Unprecedented Partnership

• 400 professionals from every major stakeholder group in the City, including:
  – Architects & Engineers
  – Construction Industry
  – Labor
  – Real Estate
  – Government
• Working together for over 4 years
Local Law 33 of 2007

Signed on July 3, 2007
Time Line

Enactment: July 2007
Effective: July 2008
Mandated: July 2009
New NYC Construction Codes

- For new building construction – Alterations may choose after 7/1/2008
- Three-year revision cycle
- Local Law 33/07 Includes:
  - Building Code
  - Fuel Gas Code
  - Mechanical Code
  - Revised administrative & enforcement provisions
- Local Law 99/05, “the Blue Print Bill,” enacted the Plumbing Code and Administrative provisions
<table>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>(Including Plumbing Code’s Chapter 1, Mechanical Code’s Chapter 1, Fuel Gas Code’s</td>
<td>Title 26 Subchapter 1-4</td>
<td>Title 27 Subchapter 1</td>
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<td>Title 27 Subchapter 4, RS 4-6, TPPN 8/88, 15/88, 22/88</td>
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New Codes Applicability: New Buildings

Permits issued before July 1, 2008?

Yes

1968 Code
New Buildings

Permits issued before July 1, 2008?

No

Application submitted* before July 1, 2009?

Yes

Option 1

Option 2

2008 Code

---

1968 Code**, except that the following must comply with the 2008 Code:

1. Administration, including:
   - Fees
   - Approval of construction documents
   - Issuance of permits
   - Issuance of certificate of occupancy
   - Special inspections
   - Use of materials
2. Enforcement, violations, fines, penalties
3. Safety of public and property during construction (BC Chapter 33)

---

* Submission of application for construction document approval
** In addition, this option remains available only if:
   1. the application is not abandoned;
   2. the work is commenced within 12 months of issuance of a permit, and
   3. the work is diligently carried out to completion
New Buildings

Permits issued before July 1, 2008?

Application submitted* on/after July 1, 2009?

Yes

2008 Code
Alterations to Existing Buildings

Permits issued before July 1, 2008?

Yes

1968 Code
Alterations to Existing Buildings

Permits issued before July 1, 2008?

No

Application submitted* before July 1, 2009?

Yes

Option 2

Option 1

2008 Code**

1968 Code***, except that the following must comply with the 2008 Code:

1. Administration, including:
   - Fees
   - Approval of construction documents
   - Issuance of permits
   - Issuance of certificate of occupancy
   - Special inspections
   - Use of materials

2. Enforcement, violations, fines, penalties

3. Safety of public and property during construction (BC Chapter 33)

* Submission of application for construction document approval

** The 2008 Code cannot be elected where the 2008 Code provisions as applied to the particular building would result in a reduction in fire safety or structural safety. As an alternative, the entire building may be made to comply with 2008 Code

*** In addition, this option remains available only if:
   1. the application is not abandoned;
   2. the work is commenced within 12 months of issuance of a permit, and
   3. the work is diligently carried out to completion
Alterations to Existing Buildings

Permits issued before July 1, 2008?

No

Application submitted* on/after July 1, 2009?

Yes

Option 2

Option 1

2008 Code**

1968 Code, including provisions that allow in certain instances the use of the 1938 Code, except that the following must comply with the 2008 Code:

1. Administration, including:
   - Fees
   - Approval of construction documents
   - Issuance of permits
   - Issuance of certificate of occupancy
   - Special inspections
   - Use of materials
2. Enforcement, violations, fines, penalties
3. Safety of public and property during construction (BC Chapter 33)
4. Plumbing work (PC)
5. Fuel gas work (FGC)
6. Mechanical work (MC)
7. Fire protection (sprinkler, standpipe, alarms) (BC Chapter 9)
8. Elevators, conveyors and amusement (BC Chapter 30)
9. Accessibility for the entire building as if hereafter erected when exceeding 50% of building value or when changing the main use or dominant occupancy (BC Chapter 11)
10. Encroachments into the public right of way (BC Chapter 32)

* Submission of application for construction document approval
** The 2008 Code cannot be elected where the 2008 Code provisions as applied to the particular building would result in a reduction in fire safety or structural safety. As an alternative, the entire building may be made to comply with 2008 Code.
Chapter 16 – Structural Design
Chapter 16 – Structural Design

• Governs the structural design of buildings and structures.
  – Based on:
    • International Building Code (IBC), 2003
    • New York City Model Code Committee, Structural/Foundation Subcommittee modifications
  – Establishes general design Methods:
    • ASD Method
    • LRFD Method
Chapter 16 – Structural Design

• Provides minimum design loads, load combinations, and procedures for determining:
  – Dead Loads
  – Live Loads
  – Snow Loads
  – Wind Loads
  – Earthquake Loads
  – Structural Integrity Loads
  – Flood loads (BC Appendix G, ASCE 24)
  – Serviceability Limits (Deflection, Drift)
Structural Occupancy Category
Section 1604.5

Based on Building Occupancy

- **Category I** – Structures that present a substantially low hazard to human life in the event of failure
- **Category II** – Buildings not listed in Categories I, III, and IV
- **Category III** – Buildings that present a substantial hazard to human life in the event of failure
- **Category IV** – Essential Facilities: Facilities housing Fire, Police, and Emergency Response personnel, Emergency Shelters

<table>
<thead>
<tr>
<th>Str. Occ. Category</th>
<th>Snow ($I_S$)</th>
<th>Wind ($I_W$)</th>
<th>Seismic ($I_E$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>0.80</td>
<td>0.87</td>
<td>1.00</td>
</tr>
<tr>
<td>II</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>III</td>
<td>1.10</td>
<td>1.15</td>
<td>1.25</td>
</tr>
<tr>
<td>IV</td>
<td>1.20</td>
<td>1.15</td>
<td>1.50</td>
</tr>
</tbody>
</table>
Chapter 16 – Structural Design

Section 1608 Snow Loads

- Based on NYC regional climate
- Thermal factors for heated and unheated buildings
- Provisions for snow drifts caused by parapets and adjacent structures
Chapter 16 – Structural Design

Section 1609 Wind Loads

– Based on NYC regional climate value for basic wind speed (V)
  • V = 98 mph

– Exposure Categories
  • Exposure Category A is permitted

– Two Simplified Methods
  • Method I: Based on ASCE 7 simplified method
    – Limited to Low-Rise Buildings (60 feet or less in Height)
  • Method II: Based on RS 9-5 of the 1968 NYC Code
    – Prescriptive Pressures based on height
    – Limited based on Height: 300 ft in Manhattan, 200 ft elsewhere
    – Not allowed within 2000 ft of river, bay or ocean shore line
Earthquake Loads Sections 1613 - 1623

- One- and Two-family homes
  - Exceptions retained for One- and Two-family homes three stories or less in height

- Existing Buildings
  - Subject to the Current Code Requirements for Seismic Retrofit (TPPN #4/1999)
Earthquake Loads Sections 1613 - 1623

- Buildings are assigned Seismic Design Categories (SDC) based on:
  - 1-second and 0.2-second spectral response accelerations
  - Site classification
  - Structural Occupancy Category

- SDC Determines
  - Requirements for Detailing of connections
  - Maximum Building Heights for specific structural systems
  - Minimum design forces for structural elements
  - Seismic resistance requirements of non-structural components
### Seismic Design Categories Section 1616.3

#### Seismic Design Category (Based on NYCBC Minimum Values)

<table>
<thead>
<tr>
<th>Site Class</th>
<th>$S_{DS}$</th>
<th>$S_{D1}$</th>
<th>Structural Occupancy Category (NYCBC Table 1604.5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Hard Rock</td>
<td>0.195</td>
<td>0.038</td>
<td>I &amp; II III IV</td>
</tr>
<tr>
<td>B Rock</td>
<td>0.243</td>
<td>0.047</td>
<td>I &amp; II III IV</td>
</tr>
<tr>
<td>C Very dense soil and soft rock</td>
<td>0.292</td>
<td>0.080</td>
<td>I &amp; II III IV</td>
</tr>
<tr>
<td>D Stiff soil profile</td>
<td>0.367</td>
<td>0.114</td>
<td>I &amp; II III IV</td>
</tr>
<tr>
<td>E Soft soil profile</td>
<td>0.518</td>
<td>0.166</td>
<td>I &amp; II III IV</td>
</tr>
<tr>
<td>F Site-specific analysis required</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note a:** Building structures in Seismic Use Groups I or II and on Site Class E may be designed in Seismic Design Category C if their Fundamental Period of Vibration is not between 1 and 2 seconds or a dynamic structural analysis based on a site specific spectrum is performed.
Structural Integrity Requirements

- Provisions Applicable to all buildings
  - Vehicular Impact
    - Section 1625.5 Design load requirement
  - High-pressure Gas Explosion
    - Section 1625.6 Design requirements
  - Continuity and Ties
    - Requiring additional strength and detailing of members and their connections
    - Steel Construction: Section 2213
      - Structural Steel Members
      - Composite Concrete Slabs on Metal Deck
    - Concrete Construction: Section 1917
      - Cast-In-Place Concrete
      - Precast Concrete
    - Masonry Construction: Section 2114
      - Bearing walls
      - Piers & Columns
Key Element Analysis

- Developed by the Structures/Foundations Subcommittee
- **Key Element**: Structural Member supporting three or more stories, or bracing such a member

Two Design Options

- **Alternate Load Path Method**: Design to prevent a disproportionate collapse assuming a “Key Element” will fail due to an extreme event
- **Specific Local Resistance Method**: Design key elements for code prescribed loads.

- **Structural Peer Review**
  - Required to be performed by a qualified independent structural engineer
Key Element Analysis Required For:

- Buildings more than 600 feet (183 m) tall or more than 1,000,000 square feet (92 903 m²)
- Essential Facilities larger than 50,000 square feet (4645 m²)
- Building with an Aspect Ratio greater than 7
- Buildings taller than 7 stories where one structural member supports more than 15% of the aggregate building area
- Buildings designed using non-linear time history analysis or utilizing special seismic energy dissipation systems (Base Isolation or Dampers)

Peer Reviewer

- Qualified by the Department, based on
  - Experience with similar structures
  - Licensure a NYS Professional Engineer
- Signed and Sealed Peer Review report to be submitted prior to plan approval
- Report scope to include review of plans and specifications for general compliance with the structural and foundation provisions of the NYC Construction Codes
Chapter 17 – Structural Tests and Special Inspections
Chapter 17 Special Inspections

• What are they?
  – Successor to Controlled Inspections
  – Inspections and testing at critical points in the construction process to safeguard against life and safety risks
  – Replace Controlled Inspections July 1, 2008

• What are the changes?
  – Set new and enhanced qualifications and standards
  – Capable of being performed by qualified individuals other than PEs & RAs
Qualifications

• **Special Inspections** can only be performed by **Special Inspectors** working for a **DOB-Approved Special Inspection Agency**

• **Special Inspectors** will be qualified for the specific task which adds safety and quality to construction:
  
  – **Inspection Supervisor**: Typically a Registered Design Professional with the appropriate qualifications based on:
    • Licensure (RA or PE in specific field)
    • Experience relevant to the inspection task
  
  – **Supplementary Inspectors**: may also perform special inspections if performed under the direct supervision of the **Inspection Supervisor**
## Sample Qualifications

<table>
<thead>
<tr>
<th>Special Inspection Category</th>
<th>Inspection Supervisor</th>
<th>Supplemental Inspector (Option 1) Under direct supervision of Inspection Supervisor</th>
<th>Supplemental Inspector (Option 2) Under direct supervision of Inspection Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>• PE or RA; and • 1 year relevant experience</td>
<td>• ACI Certification as Concrete Construction Special Inspector (ACI-CCSI) OR • ICC Certification as Concrete Special Inspector (ICC-CSI)</td>
<td>• ACI Certification as an Associate Special Inspector; and • On-site supervision by Inspection Supervisor, ACI-CCSI, or ICC-CSI</td>
</tr>
<tr>
<td>Masonry</td>
<td>PE or RA; and 1 year relevant experience</td>
<td>• Bachelor’s degree in engineering or architecture; and • ICC Certification as a Structural Masonry Special Inspector; and • 1 year relevant experience</td>
<td>• ICC Certification as a Structural Masonry Special Inspector; and • 2 years relevant experience</td>
</tr>
<tr>
<td>Verification and Inspection</td>
<td>Continuous</td>
<td>Periodic</td>
<td>Referenced Standard</td>
</tr>
<tr>
<td>---------------------------</td>
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</tr>
<tr>
<td>1. Inspection of reinforcing steel, including prestressing tendons, and placement.</td>
<td>___</td>
<td>X</td>
<td>ACI 318:3.5, 7.1 – 7.7</td>
</tr>
<tr>
<td>2. Inspection of reinforcing steel welding in accordance with table 1704.3, Item 5B.</td>
<td>___</td>
<td>___</td>
<td>AWS D1.4 ACI 318:3.5.2</td>
</tr>
<tr>
<td>4. Verifying use of required design mix.</td>
<td>___</td>
<td>X</td>
<td>ACI 318: Ch. 4, 5.2-5.4</td>
</tr>
<tr>
<td>5. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.</td>
<td>X</td>
<td>___</td>
<td>ASTM C 172 ASTM C 31 ACI 318: 5.6,5.8 (Note a,b,c)</td>
</tr>
<tr>
<td>6. Inspection of concrete and shotcrete placement for proper application techniques.</td>
<td>X</td>
<td>___</td>
<td>ACI 318: 5.9, 5.10</td>
</tr>
</tbody>
</table>
New Items

- **New Special Inspections**
  - Mechanical Demolition
  - Seismic Isolation Systems
  - Exterior Insulation Finish Systems (EIFS)
  - Smoke control systems
- **Approved Fabricators**
  - Fabricators performing work subject to special inspection in plant can become certified by DOB as Approved Fabricators in lieu of providing special inspection at plant
  - Approved Fabricators will instead be periodically inspected by approved agency
- **Concrete**
  - Concrete plants and Truck Drivers must be NRMCA certified
Estimated Timeline

- **July 1, 2008**
  - Special Inspection Agencies attest that their staff meet the required qualifications
    - Staff must meet relevant experience, but Certifications must be obtained by July 1, 2009

- **January 1, 2009**
  - Special Inspection Agencies Have to Register with the Department

- **July 1, 2009**
  - All Certifications must be obtained by Special Inspectors

- **July 1, 2010**
  - Special Inspection Agencies must be accredited by a Nationally Recognized program
Chapter 33 – Safeguards During Construction or Demolition
Building Code Chapter 33

• Covers the safety of the public and property during construction and demolition operations

• Mandated July 1, 2008 for ALL CONSTRUCTION

• Replaces Subchapter 19 of the 1968 Code

• Updated Reference Standards
  – Deleted reference to outdated NYS Labor Law
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<td>3306</td>
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<td>Protection of Adjoining Property</td>
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<td>3313</td>
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<td>Structural Ramps, Runways, &amp; Platforms</td>
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<td>3320</td>
<td>Material Handling Equipment</td>
</tr>
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Tenant Protection Plan

• **Section 3303.10 Repair or alteration operations in occupied buildings.**
  – in Work performed in buildings with occupied dwelling units require a tenant protection plan

• **28-104.8.4 Tenant Protection Plan**
  – Establishes the minimum requirements and mandates construction documents

• **1704.19.2 Site structural safety design documents**
  – Mandates design documents prepared by a PE/RA

• **Section 1704.19.5 Special Inspections**
  – Requires Special Inspector for Structural Safety in construction operations to verify compliance with Tenant Protection Plan.
Minimum Tenant Protection Plan Details:

- **Egress:** adequate egress shall be maintained
- **Fire Safety**
- **Health Requirements, including:**
  - Dust control
  - Debris removal
  - Lead & Asbestos
- **Compliance with housing standards:**
  - NYC Housing Maintenance Code
  - NYS Multiple Dwelling Law
- **Structural safety**
  - compliance with Site Structural Safety design documents
- **Noise Restrictions per the NYC Noise Control Code**
Section 3304 Excavations

• Notification of Department: Section 3304.3.1
  – Notification of Department required at least 24 hours in advance, but no more than 48 hours prior to commencement of earthwork operations
  – Exceptions:
    • Hand excavation 5 feet or less, and 2 feet or more from an existing footing, and not in a basement or cellar that adjoin an existing foundation
    • Geotechnical test pits 10 feet or less in plan
    • Burials in cemeteries
    • HPD Emergency Work
Section 3304 Excavations

• Notification of Adjacent Building Owners: Section 3304.3.2
  – Notification to Adjacent Building Owners are required in writing not less than 10 days in advance of certain earthwork operations:

  • Excavations between 5 feet and 10 feet deep, and within 10 feet of an adjacent building
  • All excavations over 10 feet deep

  – Notification must provide:
    • Description of work
    • Timeframe and schedule
    • Contact information of person causing excavation and DOB
Section 3304 Excavations

• Notification of Adjacent Building Owners: Section 3304.3.2
  – Required in writing not less than 10 days in advance of certain earthwork operations:
    • Excavations between 5 feet and 10 feet deep, and within 10 feet of an adjacent building
    • All excavations over 10 feet deep
  – Notification must provide:
    • Description of work
    • Timeframe and schedule
    • Contact information of person causing excavation and DOB
Section 3304 Excavations

• Protection of sides of excavations Section 3304.4

– Excavations 5 feet or greater in depth require protection methods, including:
  • Shoring
  • Bracing
  • Sheeting
  • Sheet piling

– Special Inspection required when protection methods employed

– Alternative: Slope sides of excavation per Soils Report with DOB approval
Section 3309 Protection of Adjoining Property

• Section 3309.4 Responsibility for Protection:
  – The person causing the excavation or fill is responsible to protect adjoining properties, regardless of depth
  – If the adjoining property owner refuses access to person causing excavation, adjacent property owner is responsible for protection and can be issued violations for failing to do so
  – NYS State law already in effect
Section 3309 Protection of Adjoining Property

- Section 3309.3: Physical Examination of adjoining properties is required
  - Prior to commencement of work
  - During the progress of work
- Conditions observed are required to be documented and made available to DOB upon request.
Pre-Construction Survey

Section 3309.4: Pre-construction surveys of adjoining properties are required to be submitted to DOB prior to commencement for:

– Excavations between 5 and 10 feet deep within 10 feet of an adjacent building

– All excavations > 10 feet deep
Section 3306 Demolition

• Categories
  – Full Demolition: the dismantling, razing, or removal of all of a building or structure, and all operations incidental thereto.
  – Partial Demolition: the dismantling, razing, or removal of structural members, floors, interior bearing walls, and/or exterior walls or portions thereof, including all operations incidental thereto.

• The demolition safety requirements apply whenever any demolition operations are being performed, regardless of the permit type issued.
Section 3306.3 Demolition Notification

• **Department Notification**
  – At least 24 hours in advance, but not more than 48 hours prior to commencing either full or partial demolition operations

• **Adjacent property Owners**
  – Written notice at least 10 days in advance of full or partial demolition operations
  – Exception: Partial interior demolition operations, where only hand-held mechanical demolition equipment is used
Section 3306.4 Mechanical Demolition

• The use of mechanical demolition equipment, other than hand-held equipment, in full and partial demolition operations
  – Construction documents shall be filed by a registered Professional Engineer
  – Mechanical Partial and Full Demolition within the building are subject to Special Inspection
Section 3306.5 Demolition Submittals

- Mechanical Demolition – Full or Partial
  - Plans showing extent, sequence, means and methods and compliance with Demo requirements
  - Description of all equipment other than hand-held devices
  - Calculations showing adequacy of the existing structure
  - Bracing and shoring necessary
Section 3306.5 Demolition Submittals

- Partial Demolition – when mechanical means and methods are not used:
  - Plans showing extent, sequence, means and methods and compliance with Demo requirements
  - Bracing and shoring necessary
<table>
<thead>
<tr>
<th>New NYC Construction Code (Building Code Section 3310.2)</th>
<th>Current NYC Building Code (Rules and Regulations Chapter 26 Appendix A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 10 or more stories, or</td>
<td>1. 15 or more stories, or</td>
</tr>
<tr>
<td>2. 125 feet or more in height, or</td>
<td>2. 200 feet or more in height, or</td>
</tr>
<tr>
<td>3. 100,000 ft² or more of lot coverage regardless of height, or</td>
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</tr>
<tr>
<td>4. Any other building as designated by the commissioner</td>
<td>4. Any other building as designated by the commissioner</td>
</tr>
</tbody>
</table>
Section 3310 Major Buildings

• Site Safety Plan, Program and Designation of Site Safety Manager or Coordinator are required for major buildings undergoing:
  – New Construction
  – Full Demolition
  – Façade Alterations needing a sidewalk shed
  – Partial Demolition

• Exceptions:
  – Interior Partial Demo using only hand tools
  – Buildings less than 14 stories, and less than 200 feet tall
## Section 3310.5 Designation of Site Safety Manager or Coordinator

<table>
<thead>
<tr>
<th>Major Buildings:</th>
<th>New Building, Full Demolition</th>
<th>Partial Demolition</th>
<th>Façade Alteration requiring a sidewalk shed</th>
<th>Interior Partial Demolition with no Mechanical Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>•15 Stories or more, •200’ or more, •100,000 SF or more</td>
<td>Site Safety Manager</td>
<td>Site Safety Manager</td>
<td>Site Safety Manager</td>
<td>N/A</td>
</tr>
<tr>
<td>•Less than 15 stories, &amp; •Less than 200’, &amp; •Less than 100,000 SF</td>
<td>Site Safety Manager or Site Safety Coordinator</td>
<td>Site Safety Manager or Site Safety Coordinator</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Visit our Website:
www.nyc.gov/buildings
New NYC Construction Codes
The Foundation for a Safe, Sustainable NYC

ConstructionCodes@buildings.nyc.gov

www.nyc.gov/buildings