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Design Industry Meeting I

New York City Department of Buildings

March 4, 2010

Outline For Today

HRCO Background

Presentation of Proposals

Open Discussion

High-rise Concrete

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High-rise Concrete

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A Review of High-Risk Construction
- High-rise Concrete
- Cranes and hoisting
- Excavations

Motivated by:
- March 15, 2008 crane collapse
- May 30, 2008 crane collapse
- 9 total fatalities

CTLPC is the Program Director
- 5 participating firms
- Over 30 experts
    - Field assessments
    - Industry outreach
    - Design review
    - Regulatory review

High-rise Concrete

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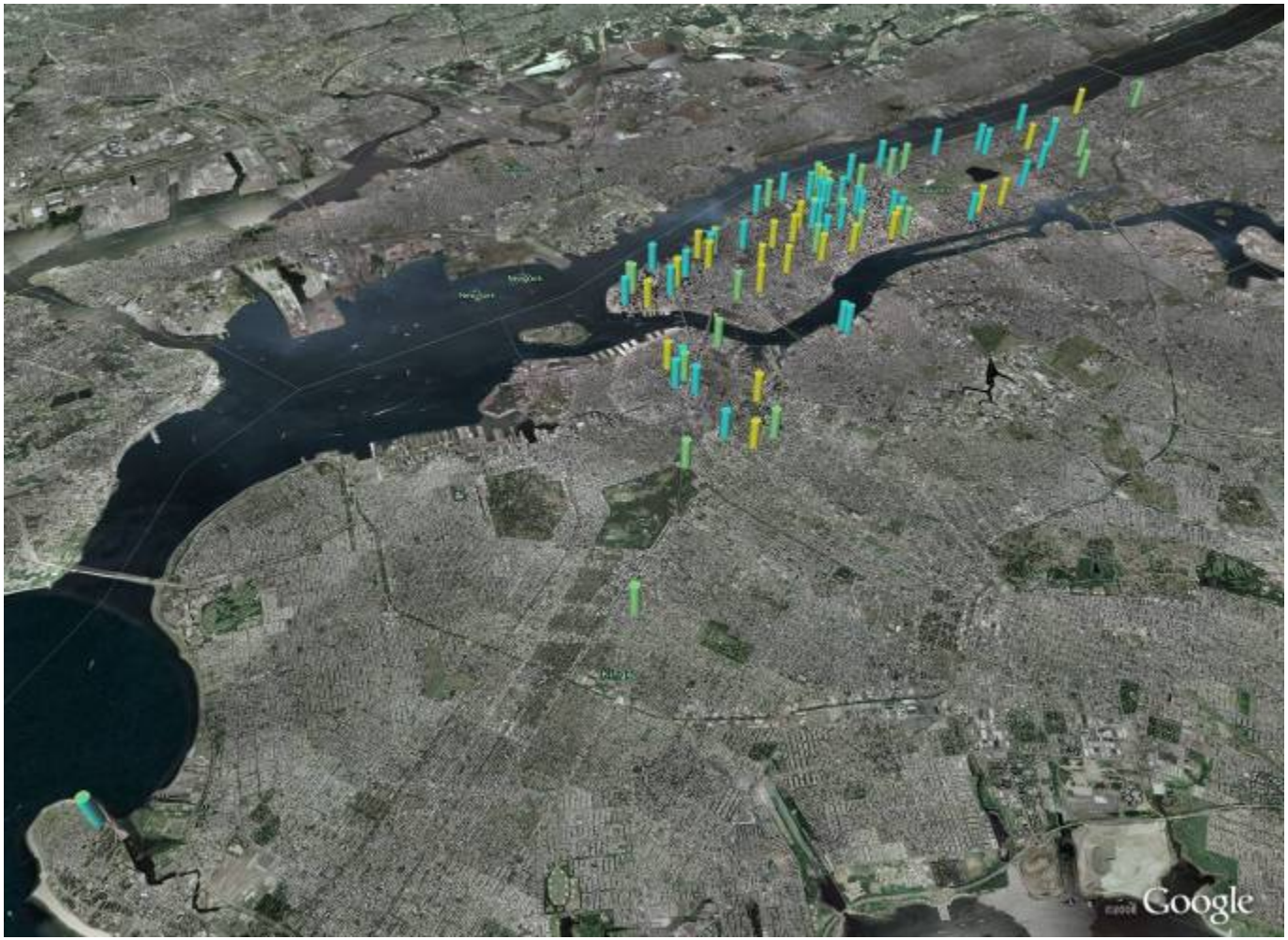

Site Visits

- Union
- Non-Union
- Unknown

High-rise Concrete Formwork

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Short-term Implementation Milestones- Design

- Issue minimum design requirement technical bulletin
- Issue bulletin regarding peer review requirements

Long-term Implementation Milestones- Design

- NYC to hire or procure supplemental peer review and audit engineers

High-rise Concrete Formwork

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Original HRCO Recommendation:

Require a minimum level of information to be included on structural building drawings, including member end reactions, and details with sufficient information to properly convey the design intent.

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Current Industry Standards and References:

- Building Code of New York City
- ACI 318 §1.2
- CRSI
- ACI 315

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Currently Required by NYC Building Code and ACI 318:

- Specified Compressive Strength and Rebar Grade
- Sizes, sections, and locations of structural elements
- Provisions for dimensional changes
- Prestress Forces and stressing sequences
- Anchorage and lap splice details (location, length)
- Mechanical and welded splice details
- Details of contraction and isolation joints
- Slab-on-grade diaphragm action (if any)

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Additional Current New York City Building Code Requirements:

- **Sufficient clarity** (28-104.7.1)
- **Referenced codes** (28-104.7.5)
- **Column loads, and accumulated column loads at each floor** (106.7.4)
- **Truss element forces** (106.7.5)
- **Design loads pertinent to design** (1603.1)
- **Building classification** (106.4)
- **Chemical and sulfate exposure classifications** (1901.4)
- **Maximum Chloride ion concentrations** (1901.4)

High-rise Concrete Overview

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HRCO Proposals

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Proposed Additional Minimum Design Information

Design Drawings to Contain...

1. Member end reactions (link beams, transfer girders, shear walls)
2. Main wind force resisting system element loads
3. Details of RC beam-column joints
4. Details of RC column splices
5. Details of layered reinforcement
6. Precedence for layered reinforcement
7. Details conforming to CRSI and ACI 315

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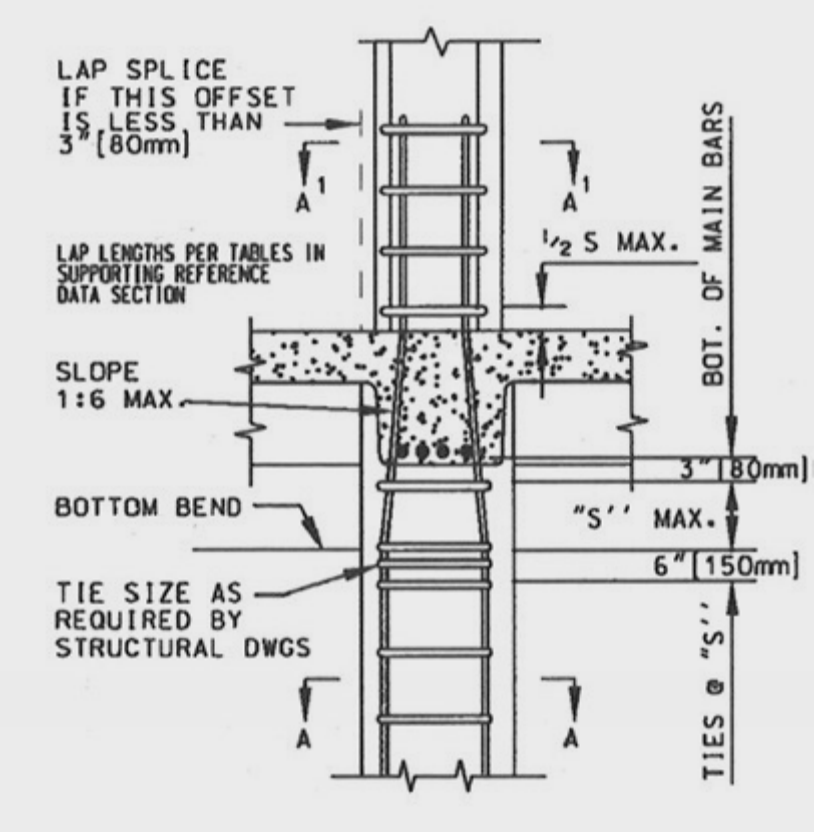

From ACI 315-99

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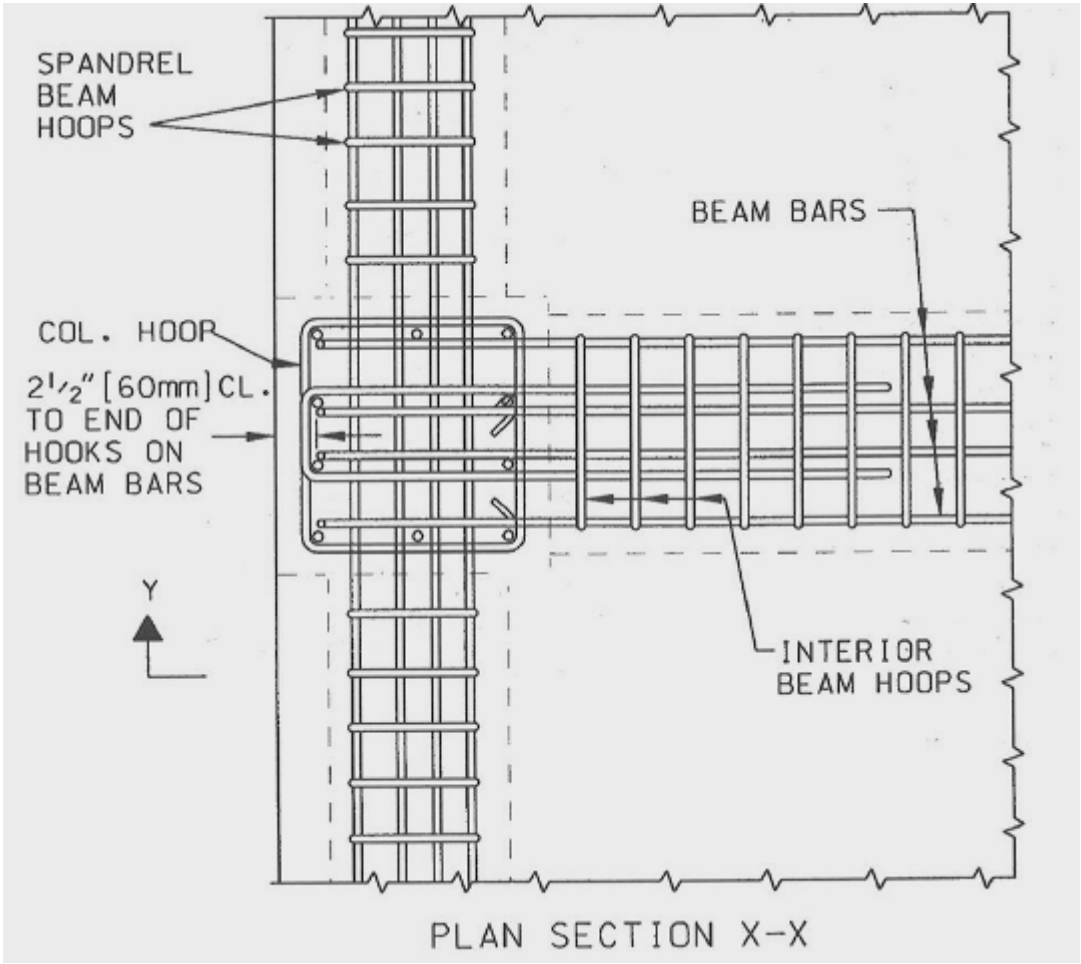

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Proposed Additional Minimum Design Information (Continued)

Design Drawings to Contain...

8. Load Key in plan format, including special loads (e.g. mechanical)
9. Foundation loads and/or capacities
10. Typical bar cut-off details for slabs and beams
11. Adequately detailed sections (see ACI 315)
12. ACI-compliant tie patterns
13. Limitations on construction joint placement

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