



DEPARTMENT OF ADMINISTRATIVE SERVICES

PROPOSED CHANGE OF THE CONNECTICUT STATE BUILDING CODE AND FIRE SAFETY CODE

DATE SUBMITTED: _____

CODE INFORMATION

Proposed change to: Building Code Fire Safety Code

Code section(s): _____

PROPONENT INFORMATION

Name: _____ Representing: _____

Telephone: _____ Email: _____

Address: _____
Street Address Town State Zip Code

PROPOSAL INFORMATION

Description of change and reason for change (attach additional information as needed):

Proposed text change, addition or deletion (attach additional information as needed):

Supporting data and documents (attach additional information as needed)

This Proposal is original material. (Note: Original material is considered to be the submitter's own idea based on or as a result of his/her own experience, thought or research and, to the best of his/her knowledge, is not copied from another source.)

This Comment is not original material, its source (if known) is as follows: (such as material / code development proposal from a prior development cycle or proposal submitted to model code committee etc.)

I would like to make an in-person presentation of my proposal.

Release

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Proponent's Signature

Printed Name

PLEASE EMAIL (PREFERRED) TO DAS.CodesStandards@CT.GOV OR MAIL OR FAX (SEE BELOW)

Department of Administrative Services
Office of the State Building Inspector
450 Columbus Boulevard, Suite 1303
Hartford, CT 06103
Tel: 860-713-5900 Fax: 860-713-7410
Affirmative Action/Equal Opportunity Employer

Attachment
IBC 2021
CHAPTER 17
SPECIAL INSPECTIONS AND TESTS

SECTION 1703
APPROVALS

Add new language as follows:

1703.1.3 Personnel. An approved agency shall employ experienced personnel educated in conducting, supervising, and evaluating tests and special inspections.

1703.1.3.1 Concrete Testing Personnel. Individuals with current credentials as provided in Table 1703.1 or equivalent credentials approved by the building official, shall be considered qualified for sampling and testing of concrete.

Add new Table 1703.1 'Concrete Testing Personnel Qualifications' as follows:

<u>TABLE 1703.1 MINIMUM CONCRETE TESTING QUALIFICATIONS</u>	
<u>Testing</u>	<u>Minimum Qualifications (refer to key at end of Table)</u>
<u>Cast-in-place or precast concrete</u>	
<u>Concrete field sampling and testing</u>	<u>A or B</u>
<u>Concrete laboratory testing including strength testing</u>	<u>A or C</u>
<u>Concrete strength testing only</u>	<u>A or D</u>

KEY:

- A. Licensed Structural Engineer (SE) or Professional Engineer (PE) specializing in the design of building structures, or Engineer-in Training (EIT) under the direct supervision of a PE and competent in the specific task area.
- B. American Concrete Institute (ACI) Concrete Field-Testing Technician with Grade 1 certification
- C. American Concrete Institute (ACI) Concrete Laboratory Testing Technician with Level 1 or Level 2 certification.
- D. American Concrete Institute (ACI) Strength Testing Technician.

Background and rationale - This proposal addresses the need to better ensure proper sampling and testing of concrete. Improper testing may result in deficiencies regarding the performance of structural concrete. This is especially a concern for concrete, as it is one of the few structural materials that are not in their final form and condition until after being placed on the construction site. It is important that qualified individuals conduct sampling and testing to ensure proper performance.

Improper sampling and testing can lead to costly added testing and construction delays. In some instances, unnecessary removal and replacement of concrete. The latter may result in challenges to ensure proper structural integrity and load paths.

The State of Connecticut Code CASE Form 101, Statement of Special Inspections, Key for Minimum Qualifications of Inspection Agents, 2004, lists specific certifications or licenses for individuals performing a stipulated test or inspection, as deemed appropriate by the Registered Design Professional. Several ACI certifications are included in this list but field experience has shown that these credentials are not consistently used.

Benefits – Enhanced confidence that concrete will perform as anticipated. Results of tests are not properly representative of the performance of the concrete, may lead to huge delays and costs. Direct costs may be additional tests, taking and testing cores, or rejection and removal and replacement of the concrete. All of these could also have indirect costs due to construction delays. This proposal identifies personnel qualified to conduct tests to aid and better ensure the public, building official, owners, designers, contractors, and material suppliers that tests are conducted properly and are representative of the intended performance of structural concrete elements.

Estimated impact on life safety – This code change proposal will assist the building official in the determination of qualifications of individuals conducting sampling and testing of construction materials, including structural concrete. When these duties are performed by qualified personnel, there is greater assurance the minimum qualifications of the code will be met, thus having a positive impact on life safety.

Estimated Cost Impact - The code change proposal will not increase or decrease the cost of construction. This proposal increases the ease for the building official to determine the qualifications of individuals qualified to conduct sampling and testing concrete.

Recommendation -

The American Concrete Institute, as a professional society whose mission includes working to facilitate the use and adoption of current concrete technology to assure the desired performance for the benefit of the public, encourages the committee to approve of this code change as submitted.

Letters of Support:

[ACI New England Chapter](#)

[Drakely Pool Company](#)



May 18, 2021

Department of Administrative Services
Office of the State Building Inspector
450 Columbus Boulevard, Suite 1303
Hartford, CT 06103

Subject: Support for Provisions that Require Qualified Individuals for Sampling, Testing, and Inspection of Concrete Code Change Proposals

Codes and Standards Committee Members:

This letter is to recommend approval provisions that set minimum requirements for individuals engaged in the sampling and testing of concrete and inspection of structural elements to the *Connecticut State Building Code* as presented in the code change proposals initiated by the American Concrete Institute.

The American Concrete Institute – New England Chapter represents concrete producers, designers, contractors, and material testing labs throughout Connecticut, and the region. These organizations employ over 3,600 people and contribute over \$325 million to the Connecticut economy.

Cast-in-place concrete is one of the few building materials formed, cured, and otherwise conditioned to create the final product on the construction site. Proper sampling and testing of cast-in-place concrete and specimens is crucial to assure quality concrete that will satisfy the intent of the building code. The code, directly or indirectly through referenced standards, establishes minimum requirements for the type and frequency of sampling, testing, and inspection. However, the code is remiss in that it does not establish or provide necessary direction the building official regarding minimum qualifications for individuals conducting sampling, tests, and inspections of structural concrete. The proposed modifications to the Building Code identifies qualified individual to perform these duties and establishes a level of competency to aid the building official approving other persons for the purpose of sampling, testing, and inspecting.

Examples of specific existing referenced standard language are:

- ACI 318 *Code Requirements for Structural Concrete*, referenced in the CT State Building Code:
 - 26.13.1.2 Inspection of concrete construction shall be conducted by the licensed design professional responsible for the design, a person under the supervision of the licensed design professional, or a qualified inspector.
- ASTM C94 *Standard Specification for Ready-Mixed Concrete* referenced in ACI 318:
 - 7.2 Tests of concrete required to determine compliance with this specification shall be made by a certified technician in accordance with Practice C1077.
- ASTM C1077
 - 6.1.3 Personnel performing laboratory and field testing shall possess current certification(s) that includes a written and performance examination for each relevant standard identified

These standards are applicable to any use of structural concrete, not just buildings. Thus, the needed guidance to assist the building official in the approval process of qualified personnel is not specifically included in the standards. These proposed modifications are extremely important for the building officials, owners, public and all effected entities in the building design and construction process understand the appropriate levels of competency to perform sampling, testing and inspection.

In addition to appropriate quality assurances, qualified individuals are necessary to reduce the frequency of improper sampling and testing which results in additional direct costs related to more expensive sampling (coring) and testing and indirect costs due to construction delays.

We find that it is increasingly more important to require qualified individuals because of significant changes in and increased complexities of mix designs, use of high strength and high-performance concrete, combined with improved engineering procedures that permit more economical use and sizing of concrete elements. Sampling and testing of concrete needs to have a level of precision commensurate with the current design and construction requirements.

We have reviewed the code change proposals initiated by ACI and respectfully request that these proposals be approved for inclusion in the Connecticut State Building Code.

Thank you in advance for your consideration of this recommendation.

Sincerely,

A handwritten signature in blue ink that reads "R. Brett Holland". The signature is written in a cursive style with a large initial "R" and a long, sweeping underline.

R. Brett Holland, Ph.D., P.E. (MA, AL, NY, TX, GA, RI), S.E. (IL)
President of the Board of Directors, ACI New England Chapter



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April 27, 2021

Department of Administrative Services
Office of the State Building Inspector
450 Columbus Boulevard, Suite 1303
Hartford, CT 06103

Subject: Support for Provisions that Require Qualified Individuals for Sampling, Testing, and Inspection of Concrete Code Change Proposals

Codes and Standards Committee Members:

This letter is to recommend approval provisions that set minimum requirements for individuals engaged in the sampling and testing of concrete and inspection of structural elements to the *Connecticut State Building Code* as presented in the code change proposals initiated by the American Concrete Institute.

Our firm is directly involved in the design and construction of concrete swimming pools. The volume of work ranges between 1500 cubic yards annually and our work is being performed throughout Connecticut. Drakeley Pool Company, located in Bethlehem, employs 25 Connecticut residents, and directly contributes \$3 million dollars to the Connecticut economy and \$45,000 in revenue for the state.

Shotcrete and/or cast-in-place processes for concrete are two of the applications for concrete materials formed, cured, and otherwise conditioned to create the final product on the construction site. Proper sampling and testing of shotcrete and cast-in-place concrete and specimens is crucial to assure quality concrete that will satisfy the intent of the building code. The code, directly or indirectly through referenced standards, establishes minimum requirements for the type and frequency of sampling, testing, and inspection. However, the code is remiss in that it does not establish or provide necessary direction the building official regarding minimum qualifications for individuals conducting sampling, tests and inspections of structural concrete. The proposed modifications to the CT Building Code identifies qualified individual to perform these duties and establishes a level of competency to aid the building official approving other persons for the purpose of sampling, testing and inspecting.

Examples of specific existing referenced standard language are:



- ACI 318 *Code Requirements for Structural Concrete*, referenced in the CT State Building Code: 26.13.1.2 Inspection of concrete construction shall be conducted by the licensed design professional responsible for the design, a person under the supervision of the licensed design professional, or a qualified inspector.

ASTM C94 *Standard Specification for Ready-Mixed Concrete* referenced in ACI 318:

7.2 Tests of concrete required to determine compliance with this specification shall be made by a certified technician in accordance with Practice C1077.

ASTM C1077

6.1.3 Personnel performing laboratory and field testing shall possess current certification(s) that includes a written and performance examination for each relevant standard identified

These standards are applicable to any use of structural concrete, not just buildings. Thus, the needed guidance to assist the building official in the approval process of qualified personnel is not specifically included in the standards. These proposed modifications are extremely important for the building officials, owners, public and all effected entities in the building design and construction process understand the appropriate levels of competency to perform sampling, testing and inspection.

In addition to appropriate quality assurances, qualified individuals are necessary to reduce the frequency of improper sampling and testing which results in additional direct costs related to more expensive sampling (coring) and testing and indirect costs due to construction delays.

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We have reviewed the code change proposals initiated by ACI and respectfully request that these proposals be approved for inclusion in the Connecticut State Building Code.

Thank you in advance for your consideration of this recommendation.

Sincerely,

William T. Drakeley Jr.
Managing Member
Drakeley Pool Company