“Construction Engineering Consultants, Inc. Is an independent inspection-testing agency with expertise in the inspection and testing of various construction materials, and the development and execution of quality assurance for the construction industry.”

History:

Joseph F. Artuso is the founder and CEO of Construction Engineering Consultants, Inc. He also performs consultations and the investigations and correction of quality problem dealing with structural building materials. He also directs the development of quality control procedures for commercial and nuclear construction.

Since its inception in 1976, Construction Engineering Consultants has become a leader in quality assurance and quality control testing. The main reason for this is simple: the company is committed to involving senior managers extensively in every project. Frequent site visits by senior managers is standard procedure. This kind of personal attention sets CEC apart, and assures problems and delays are kept to a minimum. The result is high-quality, on-time performance even on the largest power plant or heavy construction projects.
Consultations on Code Compliance and National Standards:
CEC, Inc. will interpret and translate the applicable codes to assure compliance, including:

- ASME Section III, Division @
- NQA-1 Part 2.5
- 10 CRF 50 ASTM

Additional Testing Services:
In addition to those major areas mentioned, CEC, Inc. is also experienced and qualified in the following areas:

- Shop and field inspection of coatings preparation and application

  - Surface preparation and profile, mixing and application
  - Ambient conditions
  - Dry and wet film thickness
  - Adhesion testing

- Calibration

  - Traceability to National Bureau of Standards and Industry Standards
  - Calibration of measuring and test equipment

- Asphalt

  - Field testing for density - Nuclear & physical methods
  - Mix Designs
Geotechnical Services

Construction Engineering Consultants, Inc. (CEC) performs foundation and soils investigation to develop allowable bearing pressures, for use in development of the building and foundation systems. These are developed to conform to the requirements of the International Building Code. An engineering report is developed to enable the selection of a foundation system that provides structural stability as well as economical considerations. A site reconnaissance and mine study is made prior to boring and sampling that is used in the professional analysis of the site condition.

Soil borings and samples are taken under the supervision of a fully qualified representative doing sampling and penetration testing. Samples are tested in our accredited soils laboratory. Pertinent data is collected to develop an Engineering Report that includes soil classification and design load bearing capacity for the construction documents.

The analysis will include options of the types of foundations, bearing strata and types of deep foundation. The Geotechnical Report will include:

1. A plot showing the location of test borings and/or excavation.
2. Complete record of the soil sampling data.
3. A record of the general subsurface soil and rock profile.
4. Elevation of the water table, if encountered.
5. Recommendation for foundation type and design criteria which includes: bearing capacity of natural or compacted soil and provisions to mitigate the effects of expansive soils.
6. Recommendations will be given for the Mitigation of potential soil deficiencies such as: the effects of liquefaction, differential settlement due to varying soil strength, and effects of adjacent loads.
7. Expected total and differential settlements.
8. Compacted fill material properties and testing requirements, along with recommended slope and embankment profiles.
10. Mine stabilization recommendations.
International Building Code Special Inspections:

CEC is qualified to perform the IBC Special Inspection Section 1704. The code requires that the owner shall employ an approved agency under the direction of a Registered Professional Engineer to perform inspections during construction on the types of work listed under Section 1704. This includes:

- **1704.2 Inspection of Fabricators**
- **1704.3 Special inspections for steel elements of buildings and structures as required by Table 1704.3.**
- **1704.4 Concrete Construction**
  - The special inspection and verification for concrete construction as required by Table 1704.4.
- **1704.5 Masonry Construction**
  - Masonry construction shall be inspected, verified and detailed in Table 1704.5.1 and Table 1704.5.3.
- **1704.7 Special Inspections for existing site soil conditions, fill placement and load bearing requirements shall be as required in Table 1704.7.**
- **1704.8 Driven Deep Foundations**
  
Special inspections shall be performed during installation and testing of driven deep foundations elements as required by Table 1704.8.

- **1704.9 Cast In Place Deep Foundations**
  - Special inspection shall be performed during installation and testing of cast in place deep foundation elements as required by Table 1704.9.
- **1704.10 Helical pile foundation inspections shall be performed continuously during installation of helical pile foundation.**
  - The information recorded shall include installation equipment used, pile dimensions, tip elevations, final depths (final installation torque if specified).
- **1704.12 Sprayed fire-resistant materials. Special inspection shall be performed on sprayed on fire-resistant material. Special inspections include:**
  - Condition of substrates
  - Thickness of application
  - Density in lbs./cubic foot
  - Bond strength adhesion/cohesion
  - Condition of finished application
- **1704.13 Special Inspection of mastic and intumescent fire resistance coatings applied to structural elements and decks.**
Testing Services

Concrete:

CEC, Inc. offers clients comprehensive concrete testing— including on-site materials testing and inspection and engineering support. Our engineers and technicians have been trained to ensure that every necessary requirement for structural and architectural concrete be met. Our principal services include:

- Batch Plant Inspection: Inspection and certification to ASTM C-94
- Concrete Placement Inspection: Forms, Reinforcement, Finishing, Curing
- Field Testing: Slump, Air Content, Temp., Weight, Yield, Compressive Strength
- Measurement of Floor Flatness (Ff) and Levelness (Fl) values per ASTM E115 with the use of a Computerized Face Instrument
- Measurement of Moisture Vapor Emission per ASTM F 1869 and In-Place Relative Humidity per ASTM F2170

Structural Steel:

To assure the structural integrity of structural steel, a particular high quality of inspection and testing is required. CEC engineers and technicians are used to providing the most reliable consultations and quality control. We check for the following factors:

- High Strength Bolted Connections
  - Verify proper tensioning for conformance with AISC standards
- Welding inspection and tests
  - Conduct nondestructive examination for conformance
    - Ultra-sonic Testing
    - Radiographic Testing
    - Magnetic Particle Testing
    - Penetrant Testing
Soils:

If your project requires structural soil fill, you can rely on CEC technicians to run thorough tests to determine maximum density, soil compaction, soil classification and all other applicable characteristics. Our services are in accordance with ASTM procedures and other relevant national standards. We also perform complete geotechnical subsurface investigations and provide data for site development and foundation installation. Some of the tests we perform include:

- **Test Borings:** Split Spoon Sampling with standard penetration test (SPT) data, diamond bit rock core drilling, monitoring wells, subgrade evaluations.
- **Lab Testing:** Soil identification, compressive strength, direct shear, particle size analysis, Atterberg limits, triaxial testing, density-moisture relationship, California Bearing Ratio, swell testing of chemically expansive soils.
- **Field Testing:** In-place density testing methods (Troxler, Sand Cone, Balloon), moisture content using a densometer method.

**Nondestructive Testing Technician:**

Our NDE procedures are qualified in accordance with the ASME and ASTM standards, and our NDE personnel are qualified in accordance with ASNT-TCIA.

**Methods:** Radiography, Ultra-sonic, Magnetic Particle, Penetrant, Eddy Current, Visual.
Nondestructive Examination -Concrete:

CEC, Inc. can examine and evaluate concrete strength and other properties using a variety of nondestructive techniques and equipment including:

- Bond testing of concrete overlays
- Sonic Examination (V Meter) for consolidation and concrete strength magnetic field examination (R Meter) for location of reinforcing, concrete rebound number (Schmidt Hammer) for concrete strength, Subsurface Interface Radar (SIR) for location of reinforcement, embedment’s and voids. Penetration Resistive examination (Windsor) for concrete strength
- Welding
  - Inspection and testing of conference to ASME Section IX and AWS Standards.
  - Welder qualification to ASME and AWS Standards. Weld Procedure qualifications to ASME Section IX and AWS procedures.
- Wall Thickness
  - Piping of other steel members

Light Rail Transit:

CEC, Inc. personnel have extensive experience in quality control inspection and testing of light rail transit construction. In fact, CEC, Inc. was the primary quality assurance/quality control arm of Parsons Brinkerhoff-Gibbs & Hill on the Pittsburgh LRTS project (1980-1985). CEC provided a variety of services to PB-G&H, including:

- Surveillance of PB-G&H subcontractor quality control activities
- First-line quality assurance/quality control inspection of construction activities, as well as testing of materials and components
- Provided field engineering inspectors who monitored all areas of construction and finish contractors of three main stations and line sections in CBD
Projects:

**Corporate**
FORE Systems Office Complex (Marconi), Warrendale, PA
Airside Business Park Complex, Coraopolis, PA
Cranberry Woods Office Buildings I and II, Warrendale, PA
Millennium Center Office Building, Moon Township, PA
PNC Firstside Center, Pittsburgh, PA
Mellon Client Service Center, Pittsburgh, PA
Heinz Warehouse and Distribution Center, Pittsburgh, PA
New FBI Headquarters, Pittsburgh, PA
Bridgestone Point Office Building, Pittsburgh, PA
International Electrical Workers Complex, LTV Site, Pittsburgh, PA
Alcoa Business Center
Theater Square Service Center, Pittsburgh, PA
Mt. Lebanon Public Safety Building, Mt. Lebanon, PA

**Healthcare**
VA Hospital, 108-Bed Tower, Pittsburgh, PA
UPMC Passavant-East Wing, Pittsburgh, PA
UPMC Monroeville Hospital, Monroeville, PA

**Hotel**
Shadyside Courtyard by Marriott, Pittsburgh, PA
North Side Residence Inn
North Shore Hyatt

**Institutional**
Carnegie Mellon University, Pittsburgh, PA
Carrick High School, Pittsburgh, PA
Hampton High School and Middle School Renovation, Allison Park, PA
New Western Pennsylvania Correctional Facility
Western Pennsylvania School for the Blind, Pittsburgh, PA
Western Pennsylvania State Correctional Facility, Luzerne Township, PA

**Lock & Dam**
Reconstruction of Braddock Lock & Dam, Braddock, PA

“CEC has been involved with projects in various industries, which include Corporate, Healthcare, Hospitality, Institutional, Lock & Dam, Recreational, Retail, and Mass Transit.”

**Recreation**
UPMC Sports Complex, Pittsburgh, PA
Allegheny Riverfront Park, Pittsburgh, PA
City of Pittsburgh-AquaZoo, Pittsburgh, PA
Equestrian Facility at Bethany College, Bethany WV
Star Lake Amphitheater, Burgettstown, PA

**Retail**
Target Department Stores (various throughout Western Pennsylvania)
The Home Depot (various stores throughout Western Pennsylvania)
Mall at Robinson, Robinson Township, PA
Lowe’s (various throughout Western Pennsylvania and West Virginia)
Toys R’ Us Stores (various throughout Western Pennsylvania)

**Transit**
Port Authority Airport Busway Corliss Flyover, Pittsburgh, PA
Martin Luther King Busway Extension, Wilkinsburg, PA
PAT Stage II Light Rail Transit, various locations
EBX Busway, Pittsburgh, PA
Construction Clients:

Aetos Construction
A.G. Cullen Construction
Allegheny General Hospital
Asbury Heights
Bentworth School District
Bridges, pbt
Burns & Scalo
Butler School District
CMI Contractors
California University of PA
Carl Walker Construction
Carnegie Mellon University*
Castcon Stone
Children’s Hospital of Pittsburgh
Collier Development*
Consol Energy*
Continental Building Systems
Dick Corporation
Dick’s Sporting Goods*
Dynamic Building Corporation
Fahringer, McCarty & Grey, Inc.*
Forbes Regional Hospital*
Forest City Development*
General Industries*
Hampton School District
Construction Testing Clients
IKM*
JA Jones
JJ Gumberg Company*
Jendoco Construction Company
John Deklewa & Sons*
John Gulisek Construction
Landau Building Company
Lorenzi, Dodds, & Gunnill*
Magee Women’s Hospital*
Management Engineering Corp.
Marsico Corporation
Mascaro Construction
Massaro Corporation
McHolme Builders*
Michael Baker Engineering
Michael Zamagias Properties
Mistick Construction
Mosites Construction
Mount Lebanon School District

Nathan Contracting
National Development Corporation
Nemacolin Woodlands Corporation*
Oxford Development*
PPG
PACE Entertainment
Pennsylvania Trolley Museum
P.J. Dick Contracting, Inc. Port Authority of Pittsburgh
Ragner Benson
Robert Morris College*
Ross Development*
Sierra Associates*
Sony
Target Stores, Inc.
The Haskell Company
The Home Depot*
TEDCO
Trinity School District*
Turner Construction
University of Pittsburgh
University of Pittsburgh Medical Center*
UPMC Hospital- Shadyside
UPMC Lee*
Upper Saint Clair School District*
URS Corporation
Wal-Mart Stores, Inc.
Waller Corporation
Washington & Jefferson College*
Waynesburg College*
West Penn Hospital
Zervos Construction

* also a geotechnical client
Geotechnical Clients:

Apostolou Associates
Bobby Rahal Dealership
Burt Hill Kosar Rittleman
Continental Design & Management
Doody Engineering
Gardner Pope Architects
Geneva College
Gerard-Nagar Associates
Hays Large Architects
Kratsa Properties
Levin Furniture
MacLachlan, Cornelius & Filoni
Manor Health Care
McKeesport Area School District
New Kensington-Arnold School District
Penn Trafford School District
Pittsburgh School District
Ross, Schonder, Sterzinger, Cupcheck
Shadyside Academy
The Rubinoff Company
CEC, Inc. is regularly inspected by the Cement and Concrete Reference Laboratory (CCRL) and the AASHTO Materials Reference Laboratory (AMRL both of which are located at the NIST in Washington D.C.

CEC, Inc. is additionally accredited by AASHTO in the areas of Concrete, Concrete Aggregates and Soils (see attached certificate). Please note that AASHTO no longer provides certificates with expiration dates. Confirmation of current accreditation status is made by viewing information on the web page indicated on the attached certificate (see web page example).

CEC, Inc. qualified to conduct testing for the U.S. Army Corps of Engineers (see attachments).

CEC, Inc. conducts in-house training and certification of personnel in accordance with ANSI N45.2.6 and SNT-TCI-A. Concrete testing personnel are qualified by written and performance examination equivalent to ACI Grade I as required by ACI-301 and other national standards.

CEC, Inc. meets the requirements of the following:

- ASTM C 1077
- ASTM D 3740
- ASTM E 329
- ASTM E 543
- ASTM A 880 (NOTE: This procedure was withdrawn by ASTM in 1995)

Construction Engineering Consultants

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