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PACA

Pennsylvania Aggregates and Concrete Association

Position Paper

THE CRITICAL NEED FOR CERTIFIED PERSONNEL IN CONCRETE TESTING

Introduction

Concrete is the most widely used construction material in the world. Its performance directly impacts the safety, durability, and serviceability of infrastructure, from bridges and highways to buildings and dams. Given its vital role, the accuracy and reliability of concrete testing are paramount. Accurate testing of concrete is essential to verify that it meets structural and durability requirements. Given the potential risks of improper testing—ranging from costly repairs to catastrophic failures, this paper asserts that **concrete testing must be performed by certified personnel**. This position is not only rooted in best practices but is also backed by **building code requirements** that mandate certification to protect public health, safety, and welfare.

Building Code Requirements for Certified Concrete Testing Personnel

The requirement for certified personnel is embedded in national codes and standards, most notably the International Building Code and ACI 318 – Building Code Requirements for Structural Concrete.

International Building Code (IBC)

- **IBC Section 1703 – Approved Agencies:** Testing must be performed by agencies and individuals approved by the building official and qualified to perform such work.
- **IBC Section 1704 – Special Inspections and Tests:** Special inspections and testing of concrete construction must be conducted by qualified individuals.
- **IBC Section 1705.3 – Concrete Construction:**
  - » States that concrete construction shall be inspected and tested in accordance with **ACI 318**.

ACI 318 – Building Code Requirements for Structural Concrete

- ACI 318-19 Section 26.12.1.1: Requires that field sampling and testing of fresh concrete be performed by personnel certified through an accredited program, such as:
  - » ACI Concrete Field Testing Technician – Grade I
- ACI 318-19 Section 26.12.1.2: Requires that testing agencies meet the requirements of ASTM C1077 (Standard Practice for Agencies Testing Concrete and Concrete Aggregates).

These requirements establish that certification is not optional—it is a code-mandated minimum qualification.

Ensuring Accuracy and Consistency in Testing

Concrete testing procedures - including slump, air content, temperature, and strength - must follow precise standards (e.g., ASTM C143, C231, C39). Certified technicians operate under recognized standards and codes of conduct. This fosters a culture of accountability and professionalism, improved traceability of test results, and higher confidence among project stakeholders.

In addition, certification programs require periodic renewal and continuing education, ensuring that technicians stay current with evolving standards and best practices. Testing performed by unqualified individuals introduces risk and undermines quality control.

Safeguarding Public Safety and Structural Reliability

Structural designs are based on test results that confirm whether concrete meets strength and durability criteria. Improperly conducted tests can lead to acceptance of defective materials, compromised structural performance or collapse and/or costly repairs or reconstruction.

Certified technicians ensure data reliability, enabling informed decisions that protect lives and property.

Legal and Contractual Risk Management

Using uncertified personnel violates building codes and industry standards, exposing stakeholders to project delays due to rejected test results, breach of contract or liability claims, and/or increased scrutiny from building officials and insurers. Certification provides defensible proof of compliance and reduces legal exposure.

Promoting Accountability and Professionalism

Certified technicians operate under rigorous training and examination standards. Their involvement reinforces a culture of responsibility and technical integrity. Also, traceable documentation for testing procedures is established. Having certified technicians on your project demonstrates a commitment to quality assurance and continuous improvement.

Economic Advantages of Reliable Testing

Mistakes and incorrect testing can lead to overdesign or under design based on inaccurate strength values. These errors can also be very costly in delays in the schedule, rework or litigation. Certified personnel help prevent delays and unnecessary remedial actions, reduce the risk of structural failure and warranty claims, and ensure efficient, on-schedule project delivery.

The cost of certification is minimal compared to the potential consequences of unqualified testing. Certified personnel help prevent these issues by providing reliable data, which leads to better decision-making, efficient construction, and long-term cost savings.

Conclusion

The necessity of certified personnel in concrete testing is affirmed by both common sense and codified law. The IBC and ACI 318 clearly mandate the use of certified technicians to safeguard construction quality and public safety. Compliance is not just advisable—it is enforceable.

Recommendation

All stakeholders - engineers, contractors, project owners, and public agencies - should require that concrete testing be performed exclusively by **ACI-certified personnel or equivalents**, as required by the IBC and ACI 318. Verification of certification is the responsibility of the Construction Manager or Project Manager for the project. Enforcing this standard ensures code compliance, structural safety, and professional accountability.

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