



NYC Buildings Department
280 Broadway, New York, NY 10007

Robert D. LiMandri, Commissioner



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Technical

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Issuer: Fatma M. Amer, P.E.
First Deputy Commissioner

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Purpose: This bulletin establishes the criteria for concrete producers to perform and file concrete mix designs with the Department of Buildings as approved fabricators.

Related Code	AC 28-406.1	BC 1905.3	ACI 318 §5.3
Section(s):	BC 1704.2	BC 1905.6.1	BC 1905.8.2

Related Buildings Bulletin(s): BB 2011-009

Subject(s): Concrete, concrete producer, approved fabricator; Approved fabricator, concrete; Concrete producer, concrete mix design; Concrete testing laboratory; Selection of concrete proportions; Concrete mix design

Background

Where the scope of construction includes concrete placement, the 2008 New York City Building Code requires a concrete testing laboratory licensed by the Department to perform and submit concrete mix designs in accordance with ACI 318 Section 5.3 prior to issuance of a construction permit. This bulletin establishes the requirements for a concrete producer to be recognized as an approved fabricator in accordance with section BC 1704.2.2. Once designated an approved fabricator, the concrete producer will be permitted to perform and submit concrete mix designs without the use of a licensed concrete testing laboratory. The concrete produced by an approved fabricator shall still be subject to the requirements of special inspection and testing required by sections BC 1704.4 and BC 1905.6 at the construction site by approved special inspection agencies and licensed concrete testing laboratories.

Section 1: General Requirements for Concrete Producer

Section BC 1905.8.2 of the 2008 New York City Building Code requires concrete producers that mix and deliver ready-mixed concrete in New York City to comply with the following:

1. Concrete producers shall mix and deliver ready-mix concrete in accordance with the requirements of ASTM C 94 and ASTM C 685.
2. Concrete producers shall be certified by the National Ready Mixed Concrete Association (NRMCA).
3. Concrete producers shall have their plants inspected quarterly by New York State Department of Transportation.
4. Concrete producers shall have their scales and trucks certified quarterly by New York State Department of Transportation.

5. Concrete ready-mix truck drivers shall be certified by the NRMCA.
6. Concrete producers and drivers shall comply with the rules of the Department.

Section 2: Additional Requirements for Approved Fabricator Status - Concrete Producer

In addition to the requirements in section BC 1905.8.2, where a concrete producer seeks to become an approved fabricator pursuant to section BC 1704.2.2, the concrete producer and its concrete testing laboratory shall, in addition, meet the following:

1. The concrete producer shall operate a concrete testing laboratory at a facility under its direct control (Producer concrete testing laboratory).
2. The concrete producer shall obtain certification from a Department-recognized program, such as the Concrete Industry Board's Concrete Producer Certification Program, or a Department-recognized equivalent, that shall include assessment of the producer concrete testing laboratory. (Note: An NRMCA certification alone does not meet this requirement.)
3. The producer concrete testing laboratory shall obtain and maintain accreditation to the AASHTO Accreditation Program (AAP) for the following tests and procedures:
 - a. Quality System
 - i. AASHTO R18, "*Standard Practice for Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories*"
 - b. Portland Cement Concrete
 - i. ASTM C-31, "*Practice for Sampling Freshly Mixed Concrete*"
 - ii. ASTM C-39, "*Test Method for Compressive Strength of Cylindrical Concrete Specimens*"
 - iii. ASTM C-138, "*Test Method for Density (Unit Weight), Yield and Air Content (Gravimetric) of Concrete*"
 - iv. ASTM C-143, "*Test Method for Slump of Hydraulic-Cement Concrete*"
 - v. ASTM C-172, "*Standard Practice for Sampling Freshly Mixed Concrete*"
 - vi. ASTM C-173, "*Test Method for Air Content of Freshly Mixed Concrete by Volumetric Method*"
 - vii. ASTM C-192, "*Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory*"
 - viii. ASTM C-231, "*Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method*"
 - ix. ASTM C-617, "*Standard Practice for Capping Cylindrical Specimens*"
 - x. ASTM C-1064 "*Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete*"
 - xi. ASTM C-1231 "*Standard Practice for Use of Unbonded Caps in Determination of Compressive Strength of Hardened Concrete Cylinders*"
 - xii. ASTM C-1611, "*Standard Test Method for Slump Flow of Self-Consolidating Concrete*"
 - c. Aggregate
 - i. ASTM C-29, "*Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate*"
 - ii. ASTM C-40, "*Standard Test Method for Organic Impurities in Fine Aggregates for Concrete*"
 - iii. ASTM C-117, "*Standard Test Method for Materials Finer Than 200 Sieve in Mineral Aggregates by Washing*"
 - iv. ASTM C-127, "*Standard Test Method for Density, Relative Density, (Specific Gravity) and Absorption of Coarse Aggregate*"
 - v. ASTM C-128, "*Standard Test Method for Density, Relative Density, (Specific Gravity) and Absorption of Fine Aggregate*"
 - vi. ASTM C-136, "*Standard Test Method for Sieve Analysis of Fine and Coarse Aggregate*"
 - vii. ASTM C-566, "*Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying*"
 - viii. ASTM C-702, "*Standard Practice for Reducing Samples of Aggregate to Testing Size*"
4. The producer concrete testing laboratory shall maintain enrollment in the CCRL Concrete and AMRL Aggregate Proficiency Sampling programs.

5. The concrete producer and the producer concrete testing laboratory shall maintain a quality management system that meets the requirements of AASHTO R18.
6. The producer concrete testing laboratory shall employ a full time quality control manager in charge of and responsible for all testing operations. The minimum qualifications of the quality control manager are:
 - a. NRMCA Level 3 Concrete Technologist Field Technician
 - b. American Concrete Institute (ACI) Concrete Testing Laboratory Technician Grade I, Grade II
 - c. ACI Field Testing Technician
 - d. ACI Concrete Construction Special Inspector certification
7. All concrete testing performed for construction projects falling under the jurisdiction of the Department of Buildings shall be conducted in accordance with the 2008 New York City Building Code and related reference standards.
8. The concrete producer shall maintain General Liability Insurance in the amount of one million dollars, and NYS workers compensation coverage as required.

Section 3: Approved Fabricator – Concrete Producer Application and Approval Process

All requests for approved fabricator status shall be submitted to the Office of Technical Certification and Research (OTCR) in writing in a manner acceptable to the Department. The application process shall be as follows:

1. Producer concrete testing laboratory submits an application to OTCR along with the following supporting documentation:
 - a. Documentation of all required accreditations and certifications listed in section 2 of this bulletin.
 - b. A list of employees and documentation to show the staff meets the minimum qualifications required by the Building Code and any relevant associated reference standards.
 - c. Proof of insurance
2. Department staff reviews the application for technical merit and completeness.
3. Department staff performs an initial inspection of the producer concrete testing laboratory. Any deficiencies must be corrected prior to approval of the application.
4. The term of the approved fabricator status shall be one year. Approved fabricator status may be renewed upon application on an annual basis until a Department rule is promulgated. The Department retains the right to revoke approved fabricator status at any time.
5. The Department may perform unannounced audits of the concrete producer's concrete testing laboratory to verify all concrete testing is performed in accordance with the 2008 New York City Building Code and its related reference standards. In the event that deficiencies are noted during an audit the Department will take enforcement action as necessary to have the deficient condition corrected including, but not limited to, issuance of violations and revocation of filing privileges as an approved fabricator.

Section 4: Scope of Services Provided By Producer Concrete Testing Laboratories

- a. A producer concrete testing laboratory shall be permitted to:
 1. Select concrete mix proportions in accordance with section BC 1905.2.
 2. Determine concrete mix designed by either field experience or trial mixtures in accordance with section BC 1905.3.
 3. Perform mix designs only with material used by the concrete producer to prepare ready-mix concrete.
- b. A producer concrete testing laboratory shall not be permitted to:
 1. Submit to the Department a field or trial batch mixtures for any other concrete producer.
 2. Submit to the Department any compressive strength results for evaluation and acceptance of concrete.

Section 5: Submitting a Concrete Mix Design with the Department

Once designated an approved fabricator, the concrete producer will be permitted to perform and submit concrete mix designs without the use of a licensed concrete laboratory. On projects where an approved fabricator is providing both the concrete and the mix design, the following procedures shall be followed:

1. Producer concrete testing laboratories shall submit concrete mix designs to the Department on a form acceptable to the Commissioner with the original concrete mix design as an attachment. Concrete mix designs are required to be approved by the applicant of record for the structural design prior to submission to the Department.
2. The approved fabricator's concrete mix design submittal shall be submitted to Concrete Enforcement Unit for review and approval.
3. Once approved, the approved fabricator's concrete mix design submittal shall be part of the approved construction documents for the given construction project filed with the Department.
4. The approved fabricator's concrete mix design submittal and original concrete mix design shall be accepted in lieu of a concrete design mix submitted on a TR3 form.
5. Copies of the approved fabricator's concrete mix design submittal approved by the Concrete Unit and original concrete mix design shall be maintained at the construction site by the contractor. Copies shall be provided to the licensed concrete testing laboratory performing acceptance testing of the concrete for the given construction site.
6. Batch tickets are required to be provided for each batch of concrete for all concrete produced in accordance with this bulletin.
7. The concrete produced by an approved fabricator shall still be subject to the requirements of special inspection and testing required by sections BC 1704.4 and BC 1905.6 at the construction site by approved special inspection agencies and licensed concrete testing laboratories.

Summary of Referenced Standards

1. ASTM C29-09/C29M-09, "*Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate*"
2. ASTM C31/C31M-98 "*Practice for Making and Curing Test Specimens in the Field*"
3. ASTM C39-99, "*Test Method for Compressive Strength of Cylindrical Concrete Specimens*"
4. ASTM C40-04, "*Standard Test Method for Organic Impurities in Fine Aggregates for Concrete*"
5. ASTM C94-94M-00, "*Specification for Ready-Mixed Concrete*"
6. ASTM C117-04, "*Standard Test Method for Materials Finer Than 200 Sieve in Mineral Aggregates by Washing*"
7. ASTM C127-07, "*Standard Test Method for Density, Relative Density, (Specific Gravity) and Absorption of Coarse Aggregate*"
8. ASTM C128-07a, "*Standard Test Method for Density, Relative Density, (Specific Gravity) and Absorption of Fine Aggregate*"
9. ASTM C136-06, "*Standard Test Method for Sieve Analysis of Fine and Coarse Aggregate*"
10. ASTM C138/C138M, "*Test Method for Density (Unit Weight), Yield and Air Content (Gravimetric) of Concrete*"
11. ASTM C143/C143M, "*Test Method for Slump of Hydraulic-Cement Concrete*"
12. ASTM C172-99, "*Standard Practice for Sampling Freshly Mixed Concrete*"
13. ASTM C173/C173M, "*Test Method for Air Content of Freshly Mixed Concrete by Volumetric Method*"
14. ASTM C192-07/C192M-07, "*Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory*"
15. ASTM C231-10/C231M-10, "*Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method*"
16. ASTM C566-97, "*Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying*"
17. ASTM C617-10, "*Standard Practice for Capping Cylindrical Specimens*"
18. ASTM C702-98, "*Standard Practice for Reducing Samples of Aggregate to Testing Size*"
19. ASTM C1064-08, "*Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete*"
20. ASTM C1231-10a/C1231M-10a, "*Standard Practice for Use of Unbonded Caps in Determination of Compressive Strength of Hardened Concrete Cylinders*"
21. ASTM C1611-09be1/C1611M-09be1, "*Standard Test Method for Slump Flow of Self-Consolidating Concrete*"