

# CONSTRUCTION TESTING AND INSPECTION SERVICES



## Engineering Client Success

TEC has provided construction materials testing and inspection services for renovations, additions, and new construction for both public and private sector clients since 1966. TEC's in-house and on-site laboratories are fully equipped to evaluate physical properties of a wide variety of construction materials. Services include, but are not limited to the following:

### **Foundations (Shallow and Deep)**

Inspection and testing services are provided for deep and shallow foundations. Deep foundations require visual examination as well as strength testing of the soil from the foundation base for verification of suitable bearing material. Inspection also includes monitoring of pile driving operations and blow counts for capacity evaluation with a dynamic driving formula. Vibration monitoring is often performed during installation of deep foundations to flag vibrations over a threshold value and prevent damage to adjacent structures.

Shallow foundation testing includes visual examination of the soil conditions and the Michigan Housel or DCP testing to verify compliance with the required bearing capacity and foundation recommendations.

### **Concrete (Cast-In-Place) Floor Flatness/Levelness**

TEC provides quality control inspection of concrete placement for buildings, site work and roadways. Tests include air, slump, unit weight, temperature checks, and molding of concrete test specimens for laboratory compressive strength tests. Reinforcing steel is inspected for verification of proper size, length, spacing, and for location of reinforcing bars. Floor flatness/levelness testing is also performed by TEC on many construction projects.



### **Structural Steel (Plant & Field) and Fireproofing**

Structural steel plant inspection includes verification of welder qualifications and welding procedures for conformance with AWS D 1.1 structural welding code, review of mill test certificate to verify that proper grade and quality of steel is employed on projects, visual weld inspection and non-destructive testing (NDT) as specified to ensure compliance to specifications, random dimensional and compliance checks, and verification of adequate surface preparation and painting, including mil thickness measurements.

In the field, a certified structural steel inspector conducts high strength bolted connection inspection in accordance with AISC Specifications for structural joints using ASTM A325 or A490 bolts. Inspection includes erection techniques and procedures.

Sprayed-on fireproofing is inspected for thickness verification and adhesion. Fireproofing materials are sampled and analyzed to verify density as well as the quality of workmanship.

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### Roofing and Waterproofing

Quality control inspection of roofing materials and installation includes inspection of inventory of materials to be used, overseeing and recording contractor's placement of materials, monitoring and reporting of the quality of workmanship and a daily report of work completed. Quality control inspection of waterproofing installation consists of material sampling, thickness verification, as well as recording daily field operations and quality of workmanship.



### Masonry

Quality control inspection of masonry construction consists of material sampling of grout and mortar, sample preparation, material temperature checks, and recording daily field operations and quality of workmanship. Laboratory tests include compressive strength on cured samples.

### Earthwork

Testing, inspection and oversight of fill and backfill operations is performed by an engineering field technician and includes review of materials to be used, review of contractor's methods and equipment, and field density testing with a nuclear gauge.

### Aggregate Base and Bituminous Paving Operations

Oversight, testing, inspection and laboratory analysis of the aggregate base includes monitoring during proof rolling operations, density verification with a nuclear gauge, thickness checks and sampling of representative material for laboratory tests.



Certified technicians provide bituminous testing and inspection services that include nuclear density tests, thickness and temperature checks, sampling of the mixture for laboratory analysis, monitoring and reporting on procedures and workmanship and coring to verify in-place density.

### MDOT QA/QC

TEC is a Michigan Department of Transportation (MDOT) pre-qualified firm with certified personnel performing concrete, soil and bituminous tests in the field and laboratory for highway, bridge and airport projects in Michigan. Technicians use MDOT procedures to test materials and inspect workmanship to assure the client that the work meets the current standards of the Department of Transportation. All reports are issued on State forms and technicians are trained in the current version of "Field Manager".