High Risk Construction Oversight Study

Implementation Milestones
September, 2009

NYC Buildings

Michael R. Bloomberg
Mayor

Robert D. LiMandri
Commissioner

Implementation Milestones - Concrete

Item	Initiative	0 to 6 months	6 to 12 months	12 to 24 months
Formwork Requirements				Concrete
01	Require essential specification information to be included on stamped formwork designs.	Issue requirements guide and technical bulletin		
02	Require thresholds for the production of stamped and sealed formwork designs to include instances where adjoining structures are used to support formwork.	Issue requirements guide and technical bulletin		
03	Require regular special inspection of formwork and reshore installations preferably by the formwork engineer of record, for structural integrity, conformance to essential specifications and the design intent.	Develop requirements	Promulgate rule with new requirements	Incorporate requirements in construction codes revision
04	Clarify wind design requirements pertaining to formwork to incorporate oblique wind loads. Wind resistant design of formwork should conform with national standards for temporary construction, such as the American Society of Civil Engineers, Design Loads on Structures During Construction. (ASCE 37).			Promulgate rule with new requirements; update requirements guide
05	Require perimeter formwork decking to be positively secured against uplift.	Update requirements guide and issue technical bulletin		
06	Require continual measurement of wind speed and direction during construction at prescribed elevations. Provide an audible early warning system to alert workers to possible wind danger. (*for further study)*			Analyze proposal as part of construction codes revision cycle
07	Conduct wind tunnel studies to observe and characterize wind behavior, and the resulting loads, along the perimeter of a completed concrete forming system. Further, conduct wind tunnel studies to observe and characterize wind behavior, and the resulting loads, throughout the field of a completed concrete forming system. (*for further study)*			Analyze proposal as part of construction codes revision cycle

Implementation Milestones - Concrete

Item	Initiative	0 to 6 months	6 to 12 months	12 to 24 months
General Site Safety				**Concrete**
08	Enhance level of knowledge among DOB inspectors to include qualifications consistent with current NYC Building Code requirements regarding site safety practices, proper concrete formwork installation, and proper shoring and reshoring placement.	Enhance training curriculum and develop training schedule	Provide enhanced training to select inspectors	Continue to provide training to inspectors
09	Update and publish standard sets of inspection protocols to create a consistent and uniform level of enforcement.	Standardize site safety inspection check list	Promulgate rule with new requirements	Develop Standard Operating Procedure guide for site safety inspections
10	Clarify specific house keeping requirements in inspection protocols.	Standardize housekeeping enforcement protocols and inspection checklist	Develop industry guidance document for housekeeping standards	
11	Require site safety personnel's line of accountability to lead to owner (and not to the contractor or CM) to avoid a conflict of interest. (*for further study)*			Analyze proposal as part of construction codes revision cycle
12	Study the effectiveness of enhancing existing netting requirements. (*for further study)*			Analyze proposal as part of construction codes revision cycle
13	Establish requirements for the use of outrigger systems for material handling. (*for further study)*			Analyze proposal as part of construction codes revision cycle
Worker Falls				**Concrete**
14	Implementation of a fall hazard awareness campaign through the use of posters, ads, and training at each jobsite for workers before they are allowed on site.	Initiate safety harness campaign	Develop guidelines with industry for compliance with legislated worker training requirements	

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Worker Falls				**Concrete**
15	Require contractor to document remedial actions taken when workers are identified as non-compliant regarding safety measures, including tie-off requirements. Remedial actions could include additional training sessions, suspension, or removal from job site. (*for further study)*			Analyze proposal as part of construction codes revision cycle
16	Require a "two strikes and you're out" provision to be levied against the contractor in the event the contractor fails to enforce safety regulations and procedures. (*for further study)*			Analyze proposal as part of construction codes revision cycle
Special Inspection and Construction Quality				**Concrete**
17	Strengthen outreach to industry on Special Inspection qualifications, and enforce the requirement that all Special Inspectors are properly registered and/or certified in compliance with NYC Special Inspection Rule requirements.	Conduct outreach; promulgate updated requirements rule	Register special inspection agencies	Require accreditation of special inspection agencies
18	Enhance level of knowledge among DOB inspectors to include qualifications consistent with the current NYC Building Code, specific to ACI Special Inspector training, to promote consistent enforcement of concrete practices, including field testing procedures.	Complete level 1 certification for select inspectors	Expand ACI code requirements training to additional inspectors	Expand ACI code requirements training to additional inspectors
19	Enhance level of knowledge among DOB personnel to include qualifications consistent with the current NYC Building Code, specific to ACI Special Inspector training, and other similar certifications to promote consistent inspection of laboratory practices and conditions.	Complete ACI testing lab training for select inspectors	Expand ACI testing lab training to more inspectors	Expand ACI testing lab training to more inspectors
20	Require documentation through photo and/or video that site bending practice complies with accepted industry standards and tolerances. Conformance may be spot checked by the DOB through inspection of logs and field conditions.	Include in updated special inspection rule	Implement new requirements	Incorporate requirements in construction codes revision
21	Require documentation through photo and/or video that steel placement complies with accepted industry standards and tolerances. Conformance may be periodically spot checked by the DOB through inspection of construction logs and field conditions.	Include in updated special inspection rule	Implement new requirements	Incorporate requirements in construction codes revision

Implementation Milestones - Concrete

Item	Initiative	0 to 6 months	6 to 12 months	12 to 24 months
Plan Review				**Concrete**
22	Retain professional engineers on behalf of DOB to monitor that peer reviews of identified projects are properly conducted as required by the NYC Building Code.	Issue bulletin on peer review requirements	Promulgate rule on peer review requirements	Hire or procure supplemental engineers
23	Require 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.	Issue guide and technical bulletin on minimum structural information requirements		
24	DOB should retain professional structural engineers to review drawings to verify that the minimum level of structural information is contained on each set of structural drawings, shop drawings, and formwork drawings. Information to include requirements contained in ACI publications as noted in current NYC Building Code.		Develop protocol and criteria for reviewing structural drawings	Hire or procure supplemental engineers
25	DOB should retain professional structural engineers to audit and verify that a sufficient, minimum level of details and detailing is included on each set of structural drawings and shop drawings. Minimum level of detailing to comply with requirements of ACI publications as noted in current NYC Building Code.		Develop protocol and criteria for auditing structural drawings	Hire or procure supplemental engineers

Implementation Milestones - Cranes & Hoists

Item	Initiative	0 to 6 months	6 to 12 months	12 to 24 months
Equipment Design				**Cranes & Hoists**
01	Replace the current model-specific Certificate of Approval process with one that approves the manufacturer using predetermined, industry-standard criteria.	Introduce legislation	Develop standards for manufacturer approval	Promulgate rule
02	Require an extensive mechanical crane inspection for all cranes at least every 10 years over the crane's lifetime and potentially an age limitation for operation in the jurisdiction. (*for further study)*			Analyze proposal as part of construction codes revision cycle
03	Have an all-electric tower crane fleet in the jurisdiction by a specified date. (*for further study)*			Analyze proposal as part of construction codes revision cycle
04	Create and implement an Equipment Acceptance Certification program for all hoisting and hoist related equipment employed in the NYC area. (*for further study)*		Identify manufacturer standards that sufficiently cover equipment models	Analyze how to integrate standards into enhanced regulatory framework
Site Specific Design				**Cranes & Hoists**
05	Tie-In connections should be subjected to special inspection and require improved design and erection procedures.	Issue technical bulletin		Incorporate requirements in construction codes revision
06	Foundations should be subjected to special inspection and require improved design and erection procedures.	Issue technical bulletin		Incorporate requirements in construction codes revision
07	The test weights to be used should not exceed the manufacturer's specification or, in case where the manufacturer is not available, the applicable ANSI standard should apply.	Issue technical bulletin		Incorporate requirements in construction codes revision

Implementation Milestones - Cranes & Hoists

Item	Initiative	0 to 6 months	6 to 12 months	12 to 24 months
Site Specific Design				**Cranes & Hoists**
08	Counter weight information should be readily available on the drawing and on the counter weight module itself.	Issue technical bulletin	Develop standards for approval	Incorporate requirements in construction codes revision
09	Require the building engineer of record or an engineer acceptable to the DOB to review that the building can support the loads imposed by the hoist.	Issue technical bulletin		Incorporate requirements in construction codes revision
Crane Operations				**Cranes & Hoists**
10	The city should increase enforce current regulations related to rigging practices, eliminate the practice of “side pulling” loads and improve rigger training courses.	Promulgate rule on rigging practices	Promulgate rule on signalmen	Analyze proposal for riggers and climbing teams as part of construction codes revision cycle
11	The definition of “crane” should be changed so that articulating boom cranes are regarded as a special type of crane. This, in turn, would require each such crane to have an annual inspection (Certificate of Operation) and a licensed operator (HMO).	Issue technical bulletin restricting use of knucklebooms	Develop requirements for regulatory framework	Incorporate requirements in construction codes revision
12	All assembly, climbing and dismantling of a tower crane must include the on-site participation of a Technical Advisor who is one of the following: 1. A representative from the OEM. 2. A qualified, factory trained representative of the distributor / OEM. 3. A qualified, factory trained owner’s representative.			Incorporate requirements in construction codes revision
13	Require a national crane operator certification for Hoisting Machine Operator “C” License Examination and Evidence of Fitness for Duty.	Promulgate rule and implement new requirements		Revise licensing classification in construction codes revision
14	Require all Hoist Machine Operators (HMOs) to have a nationally recognized certificate and ensure each operator has the necessary experience to operate the cranes he uses.		Develop requirements	Incorporate requirements in construction codes revision

Implementation Milestones - Cranes & Hoists

Item	Initiative	0 to 6 months	6 to 12 months	12 to 24 months
Crane Operations				Cranes & Hoists
15	DOB should require a plan review and inspection of custom built hoisting systems that are able to hoist loads exceeding 1 ton. (*for further study)*			Analyze proposal as part of construction codes revision cycle
16	Restrict actions of workers riding on top of cars to limit inherent dangers of working on and in close proximity to moving equipment. (*for further study)*			Analyze field practices to assess underlying causes
Inspections				Cranes & Hoists
17	Allow third party inspectors (inspectors from entities independent from DOB and the crane owner or user) to perform the required annual crane inspections needed for the CD permit.	Introduce legislation	Develop inspector qualifications	Approve inspectors
18	All bolted connections must be checked regularly. Crane maintenance personnel must have basic knowledge about bolt torquing.	Issue technical bulletin		Incorporate requirements in construction codes revision
19	Require the crane user/owner of mobile cranes to notify DOB prior to the start of a job and when the crane will leave the job site. DOB must also be notified if there are changes in the schedule. The notification is required for all jobs that require a Certificate of On-site Inspection.		Promulgate rule	Implement new requirements
20	Adopt the ANSI A10.5 Material Hoist standard. Regularly update regulation to reflect current versions of A10.5 (Material Hoist) and A10.4 (Personnel and Material Hoist).	Finalize requirements	Promulgate rule and implement new requirements	
21	Introduce a “Qualified Hoist Inspection” Program that establishes the requirements and qulaifications of the inspectors performing inspections of temporary personnel and material hoists, as well as the inspection criteria and Drop Test Reports that are filed with DOB after the inspections are performed.	Develop requirements	Promulgate as part of material hoist standards rule	

Implementation Milestones - Cranes & Hoists

Item	Initiative	0 to 6 months	6 to 12 months	12 to 24 months
Maintenance and Repair				**Cranes & Hoists**
22	The Owner must notify DOB of all major structural repairs while the component is actively registered (has CD) or upon renewal if the CD lapsed. All parts (structural and major components) should be replaced with OEM parts or OEM equivalent as determined by the DOB.	Introduce legislation	Implement new repair standards	Incoporate requirements in construction codes revision
23	Increase the written maintenance and inspection log requirements to provide more complete records of the work performed on each crane.	Introduce legislation	Implement new maintenance standards	Incoporate requirements in construction codes revision
24	The DOB should institute a tracking system for major structural components of cranes.	Introduce legislation	Develop tracking requirements and promulgate rule	Implement information sharing system with other jurisdictions
25	The DOB should consider the use of data recording devices that will provide critical information regarding the operation of cranes within the jurisdiction. (*for further study)*			Analyze proposal as part of construction codes revision cycle
26	Introduce and implement an Off-site Hoist Equipment Control Program to check that the equipment is adequate for the intended use. (*for further study)*			Analyze proposal as part of construction codes revision cycle
27	Require that all site locations maintain an On-Site Hoist Equipment Log to standardize record keeping of all pertinent data.	Issue technical bulletin	Integrate requirements into updated crane standards rule	Incoporate requirements in construction codes revision
DOB Operations				**Cranes & Hoists**
28	Assess the various skill sets of the inspectors and plan examiners of the Department of Buildings and provide them the necessary training and tools to complete their tasks effectively and efficiently.	Enhance training for inspectors and obtain certifications for select inspectors	Continue training efforts	Continue training efforts

Implementation Milestones - Cranes & Hoists

Item	Initiative	0 to 6 months	6 to 12 months	12 to 24 months
DOB Operations				**Cranes & Hoists**
29	The Crane and Derrick Division should formalize its incident/accident reporting procedure to ensure each file contains the required information and the inspectors' investigation is organized and thorough.	Develop and implement standard protocol		
30	Develop and install a change process whereby the Cranes and Derricks Division of the Department of Buildings monitors itself and makes adjustments as necessary.	Implement updated quality assurance protocol; Develop enhanced BIS system for cranes data	Launch mobile device field system for inspectors	
31	The DOB should revise of RS 19-2 and seek industry comments.	Introduce legislation regarding maintenance, repair, and certificate of on-site inspection standards	Promulgate rule for updated crane inspection and operation standards	Promulgate updated certificate of approval standards as part of approved manufacturer rule
32	Hoist equipment (Personnel and Material Hoists and Back-Structures) should be subjected to engineering review, permitting and site inspection by a dedicated DOB department.		Develop requirements for standardizing and enhancing cranes and derricks and hoists processes	Implement enhanced procedures

Implementation Milestones - Excavation

Item	Initiative	0 to 6 months	6 to 12 months	12 to 24 months
Design				**Excavation**
01	Excavations which must extend below the bearing level of an existing footing or foundation should be restricted to ensure adequate measures are taken regarding stability of the structure.	Issue technical bulletin	Conduct compliance assessment	
02	DOB should implement a procedural method for permitting underpinning that is differentiated as shallow or deep to better screen these operations for associated safety issues. (*for further study)*			Analyze proposal for potential process and system changes
03	DOB should provide minimum requirements for a preconstruction survey that defines the baseline condition of adjacent and influenced structures on, and surrounding, a project site. A professional engineer should be responsible for submitting the survey.	Promulgate rules and implement new requirements	Introduce legislation for license to access adjoining properties	
04	The excavation, earth retention system, or underpinning designer should identify all influenced structures, and should establish a monitoring program for the construction operation, meeting minimum requirements established by DOB.	Promulgate rule and implement new requirements		
05	Design submittals for excavation, earth retention, or underpinning permits should include sufficient plan, section, and detail drawings as necessary to convey the full intent and scope of the construction. DOB should establish minimum requirements for submittals	Issue technical bulletin	Conduct compliance assessment	Promulgate rule and implement new requirements
06	Require pre-permit technical review of excavation, earth retention system, and underpinning permit designs.	Provide optional pre-permit reviews of submittal documents	Establish standard operating procedure for plan reviews	Implement plan reviews prior to permit
07	The contractor should notify the Department of Buildings a minimum of 24 hours, but no more than 72 hours (3 working days) in advance of the start of underpinning construction. The contractor should also be required to provide the same notification to the underpinning designer and to the responsible agent for special inspections if different from the designer.	Request notification of underpinning activity at time of excavation notification		

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Item	Initiative	0 to 6 months	6 to 12 months	12 to 24 months
Design				**Excavation**
08	Critical inspection information, including the TR1 form and a log of special and progress inspections should be maintained on site for the benefit of the construction parties and DOB.	Promulgate as part of special insepctions rule and implement new requirements		
09	The contractor should schedule an on-site meeting with the designer and special inspector (as applicable) to walk through the planned operation in advance of the start of construction. The contractor should the notify the Department of Buildings of the time and place of the meeting, and attendance by the NYC DOB should be at their discretion.	Issue technical bulletin	Promulgate rule and implement notification process	