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Sponsors:	Stephen T. Levin, Margaret S. Chin, Deborah L. Rose				
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Preconsidered Int. No. 262

By Council Members Levin, Chin and Rose

A Local Law to amend the administrative code of the city of New York and the New York city energy conservation code, in relation to system commissioning.

Be it enacted by the Council as follows:

Section 1. Section 28-1001.2 of the administrative code of the city of New York, as added by local law number 1 for the year 2011, is amended by adding the following New York city amendment to Chapter 1 of the 2010 energy conservation construction code of New York state:

SECTION ECC 106

SYSTEM COMMISSIONING OF COMMERCIAL BUILDINGS

106.1 General. Notwithstanding any other provision of this code, mechanical and related systems, service

water heating and electrical power and lighting systems of commercial buildings shall be commissioned in accordance with Section C408 of the 2012 edition of the International Energy Conservation Code (IECC) published by the International Code Council Inc., as set forth in Section 106.2.

106.2 New York city modifications. Section C408 of the 2012 edition of the International Energy Conservation Code (IECC) published by the International Code Council, Inc., with changes that reflect the unique character of the city, is hereby adopted to read as follows:

SECTION C408

SYSTEM COMMISSIONING

C408.1 General. This section covers the commissioning of building mechanical and related systems, service water heating systems and electrical power and lighting systems of commercial buildings that comply with the provisions of the New York City Energy Conservation Code. Commercial buildings that comply with ASHRAE/IESNA 90.1 as modified by the New York City Energy Conservation Code must also comply with this section.

C408.2 Mechanical and related systems and service water heating systems commissioning and completion requirements. Prior to passing the final mechanical inspection, the registered design professional shall provide evidence of mechanical and related systems and service water heating systems commissioning and completion in accordance with the provisions of this section:

Construction document notes shall clearly indicate provisions for commissioning and completion requirements in accordance with this section and are permitted to refer to specifications for further requirements. Copies of all documentation shall be given to the owner and made available to the department upon request in accordance with Sections C408.2.4 and C408.2.5.

Mechanical systems and service water heating systems shall include but are not limited to, at a minimum, the following heating, ventilating, air conditioning, water heating, indoor air quality and refrigeration systems (mechanical and/or passive) and associated controls:

1. Ducts and associated dampers, duct insulation, and duct system protection as related to indoor air quality.
2. Heating, air handling and distribution, ventilation, and exhaust systems, and their related air quality monitoring systems.
3. Air, water, and other energy recovery systems.
4. Manual or automatic controls, whether local or remote, on energy using systems including but not limited to temperature controls, setback sequences, and occupancy based controls, including energy management functions of the building management system.
5. Plumbing, including insulation of piping and associated valves, and domestic and process water pumping and mixing systems.
6. Service water heating systems and domestic hot water systems.
7. Refrigeration systems.
8. Renewable energy and thermal storage systems.
9. If air-tightness is specified in the commissioning plan, building envelope systems, components and

assemblies (including building envelope pressurization).

10. Other systems, equipment and components that are used for heating, cooling or ventilation and that affect energy use or indoor air quality.

Exception. Such systems in buildings where the total mechanical equipment capacity being installed is less than 480,000 Btu/h (140 690 W) cooling capacity and 600,000 Btu/h (175 860 W) heating capacity are exempt from the commissioning requirements.

C408.2.1 Commissioning plan. A commissioning plan shall be developed by a registered design professional or approved agency and shall include the following items:

1. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities.
2. A listing of the specific equipment, appliances or systems to be tested, their full sequences of operation, and a description of the tests to be performed, including prerequisite activities and reference to specific checklists or worksheets which are necessary or required by the department.
3. Functions to be tested, including, but not limited to, calibrations and economizer controls.
4. Conditions under which the test will be performed. At a minimum, testing shall affirm winter and summer design conditions and full outside air conditions.
5. Measurable criteria for performance.

C408.2.2 Systems adjusting and balancing. HVAC systems shall be balanced in accordance with ASHRAE 111-2008, "Testing, Adjusting and Balancing of Building HVAC Systems" or other standards acceptable to the department. Air and water flow rates shall be measured and adjusted to deliver final flow rates within the tolerances provided in the product specifications. Test and balance activities shall include air system and hydronic system balancing.

C408.2.2.1 Air systems balancing. Each supply air outlet and zone terminal device shall be equipped with means for air balancing in accordance with the requirements of Chapter 6 of the New York City Mechanical Code. Discharge dampers are prohibited on constant volume fans and variable volume fans with motors 10 hp (18.6 kW) and larger. Air systems shall be balanced in a manner to first minimize throttling losses and then, for fans with system power of greater than 1 hp (0.74 kW), fan speed shall be adjusted to meet design flow conditions.

Exception: Fans with fan motors of 1 hp (0.74 kW) or less.

C408.2.2.2 Hydronic systems balancing. Individual hydronic heating and cooling coils shall be equipped with means for balancing and measuring flow. Hydronic systems shall be proportionately balanced in a manner to first minimize throttling losses, then the pump impeller shall be trimmed or pump speed shall be adjusted to meet design flow conditions. Each hydronic system shall have either the capability to measure pressure across the pump, or test ports at each side of each pump.

Exceptions:

1. Pumps with pump motors of 5 hp (3.7 kW) or less.
2. Where throttling results in no greater than five percent of the nameplate horsepower draw above that required if the impeller were trimmed.

C408.2.3 Functional performance testing.

Functional performance testing specified in Sections C408.2.3.1 through C408.2.3.3 shall be conducted.

C408.2.3.1 Equipment.

Equipment functional performance testing shall demonstrate the installation and operation of components, systems, and system-to-system interfacing relationships in accordance with approved plans and specifications such that operation, function, and maintenance serviceability for each of the commissioned systems is confirmed. Testing shall include all modes and sequence of operation, including under full-load, part-load and the following emergency conditions:

1. All modes as described in the sequence of operation;
2. Redundant or automatic back-up mode;
3. Performance of alarms; and
4. Mode of operation upon a loss of power and restoration of power.

Exception: Unitary or packaged HVAC equipment listed in Tables C403.2.3(1) through C403.2.3 (3) that do not require supply air economizers shall only be required to demonstrate functioning under full-load and part-load conditions.

C408.2.3.2 Controls. HVAC control systems shall be tested to document that control devices, components, equipment, and systems are calibrated, adjusted and operate in accordance with approved plans and specifications. Sequences of operation shall be functionally tested to document they operate in accordance with approved plans and specifications.

C408.2.3.3 Economizers. Air economizers shall undergo a functional test to determine that they operate in accordance with manufacturer's specifications for airflow and control.

C408.2.4 Preliminary commissioning report. A preliminary report of commissioning test procedures and results shall be completed and certified by the registered design professional or approved agency and provided to the department and the building owner. The report shall be identified as "Preliminary Commissioning Report" and shall identify:

1. Itemization of deficiencies found during testing required by this section that have not been corrected at the time of report preparation.
2. Deferred tests that cannot be performed at the time of report preparation because of climatic conditions.
3. Climatic conditions required for performance of the deferred tests.

C408.2.4.1 Acceptance of report. Buildings, or portions thereof, shall not pass the final mechanical inspection until such time as the department has received the Preliminary Commissioning Report and a letter of transmittal from the building owner acknowledging that the building owner has received the Preliminary Commissioning Report.

C408.2.5 Documentation requirements. The construction documents shall specify that the documents described in Sections C408.2.5.1 and C408.2.5.2 be provided to the building owner within 90 days of the date of receipt of the certificate of occupancy.

C408.2.5.1 Drawings. Construction documents shall include the location and performance data on each piece of equipment.

C408.2.5.2 Manuals. An operating and maintenance manual shall be provided and include all of the following:

1. Submittal data stating equipment size and selected options for each piece of equipment requiring maintenance.
2. Manufacturer's operation manuals and maintenance manuals for each piece of equipment requiring maintenance, except equipment not furnished as part of the project. Required routine maintenance actions shall be clearly identified.
3. Name and address of at least one service agency.
4. HVAC controls system maintenance and calibration information, including wiring diagrams, schematics, and control sequence descriptions. Desired or field-determined setpoints shall be permanently recorded on control drawings at control devices or, for digital control systems, in system programming instructions.
5. A narrative of how each system is intended to operate, including recommended setpoints.

C408.2.5.3 System balancing report.

A written report describing the activities and measurements completed in accordance with Section C408.2.2.

C408.2.5.4 Final commissioning report. A report of test procedures and results identified as "Final Commissioning Report," including the "System Balancing Report," shall be delivered to the department and the building owner within 18 months of the receipt of the certificate of occupancy and shall include:

1. Results of functional performance tests.
2. Disposition of deficiencies found during testing, including details of corrective measures used or proposed.
3. Functional performance test procedures used during the commissioning process including measurable criteria for test acceptance, provided herein for repeatability.

Exception: Deferred tests which cannot be performed at the time of report preparation due to climatic conditions.

C408.3 Lighting system functional testing. Controls for automatic lighting and shading systems shall comply with Section C408.3.

C408.3.1 Functional testing. Testing shall ensure that control hardware and software are calibrated, adjusted, programmed and in proper working condition in accordance with the construction documents and manufacturer's installation instructions. The construction documents shall state the party who will conduct the required functional testing. Where required by the department, an approved party independent from the design or construction of the project shall be responsible for the functional testing and shall provide documentation to the department certifying that the installed lighting controls meet applicable requirements.

Where occupant sensors, time switches, programmable schedule controls, photosensors or daylighting controls are installed, the following procedures shall be performed:

1. Confirm that the placement, sensitivity and time-out adjustments for occupant sensors yield acceptable performance.
2. Confirm that the time switches and programmable schedule controls are programmed to turn the lights off.
3. Confirm that the placement and sensitivity adjustments for photosensor controls reduce electric light

based on the amount of usable daylight in the space as specified.

§ 2. This local law shall take effect on July 1, 2014.

JCH
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