



Construction Safety Week 2011

New Concrete Requirements Gus Sirakis, PE

April 25, 2011 – NYU Rosenthal Pavilion

Today's Agenda

- **2010 Concrete Unit highlights**
- **Concrete testing requirements & bulletins**
- **TR2 & TR3 filing requirements**
- **Concrete testing exemptions**
- **How deal with testing report issues**
- **Approved Concrete Producer Pilot Program**
- **High-strength steel reinforcement**
- **Concrete section on DOB website**

Concrete Unit

- Launched 2009
- Comprised of licensed professionals, inspectors & attorneys
- Department personnel certified by ACI for field & laboratory testing
- Performs audits at construction sites
- Performs audits in concrete testing laboratories



2010 Unit Highlights

- **220** field audits conducted
- **321** ECB violations issued to concrete testing laboratories, contractors & licensees
- **44** concrete laboratories inspected
- **291** concrete cylinders tested from **49** sites
- **6** lab licenses revoked, denied or surrender

Concrete Testing Requirements



DOB licensed labs are required to:

- Perform mix designs (TR3)
- Sample concrete at construction sites (TR2)
- Perform field tests (TR2)
- Perform laboratory tests (TR2)

Director – PE or RA

ACI Certification Required of Technicians

- Both field and lab testing
- ID cards

Sampling & testing is required once per every 50 cubic yards or once per every 5,000 square-foot of slab or wall

- Minimum once per day of concrete placement
- 2008 Building Code requires that the engineer of record can reduce it to once per 150 cubic yards

Minimum of 5 strength tests per class of concrete

- 2008 Building Code - Average of **two** cylinders
- 1968 Building Code - Average of **three** cylinders

Field Sampling & Testing

Temperature – ASTM C 1064

Slump – ASTM C 143

Unit Weight – ASTM C 138

Air Content – Two acceptable methods:

- Pressure Method – ASTM C 231
 - Not applicable for concrete with light weight aggregates
- Volumetric Method – ASTM C 173
 - Acceptable method for light weight aggregates

Making Cylinders – ASTM C 31



TR₁, TR₂ & TR₃

On October 1, 2009, the Department began accepting only the new 10/09 version of the TR₁, TR₂ & TR₃

Changes to Concrete Design Mix & Concrete Test Cylinder required items:

- Identification of responsibilities & certification of completion have been removed from the TR₁

Concrete		27-603	
Concrete - Precast		27-607	
Concrete - Pre-stressed		27-607	
Concrete Design Mix	■ TR-3	27-605	Submit TR2 to Complete These Items
Concrete Test Cylinders	■ TR-2	27-607a(1)	Submit TR3 to Complete These Items

Submitted prior to permit identifying lab responsible for testing:

- **Laboratory statement & signature**
- **Design applicant statement & signature**
- **Building owner statement & signature**

Submitted prior to sign-off certifying completion:

- **Laboratory statement & signature**
- **Design applicant statement & signature**
- **Concrete producer's statement, signature & NRMCA expiration date**

TR3: Concrete Mix Design

- Required prior to permit
- Up to 3 mixes can be filed on one form
- Additional mixes can be filed subsequently as needed on additional TR3 forms
- Mix Designs can be based on one of two methods:
 - Trial Mixtures
 - Field Experience
- Revised form updated to incorporate more ingredients

TR3: Concrete Mix Design

- Statements required
- Laboratory statement & signature
- Design applicant statement & signature
- Concrete producer's statement & signature & NRMCA expiration date
- Building owner statement & signature



Concrete Requirements

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- **Concrete**
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Concrete

Concrete placed at any building under construction in New York City is required to be tested to ensure it meets the project's structural design requirements. Concrete testing must be performed by a licensed Concrete Testing Lab.

The Department's Concrete Unit performs audits of concrete testing in New York City.

- ▶ [Concrete Testing](#)
- ▶ [Concrete Retesting](#)
- ▶ [Permits that Exclude Concrete Operations](#)
- ▶ [Concrete Bulletins](#)
- ▶ [Concrete Testing Labs](#)

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Concrete Testing (TR2)

Licensed Expired

A B C

Never Licensed

B C

Licensed

C D

A

Evaluation Report

PAA must be filed to file an Evaluation Report in which the applicant of record states that the concrete complies with the specified strength based on a review of the testing results reported by the lab for the particular site

B

Retesting

Under the supervision of the applicant of record per Buildings Bulletin 2009-014. The PAA must be filed to submit the Retesting Report

C

Exemption

Based on the total volume of concrete for the building per BC 1704.4 or BB 2009-026. It must be stated on the plans or in a signed & sealed letter from the applicant of record. The letter must be submitted to the Plan Exam staff

D

Submit the TR2

Concrete Mix Designs (TR₃)

Licensed Expired

A B C

Never Licensed

B C

Licensed

C

A

Evaluation Report

PAA must be filed to file an Evaluation Report in which the applicant of record states that the concrete complies with the specified strength based on a review of the testing results reported by the lab for the particular site

B

Exemption

Based on the total volume of concrete for the building per BC 1704.4 or BB 2009-026. It must be stated on the plans or in a signed & sealed letter from the applicant of record. The letter must be submitted to the Plan Exam staff

C

Submit the TR₃

The 1968 Building Code

Concrete testing required except:

- **AC 27-607, Tables 10-1, 10-2:**
 - Placement of a total of less than 50 cubic yards used at levels of calculated stress 70% or less of the basic allowable values
 - Walls & footings for buildings in occupancy group J-3
 - Private sidewalks, curbs, paving or slabs-on-grade

Any of the above requested waivers must be stated on the plans, signed & sealed by the applicant of record. For approved jobs, a letter from the applicant of record on his/her letterhead, signed & sealed will be accepted.

- **There is no concrete on the jobs.**

BC 1704.4: Special inspections shall not be required for the following when specifically exempted on the approved construction documents:

- **Non-Structural Concrete:** Less than 50 cubic yards
- **Structural Concrete (BB 2009–026):**
 - Less than 50 cubic yards
 - Design stress in concrete < 2,500 psi
 - Concrete specified compressive strength of 4,000 psi or greater
- **Non-structural slabs supported directly on the ground**
- **Concrete foundation(s) for lightweight fences & recreational equipment**
- **Concrete patios, site furnishings, garden walls, driveways, sidewalks & similar construction**

Concrete Testing Audits



Concrete Testing Audits



Concrete Testing Audits



Concrete Testing Audits



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Concrete Testing Audits



Concrete Testing Audits



Concrete Testing Audits



Concrete Testing Audits



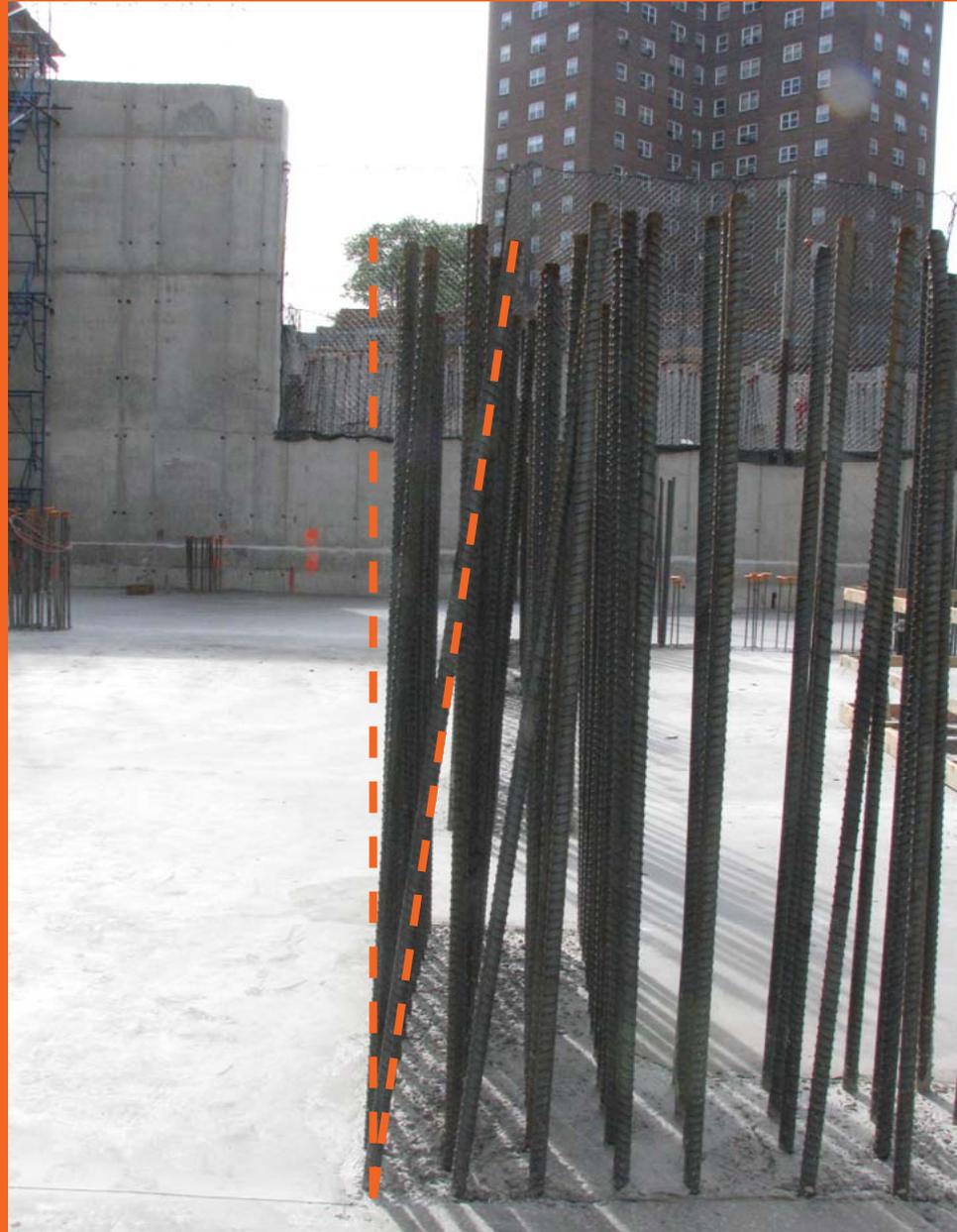
Concrete Testing Audits



Concrete Testing Audits



Concrete Testing Audits



Concrete Testing Audits



High-strength reinforcing steel bulletin

**Approved Concrete Producer Bulletin
(pending)**

Questions?