4791, D5821

Concrete
C31, C39, C138, C143, C172, C231, C173, E329, C511, C1064, C1077, C1231

Geotextiles
D374, D413, D751, D792, D882, F904, D1004, D1204, D1238, D1505, D1593, D1603, D3786, D4218, D4491, D4533, D4595, D4632, D4716, D4751, D4833, D4884, D4885, D5035, D5199, D5261, D5321, D5323, D5596, D5884, D5887, D5890, D5891, D5993, D5994, D6214, D6241, D6243, D6364, D6392, D6496, D6636, D6693, D6766, D6768, D7003, D7004, D7005, D7179, D7466,

Rock
D3967, D4543, D5607, D5731, D7012

Soils
G51, G187, D421, D422, D558, D559, D698, D854, D1140, D1557, D1633, D1883, D2166, D2216, D2434, D2435, D2487, D2488, D2850, D2937, D2974, D3080, D3740, D4254, D4318, D4718, D4767, D4972, D5084, D6913, D6938, D7928

MTC
MATERIALS TESTING CENTER

USACE CERTIFICATE
OF
LABORATORY VALIDATION

ERDC

Geotechnics, Inc.
2200 Westinghouse Blvd. Suite 103
Raleigh, NC,
Mike Smith
(919) 876-0405

has demonstrated, by abbreviated audit of its AASHTO accreditation, or by inspection of required records, equipment, procedures, facilities, and/or final reports, its proficiency to perform testing of construction materials, as established by the quality standards of AASHTO R 18 guidance and the requirements of the applicable ASTM standards.

THIS USACE CERTIFICATE OF LABORATORY VALIDATION IS ACCURATE AS OF ITS DATE AND TIME OF GENERATION:
01 JUL 2024 AT 14:13 HOURS

ALL METHODS LISTED ON THIS CERTIFICATE OF VALIDATION WILL EXPIRE ON 05/15/2026

PLEASE CONFIRM THE CURRENT VALIDATION STATUS OF THIS LABORATORY USING THE SEARCH FEATURE ON OUR PUBLIC WEBSITE: https://mtc.erdc.dren.mil

Chad A. Gartrell, PE, Director
USACE Materials Testing Center
Vicksburg, Mississippi, USA

SCOPE OF USACE ACCREDITATION
RALEIGH

Aggregates
C 117, C136

Bituminous
D2726

Rock
D4543, D7012

Soils
D421, D422, D558, D698, D854, D1140, D1557, D1883, D2166, D2216, D2434, D2435, D2487, D2850, D2974, D3080, D3740, D4318, D4546, D4767, D4829, D5084, D6913, D6938, D7928

USACE CERTIFICATE
OF
LABORATORY VALIDATION

Geotechnics, Inc.
13 Industrial Park Drive, Suite 500
Hendersonville, TN,
Tyler Volpe
(412) 823-7600

has demonstrated, by abbreviated audit of its AASHTO accreditation, or by inspection of required records, equipment, procedures, facilities, and/or final reports, its proficiency to perform testing of construction materials, as established by the quality standards of AASHTO R 18 guidance and the requirements of the applicable ASTM standards.

THIS USACE CERTIFICATE OF LABORATORY VALIDATION IS ACCURATE AS OF ITS DATE AND TIME OF GENERATION:
12 MAR 2026 AT 16:49 HOURS

ALL METHODS LISTED ON THIS CERTIFICATE OF VALIDATION WILL EXPIRE ON 04/08/2027

PLEASE CONFIRM THE CURRENT VALIDATION STATUS OF THIS LABORATORY USING THE SEARCH FEATURE ON OUR PUBLIC WEBSITE: https://mtc.erdc.dren.mil

Chad A. Gartrell, PE, Director
USACE Materials Testing Center
Vicksburg, Mississippi, USA

SCOPE OF USACE ACCREDITATION
NASHVILLE

Aggregates
C117, C127, C136, C566

Rock
D4543, D7012

Soils
D421, D422, D698, D854, D1557, D1883, D2166, D2216, D2435, D2487, D2488, D2850, D2974, D3080, D3740, D4318, D4718, D4767, D5084, D6913, D6938, D7928, E329

USACE CERTIFICATE
OF
LABORATORY VALIDATION

Geotechnics, Inc.
550 Axminister Drive
St. Louis, MO,
Tyler Volpe
(412) 823-7600

has demonstrated, by abbreviated audit of its AASHTO accreditation, or by inspection of required records, equipment, procedures, facilities, and/or final reports, its proficiency to perform testing of construction materials, as established by the quality standards of AASHTO R 18 guidance and the requirements of the applicable ASTM standards.

THIS USACE CERTIFICATE OF LABORATORY VALIDATION IS ACCURATE AS OF ITS DATE AND TIME OF GENERATION:
03 JUL 2024 AT 09:05 HOURS

ALL METHODS LISTED ON THIS CERTIFICATE OF VALIDATION WILL EXPIRE ON 07/02/2026

PLEASE CONFIRM THE CURRENT VALIDATION STATUS OF THIS LABORATORY USING THE SEARCH FEATURE ON OUR PUBLIC WEBSITE: https://mtc.erdc.dren.mil

Chad A. Gartrell, PE, Director
USACE Materials Testing Center
Vicksburg, Mississippi, USA

SCOPE OF USACE ACCREDITATION
ST LOUIS

Aggregates
C29, C117, C127, C128, C136

Soils
D421, D422, D698, D854, D1140, D1557, D2216, D4318, D4718, D5084, D6913, D7928

Staff Experience

We've built strong teams of seasoned professionals in all facets of our business. The combined company staff consists of approximately 60 highly experienced employees. Key personnel are listed below.

PITTSBURGH HEADQUARTERS

Mr. Randy O'Rourke, President of Geotechnics, has been in the engineering and laboratory industry since 1974. Randy holds a BS in Engineering - Special Fields from the University of Pittsburgh. A trusted advisor to engineers, consultants and clients around the world, he has extensive experience in laboratory and field-testing services.
rorourke@geotechnics.net

Mr. J.P. Kline, P.E., Partner, Technical/Geosynthetics Laboratory Director, has been involved in the geosynthetics industry since 1996. He holds a Masters of Engineering in Environmental Pollution Control from Pennsylvania State University, a BS in Environmental Engineering Technology from Pennsylvania State University, and a BA in Classics from Randolph-Macon College, Virginia. J.P. is a registered PA Professional Engineer and is the Chairman of D35.04 subcommitte on Geosynthetics Clay Liner.
jpkline@geotechnics.net

Mr. Nathan Melaro, Partner, Is the Geotechnical Laboratory Director in Pittsburgh, and the Director of Operations for the Pittsburgh, Raleigh, Nashville, and St. Louis facilities. Involved in the laboratory and field services industry since 1998, he holds a BS in Environmental Science from Westminster College.
nmelaro@geotechnics.net

Mr. Ryan O'Rourke, Partner, Geosynthetics Laboratory Manager, joined the laboratory and field services industry in 2008. He has completed Civil Engineering studies at the University of Pittsburgh, Johnstown Campus. He is responsible for the daily testing schedule and client correspondence.
ryano@geotechnics.net

Mr. Tyler Volpe is the company Safety & Quality Director. Experienced in various safety management roles within the construction industry since 2015, he holds a BS in Occupational Safety & Health from Slippery Rock University of Pennsylvania. As Safety and Quality Director, he is responsible for implementing laboratory safety and quality programs and routinely managing external and internal audits for all Geotechnics facilities. Tyler is certified in ISO 9001 Internal Auditing and OSHA Construction Industry Outreach Training.
tvolpe@geotechnics.net

Mr. Ryan Eberhart, Lead Laboratory Technician, joined the geotechnical industry in 2016. He has a B.S. in Civil Engineering Technology from Pennsylvania College of Technology. Ryan performs all aspects of Triaxial, Consolidation, Direct Shear, and Permeability testing. While in college, he participated as a civil engineering designer for the Penn College National Association of Home Builder's student site design and construction competition.
reberhart@geotechnics.net

Mr. Jeffrey Corchado, Lead Technician/Staff Geologist of our concrete, grout, and rock testing services, entered the geology field in 1987. He earned a BS in Geology from the University of Pittsburgh Johnstown Campus. He manages all aspects of concrete & rock testing, including preparation of the samples for laboratory certification by CCRL and others.
jcorchado@geotechnics.net

Mr. Stephen Backo is the Interface Friction/Large Box Direct Shear Laboratory Manager. He obtained a BS degree in Geology from California University of Pennsylvania, entering the field in 2017. He oversees testing through completion and data analysis. He also oversees large box Direct Shear testing on rock cores, soil, and aggregates.
sbacko@geotechnics.net

RALEIGH FACILITY

Mr. Michael Smith, Partner, is the Vice President and Regional Director of the Raleigh Facilities. Active in geotechnical field and laboratory testing since 1997, Mr. Smith holds a BS in Environmental Studies from Northland College. Mike is a former member of the ASTM D-18 Committee on geotechnical testing. He has experience managing and coordinating complex geotechnical testing programs and the business management associated with such.
msmith@geotechnics.net

Mr. Erik Lindquist, Project Coordinator, joined the geotechnical industry in 2014. He holds a BS in Environmental Science from State University of New York at Brockport and now provides project oversight for field projects and reporting. In addition, he coordinates technician activities and scheduling.
elindquist@geotechnics.net

NASHVILLE FACILITY

Mr. Dan Smith, P.E. is the Regional Manager/Laboratory Director of the Nashville, TN and St. Louis, MO laboratories. Dan has more than thirty-five years of experience performing geotechnical engineering, laboratory and field testing, and project management. His administrative duties include project management, preparation of proposals, review of test data, technical support to clients, and business development. Dan is a registered Professional Engineer in MO, TN, AL, CO, IL, KY, MS, NC, SC, TX, UT, and WY. Dan is a member of the Society of Civil Engineers and the Association of State Dam Safety Officials.
dsmith@geotechnics.net

Ms. Alexandra Blakely is the Laboratory Manager in Nashville, TN. Alexandra has a Bachelor of Science in Geology from Allegheny College. Since 2018, she has garnered experience in geotechnical laboratory testing, performing classification, strength, density, consolidation, and permeability. Her field experience includes reinforced steel and post-tension slab observations.
ablakely@geotechnics.net

ST. LOUIS FACILITY

Mr. Dan Smith, P.E. is the Regional Manager/Laboratory Director of the Nashville, TN and St. Louis, MO laboratories. Dan has more than thirty-five years of experience performing geotechnical engineering, laboratory and field testing, and project management. His administrative duties include project management, preparation of proposals, review of test data, technical support to clients, and business development. Dan is a registered Professional Engineer in MO, TN, AL, CO, IL, KY, MS, NC, SC, TX, UT, and WY. Dan is a member of the Society of Civil Engineers and the Association of State Dam Safety Officials.
dsmith@geotechnics.net

Mr. Phil Merz is the Lead Laboratory Technician in the St. Louis facility. He has completed courses in the University of Missouri Mechanical Engineering Program. Phil performs classification, density, strength, and permeability testing. He is also responsible for equipment calibration and documentation.
pmerz@geotechnics.net

PROJECT EXPERIENCE: RIO GUANAJIBO-HORMIGUEROS FLOOD CONTROL

A RIVER RUNS THROUGH IT.

The 19-mile Rio Guanajibo runs through several municipalities; an extensive flood control project of the United States Army Corps of Engineers was designed to protect the densely populated communities of Guanajibo Homes and San Jose, Puerto Rico.

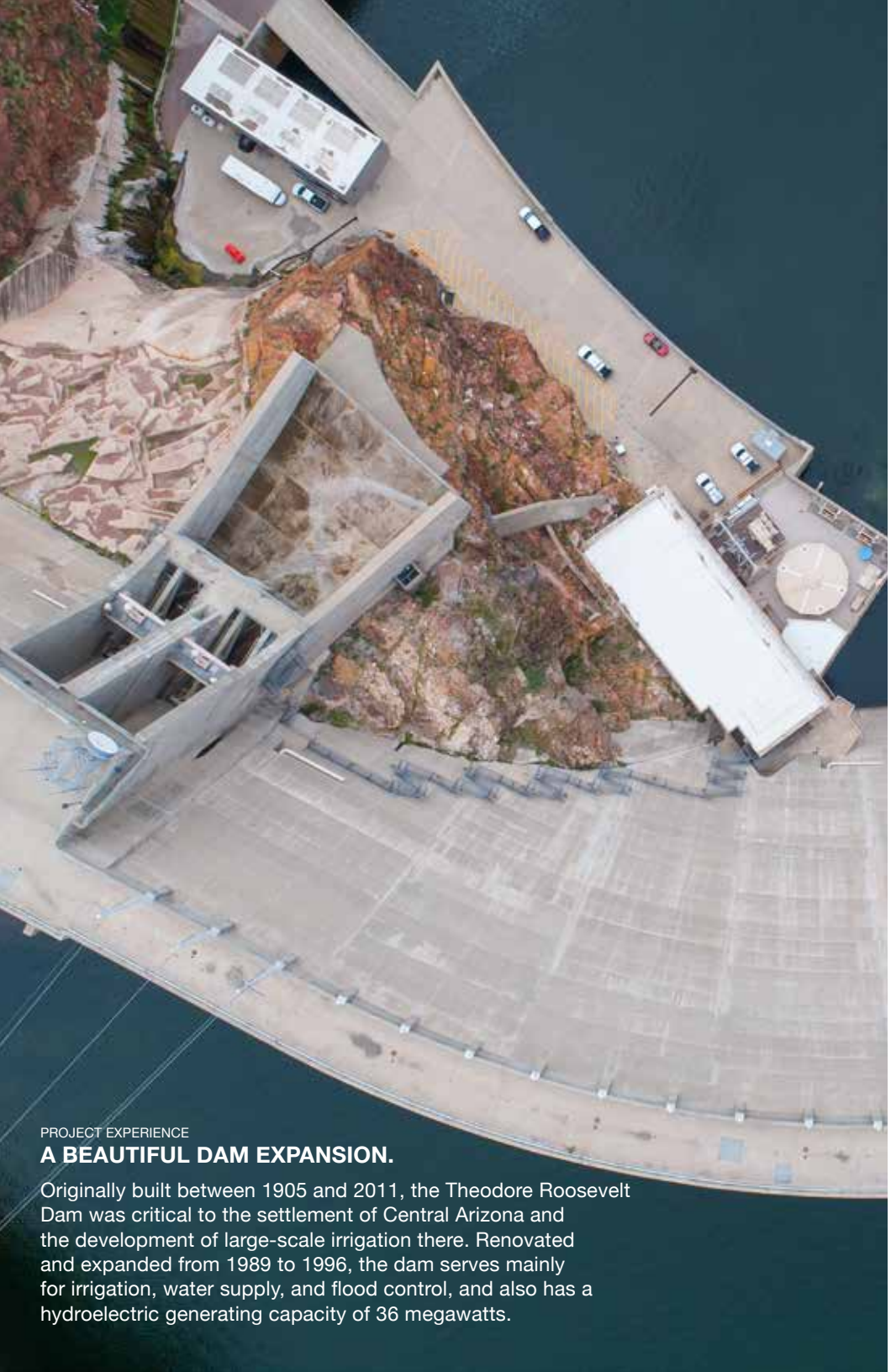
Thank you.

We are deeply honored to be a part of teams working around the globe. And we don't take lightly the responsibility entrusted with us for accurate testing and reliable data. We are fortunate to have earned the trust of professionals in a wide range of sectors including::

Consultants
Utility Companies
Contractors
Governmental Entities
Manufacturing Facilities
Landfills
Industrial Sites

DAMS, LEVEES & WATERWAYS

TVA-SOUTH PADUCAH DAM, KENTUCKY
LIME LAKE, NEW YORK
BAKER DAM, NEW HAMPSHIRE
NEW CREEK DAM, WEST VIRGINIA
ARCADIA LAKES DAM, OKLAHOMA
RAKES MILL DAM, VIRGINIA
MAHONING DAM, PENNSYLVANIA
RIO GUANAJIBO-SAN JOSE, PUERTO RICO
RIO NIGUA FLOOD CONTROL, PUERTO RICO
RIO GUANAJIBO-HORMIGUEROS FLOOD CONTROL, PUERTO RICO
GRIFFIN DAM REHABILITATION, GEORGIA
HARWOOD LAKE DAM, NEW YORK
JOHN C. SMITH DAM, PENNSYLVANIA
GIRARD LAKE DAM, OHIO
PYMATUNING LAKE STATE PARK, PENNSYLVANIA
SOUTHWEST ILLINOIS MISSISSIPPI RIVER LEVEE, ILLINOIS
ROOSEVELT DAM, ARIZONA
MONTGOMERY LOCK & DAM, PENNSYLVANIA
BOILING SPRINGS DAM RESTORATION, NORTH CAROLINA
EAST BRANCH DAM, PENNSYLVANIA



PROJECT EXPERIENCE

A BEAUTIFUL DAM EXPANSION.

Originally built between 1905 and 2011, the Theodore Roosevelt Dam was critical to the settlement of Central Arizona and the development of large-scale irrigation there. Renovated and expanded from 1989 to 1996, the dam serves mainly for irrigation, water supply, and flood control, and also has a hydroelectric generating capacity of 36 megawatts.

HIGHWAYS & ROADWAYS

DOOKERS HOLLOW BRIDGE, PENNSYLVANIA
GRANDVIEW AVENUE, PENNSYLVANIA
MON FAYETTE EXPRESSWAY, PENNSYLVANIA
I-70/SR 51 INTERCHANGE, PENNSYLVANIA
BLUE RIDGE PARKWAY, VIRGINIA
SR 376 COMMERCIAL STREET BRIDGE, PENNSYLVANIA
FERN HOLLOW BRIDGE REPLACEMENT, PENNSYLVANIA
BEAVER ISLAND PARKWAY BRIDGE, NEW YORK
SHARP STREET BRIDGE, NEW YORK
MON INCLINE MCARDLE ROADWAY, PENNSYLVANIA
PORT AUTHORITY OF PITTSBURGH BUSWAY PENN AVENUE, PENNSYLVANIA
MORR BRIDGE REPLACEMENT, NORTH CAROLINA
NORFOLK SOUTHERN RAILWAY LINES, ALABAMA
ILLINOIS ROUTE 4/150 IMPROVEMENTS, ILLINOIS
INTERSTATE I-75 RECLAMATION, TENNESSEE
NOTRE DAME BRIDGE, PUERTO RICO
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, NORTH CAROLINA
ALLIGATOR RIVER BRIDGE REPLACEMENT, NORTH CAROLINA
INTERSTATE I-440 EXPANSION, NORTH CAROLINA
TENNESSEE DEPARTMENT OF TRANSPORTATION, TENNESSEE

PROJECT EXPERIENCE

WOW, THAT WAS FAST.

When Pittsburgh's Fern Hollow Bridge suddenly collapsed in 2022, nobody could have imagined how quickly a replacement could be designed and built. Thanks to massive collaboration – and quality geotechnical testing – the replacement opened a mere 327 days after the former bridge collapsed.

PROJECT EXPERIENCE

READY FOR LIFTOFF.

Each year, more than 1.5 million guests from around the world experience their very own space adventure by exploring the exciting past, present, and future of America's space program at Kennedy Space Center Visitor Complex. Built in 1967 as a means for NASA astronauts' and employees' families to view space center operations, today the Visitor Complex is one of Central Florida's most popular tourist destinations. One of 10 NASA field centers, Kennedy Space Center is a premier multiuser spaceport with more than 90 private-sector partners and nearly 250 partnership agreements.

CIVIL

SCOTT AIR FORCE BASE, ILLINOIS
ALCOSAN, OHIO RIVER TUNNEL, PENNSYLVANIA
LEGENDS, PARRIS ISLAND GOLF COURSE, SOUTH CAROLINA
FAYETTE COUNTY PRISON, PENNSYLVANIA
MELLON PARK, PENNSYLVANIA
HIGHLAND PARK TUNNEL, PENNSYLVANIA
ASHEVILLE REGIONAL AIRPORT, NORTH CAROLINA
UPMC SHADYSIDE, PENNSYLVANIA
NIAGARA POWER ROBERT MOSES PLANT, NEW YORK
MONTGOMERY EQUESTRIAN CENTER, ALABAMA
SANTA FE UNIT SCHOOL, TENNESSEE
TITANS FOOTBALL STADIUM, TENNESSEE
RANDOLPH AIRFORCE BASE, TEXAS
WHEELING ISLAND CASINO, WEST VIRGINIA
UPMC LUNA GARAGE, PENNSYLVANIA
VETERANS ADMINISTRATION MONROEVILLE, PENNSYLVANIA
UPPER ST. CLAIR MUNICIPAL COMPLEX, PENNSYLVANIA
PENTAGON 911 MEMORIAL VISITOR CENTER, VIRGINIA
PITTSBURGH INTERNATIONAL AIRPORT, PENNSYLVANIA
NASA KENNEDY SPACE CENTER, FLORIDA
PITTSBURGH INTERNATIONAL AIRPORT, PENNSYLVANIA

PROJECT EXPERIENCE

OUT OF AFRICA

One of the largest waste management companies in all of Africa, Zoomlion has over the years emerged as a leader in providing sustainable waste management and environmental sanitation services across Ghana and beyond.

LANDFILLS

RUMPKE SANITARY LANDFILL, OHIO
KIMBLE CLAY & LIMESTONE LANDFILL, OHIO
WM VALLEY LANDFILL, PENNSYLVANIA
LOGAN ALUMINUM LANDFILL, KENTUCKY
SOUTH SHELBY LANDFILL, TENNESSEE
FORT LEONARD LANDFILL, MISSOURI
BI-COUNTY LANDFILL, TENNESSEE
SEMINOLE LANDFILL, GEORGIA
MINOT LANDFILL, NORTH DAKOHTA
JOHNSTON COUNTY LANDFILL, NORTH CAROLINA
NEWLAND PARK LANDFILL, MARYLAND
ECO SOUTH LANDFILL, ALABAMA
ZOOMLION LANDFILL, GHANA
HAMM LANDFILL, KANSAS
CITY OF WACO TEXAS LANDFILL, TEXAS
SWACO LANDFILL, OHIO
FLINT CREEK LANDFILL, ARKANSAS
DSWA CENTRAL LANDFILL, DELAWARE
WESTERN ELITE LANDFILL, NEVADA
MEDLEY LANDFILL, FLORIDA

PROJECT EXPERIENCE

HIGH TECH FOR HIGH TECH

Demand for high purity quartz (HPQ) has increased substantially in recent years, leading global giant Sibelco to increase production of HPQ at its Spruce Pine facility in North Carolina by over 30% from 2019 to 2022. To meet anticipated further market growth, Sibelco will invest an estimated $200 million in Spruce Pine between 2023 and 2025 to double its installed capacity from the 2022 base.

INDUSTRIAL

VITRO GLASS FACILITY, TEXAS
US STEEL CLAIRTON WORKS, PENNSYLVANIA
GM BEDFORD FACILITY, PENNSYLVANIA
HARSCO PLANT, UTAH
KOPPERS INC. NORTH LITTLE ROCK PLANT, ARKANSAS
SIBELCO, SPRUCE PINE EXPANSION, NORTH CAROLINA
SHELL CRACKER PLANT, PENNSYLVANIA
NESTLE - PURINA PLANT, MISSOURI
TVA CUMBERLAND CITY NATURAL GAS PLANT, TENNESSEE
CHEMTRADE, ILLINOIS
BLUEGRASS WATER, WYOMING
HOLSTON ARMY AMMUNITION PLANT, TENNESSEE
DUQUESNE LIGHT COMPANY, PENNSYLVANIA
CHEVRON BALTIMORE FACILITY, MARYLAND
PPG BARBERTON, OHIO
CHEVRON ASPHALT PLANT, NEW JERSEY
MORTON SALT, OHIO
MOBLEY GAS PLANT, WEST VIRGINIA
ALCOA LISTER HILL COMPLEX, ALABAMA
FREEPORT - MCMORAN, ARIZONA

PROJECT EXPERIENCE

ENERGY OUT AT SEA

From the depths of the Atlantic Ocean, the Skipjack Wind projects will generate enough energy to power more than 300,000 homes in the Delaware-Maryland region. Scheduled to be operational in the second quarter of 2026, Skipjack Wind is a 966-megawatt offshore wind energy project being developed to diversify America's energy mix with clean energy alternatives.

ENERGY

KARN SOLAR GENERATING PLANT, MICHIGAN
HILLSBORO SOLAR FARM, OREGON
SPRING VALLEY SOLAR, ALABAMA
WILLIAMS SOLAR, FLORIDA
CARVER FALLS SOLAR FARM, TEXAS
DOMINION MICHAUX SOLAR, VIRGINIA
HI-STORM NUCLEAR STORAGE VESSELS, PENNSYLVANIA
BENEVOLA SOLAR FARM, MARYLAND
GRATIOT SOLAR FARM, MICHIGAN
CRITERION WIND FARMS, MARYLAND
ERIE SOLAR FARM, PENNSYLVANIA
DOGWOOD SOLAR, MISSOURI
DUKE LAURENS COUNTY SOLAR FARM, SOUTH CAROLINA
ORANO - TN AMERICAS, LLC, NORTH CAROLINA
SKIPJACK WIND FARM, ATLANTIC OCEAN, MARYLAND
CARBON FREE POWER PROJECT, IDAHO
ARKANSAS NUCLEAR ONE, ARKANSAS
WOLF CREEK NUCLEAR POWER PLANT, KANSAS
FOUR MILE WIND FARM, MARYLAND
HIGHLAND PARK LOCK & DAM HYDRO, PENNSYLVANIA

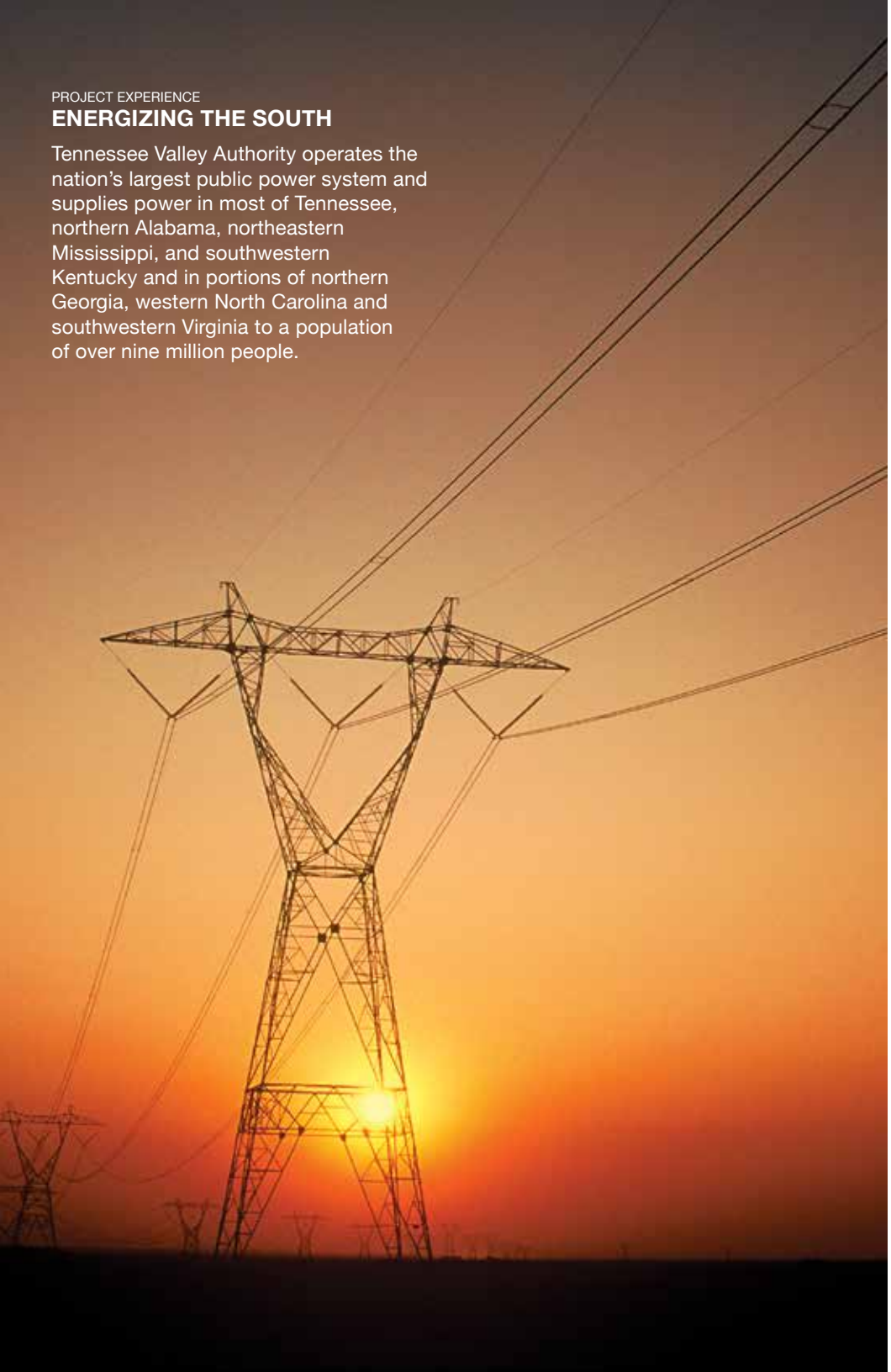
PROJECT EXPERIENCE

HIGH-POWERED PROJECT

The Gibson Generating Station is a coal-burning power plant located in Indiana. With a 2013 aggregate output capacity among its five units of 3,345 megawatts, it is the largest power plant run by Duke Energy, and the tenth-largest electrical plant in the United States. Located immediately south of Gibson Lake, the plant's cooling pond, is the Cane Ridge National Wildlife Refuge, a 26-acre area that serves as the easternmost nesting ground for the Least Tern *(Sternula antillarum)* in the U.S.

COAL COMBUSTION PRODUCTS

TVA CUMBERLAND, TENNESSEE
TVA BULL RUN, TENNESSEE
TVA KINGSTON, TENNESSEE
TVA GALLATIN, TENNESSEE
TVA SHAWNEE, KENTUCKY
CONSOL BAILEY FACILITY, PENNSYLVANIA
CUMBERLAND COAL FACILITY, PENNSYLVANIA
◀ **DUKE GIBSON NORTH ASH BASIN, INDIANA**
CONEMAUGH ASH DISPOSAL SITE, PENNSYLVANIA
CHESWICK DISPOSAL SITE, PENNSYLVANIA
KEYSTONE ASH DISPOSAL SITE, PENNSYLVANIA
VISTA ENERGY, ALBERTA, CANADA
CONEMAUGH ASH DISPOSAL FACILITY, PENNSYLVANIA
BELEWS CREEK ASH LANDFILL, NORTH CAROLINA
TVA-CUMBERLAND CITY FOSSIL PLANT, TENNESSEE
LOUISVILLE GAS & ELECTRIC GHENT FACILITY, KENTUCKY
CLIFITY CREEK POWER PLANT, INDIANA
NEW MADRID POWER PLANT, MISSOURI
DUKE DAN RIVER STATION, NORTH CAROLINA
MILL CREEK GENERATING PLANT, KENTUCKY



PROJECT EXPERIENCE

ENERGIZING THE SOUTH

Tennessee Valley Authority operates the nation's largest public power system and supplies power in most of Tennessee, northern Alabama, northeastern Mississippi, and southwestern Kentucky and in portions of northern Georgia, western North Carolina and southwestern Virginia to a population of over nine million people.

SLURRY WALLS & SOIL MIXING

SWAN RIVER, MINNESOTA
TOMS RIVER, NEW JERSEY
MICHIGAN CITY, INDIANA
NEW WALES, FLORIDA
MIAMI, FLORIDA
PORTSMOUTH, VIRGINIA
MALDEN, MASSACHUSETTS
BRUNNER ISLAND, PENNSYLVANIA
CLOYNE, ONTARIO, CANADA
CHICAGO, ILLINOIS
BRUNSWICK, GEORGIA
LOXAHATCHEE, FLORIDA
KOKOMO, INDIANA
MANHATTAN, NEW YORK
OGDEN, UTAH
FORT MCMURRY AIR FORCE BASE, ALBERTA, CANADA
EXXON MOBILE, TEXAS
TENNESSEE VALLEY AUTHORITY
TENNESSEE VALLEY AUTHORITY, TENNESSEE
WINDY GAP RESERVOIR, COLORADO

Size matters

Different tests require different sample types and sizes. Please use the handy chart below to prepare your samples.

Soil Sample Type	Possible Test	Comments
Split Spoon or Vibratory Core	☐ Classification ☐ Moisture Content	If possible, collect additional sample from the split spoon and place in a zip lock bag. This additional material is always helpful to expedite turnaround time.
Quart-size jar or zip lock bag	☐ Classification ☐ Moisture Content ☐ Corrosion Suite	Additional material can expedite turnaround time.
5-gallon bucket, large burlap or cloth bags	☐ Classification ☐ Moisture Content ☐ Compaction ☐ Permeability ☐ Corrosion Suite ☐ Remolded Triaxial Series ☐ Remolded Direct Shear Series ☐ Thermal Conductivity	A completely full bucket is preferred to perform all of these tests. Place the test request forms or other paper work in a plastic bag before placing it in direct contact with soil, as paper absorbs moisture and the test request becomes unreadable. If cloth bags are utilized, place moisture content samples in zip lock bags inside the cloth bag.
Shelby Tube	☐ Classification ☐ Moisture Content ☐ Density ☐ Triaxial Series ☐ Consolidation ☐ Unconfined Compression ☐ Direct Shear ☐ Bulk Specific Gravity/Unit Weight	A 24" recovery on a Shelby Tube *(Full Recovery)* Consolidation, 3 inches Permeability, 6 inches Direct Shear Series, 6 inches Triaxial Series, 18" Unconfined Compression, 6 inches

geotechnics
geotechnical & geosynthetic testing

Quality samples in, quality data out

Sample collection guidelines

Name, rank, serial number, please.

For best results, samples must be properly identified.

Use a permanent marker, directly on the bag, tube or side of the bucket, to include the following:

- ☐ Client Name
- ☐ Project Name
- ☐ Project Number
- ☐ Sampling Date
- ☐ Boring or Test Pit Number
- ☐ Sample Number
- ☐ Depth or Elevation

Please note:

Tags or bucket lids may become detached during shipping and handling.

Be sure to place test request forms or other paperwork in a plastic bag before packing it in direct contact with soil. Paper absorbs moisture and documents become unreadable.

Our work is only as good as yours. ***Login information is key.***

HANDY REFERENCE FOR SAMPLES BY TEST METHOD

Not intended to address impacted soil samples

ASTM D1452	Practice for Soil Exploration and Sampling by Auger Borings
ASTM D1586	Test Method for Penetration Test and Split-Barrel Sampling of Soils
ASTM D1587	Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes
ASTM D4220	Practices for Preserving and Transporting Soil Samples
ASTM D6151	Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling
ASTM D5079*	Preserving and Transporting Rock Core Samples
ASTM D5434	Field Logging of Subsurface Explorations of Soil and Rock

*This method was withdrawn in 2017.

We are grateful for the people we've had the opportunity to work with over the past 40 years that entrust us with their geotechnical and geosynthetic testing services.

As much as our work centers on data and testing, it's really all about people. Our employees. Our partners. Our clients.

PITTSBURGH RALEIGH NASHVILLE ST. LOUIS

geotechnics.net