Geotechnical Services

For infrastructure improvement projects, conditions below grade are often as important as surface conditions. This is especially true when construction is contemplated. The most cost-effective way to ascertain subsurface conditions is by procuring geotechnical services such as those provided by the professionals in the Michigan region of Professional Service Industries (PSI).

PSI Michigan realizes that geotechnical conditions play a crucial role in the proper construction of roads, runways, bridges dams and other structures. A solid foundation is an essential prerequisite for any well-constructed improvement. A thorough subsurface exploration can result in a more cost-effective foundation design and can reduce construction delays caused by unforeseen conditions.

The variety of sizes and types of equipment and our crew's broad experience permit flexibility in sampling and drilling techniques, include:

- Auger or Wash Drilling Techniques
- Standard Penetration Testing
- Cone Penetrometer Testing
- Rock Coring
- Undisturbed Sampling

PSI Michigan is pre-qualified with the Michigan Department of Transportation to perform Geotechnical Engineering Services (NIGP #925-45, Engineering Services, Professional, Geological; NIGP #925-46, Engineering Services, Professional, Geotechnical - soils).

The Geotechnical Department of PSI in Plymouth, Michigan holds accreditations from American Association of State Highway and Transportation Officials (AASHTO) Materials Reference Library (AMRL) in Hot Mix Asphalt, Aggregate, Soil and Portland Cement Concrete. It is also certified in Aggregate and Soils Test categories by the U.S. Army Corps of Engineers. These certifications attest to the laboratory's proficiency to perform a variety of tests. These tests include, but are not limited to: Soil Resistivity, Moisture Content, Specific Gravity, Unconfined Compressive Strength, California Bearing Ratio (CBR), Permeability (Constant Head), One-Dimensional Consolidation, pH, and Organic Content.

Quality is an integral part of PSI's approach to geotechnical work. Our Senior Engineers and Chief Engineers have years of demonstrated experience and are the crux of our quality assurance program. These Senior and Chief Engineers review all reports and documentation on each project to make certain that PSI's methodologies and technical approach and recommendations for design and construction, along with contractual agreements, are followed. In addition, field and laboratory personnel receive intensive training from seasoned veterans.

PSI is experienced. Tens of thousands of subsurface explorations have been performed by PSI personnel on a wide variety of projects. Our experience ranges from projects requiring a few borings to large projects requiring several hundred borings. Project types include:

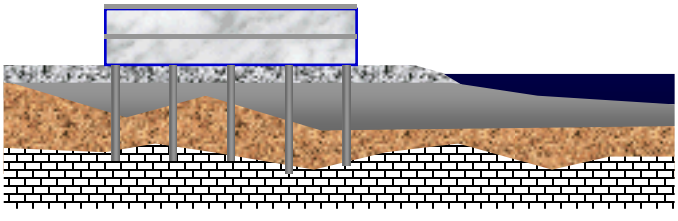
- Roads and Bridges
- Airports
- Dams
- High Rises, Medium Rise to Single-Story Buildings
- Railroads
- Petrochemical Plants
- Pulp and Paper Plants
- Industrial Complexes
- Tank Farms
- Pipelines
- Schools
- Hospitals
- Docks and Harbors
- Transmission towers
- Compressor Foundations
- Sinkhole/Subsidence Studies
- Forensic Evaluations

Geotechnical Studies
- Early site selection & planning assistance
- Preliminary & final subsurface studies
- Shallow & deep foundations
- Settlement analysis
- Slope stability analysis
- Site preparation recommendations

Foundation/Specialty Analysis
- Risk assessment
- Foundations/construction over
- compressible soils
- Soil modification/improvement
- Dewatering
- Pile drivability
- Laterally loaded foundations
- Retention systems/bulkheads
- Obtaining and interpreting cone
- Penetration test data
- Landfill siting studies
- Earthen dam evaluation and design
- Plate and pile load testing
- Dynamic pile driving analysis & load testing
- Pile/pier integrity testing

Environmental/Permitting
- Environmental permits
- Groundwater studies
- Soil suitability analysis
- Effluent disposal evaluation
- Well and pollution source inventory
- Design of ponds and liners
- Water supply testing and permitting
- Septic tank design and permitting
- Drawdown effects on wetlands
- Solid waste landfill permitting and design

Roadway/Transportation Studies
- Corridor studies
- Bridge foundations
- Roadway soil survey
- Stormwater pond studies
- Sign and light pole foundations
- Pavement evaluation and design
- Airport runways and aprons
- Embankments
- Dynoflect/Falling weight deflectometer



Field and Drilling Services
- Standard test borings
- Auger borings
- Rock coring
- Monitoring well installation
- Continuous sampling
- Environmental sampling
- Undisturbed thin-walled tubes
- Groundwater sampling
- Bulk disturbed samples
- Mineral exploration

Laboratory Services
- Soil classification
- Strength
- Consolidation
- Swell tests
- Compaction characteristics
- Permeability
- CBR
- Soil Cement
- Resistivity

Additional Services
- Hydrology
- Inclinometers
- Fault studies
- Slurry walls
- Soil/rock dynamics
- Field resistivity and seismic studies
- Subsidence studies
- Computer modeling
- Liquefaction
- Tunneling
- Earthquake geology and engineering
- Environmental geology
- Soil stabilization
- Geophysical investigations

Preliminary or General Studies
- Vibration monitoring and assessment
- Early site selection
- Preliminary soil & foundation evaluation
- Foundations for low/high-rise construction
- Slope stability and design
- Site preparation specifications
- Design of pond and landfill liners
- Embankment settlement
- Muck Survey