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Title: A Local Law to amend the administrative code of the city of New York, in relation to the allowable maximum heat loss through building walls.

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Indexes:

Attachments: 1. Summary of Int. No. 184, 2. Committee Report 4/2/14, 3. Hearing Testimony 4/2/14, 4. Hearing Testimony 4/2/14 (Con't), 5. Hearing Transcript 4/2/14

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Int. No. 184

By Council Members Chin, Johnson, Koo, Levine, Mendez, Rose, Constantinides, Rodriguez, Lancman, Torres, Vallone, Reynoso, Koslowitz, Crowley, Kallos, Levin, Van Bramer and Miller

A Local Law to amend the administrative code of the city of New York, in relation to the allowable maximum heat loss through building walls.

Be it enacted by the Council as follows:

Section 1. Statement of findings and purpose. The thermal performance of the exterior walls of a building has a significant impact on the energy use of the building over a long period of time. This is because the building envelope is replaced infrequently, unlike other energy systems, such as lighting or HVAC equipment, that have much shorter useful lives. Presently, the national model energy codes do not explicitly require the designer to account for certain common thermal bridges in buildings, including floor slabs, shelf

angles and mechanical wall penetrations.

The proposed legislation mandates heightened thermal performance of exterior walls by requiring (1) inclusion of thermal bridging of exterior walls at floor slabs and mechanical equipment penetrations as part of the calculation of the U-factor of the opaque wall, and (2) minimization of air leakage at mechanical penetrations.

§ 2. Section 28-1001.2 of the administrative code of the city of New York is amended to read as follows:

Chapter 2 -- Definitions

Section 202

Add a new definition of "Mechanical wall penetration" after the definition of "Manual," to read as follows:

MECHANICAL WALL PENETRATION. An opening in an *exterior wall* filled by a piece of heating, ventilating and/or air conditioning (HVAC) equipment.

Add a new definition of "Window wall" after the definition of "Ventilation air," to read as follows:

WINDOW WALL. Panelized cladding or *fenestration* products used to create an external nonload-bearing wall that is designed to separate the exterior and interior environments and that rests on the floor slab instead of hanging from it.

Chapter 5 - Commercial Energy Efficiency

Table 502.1.2 Add after "Metal framed" the following symbol: [b]

Add after "Walls, Above Grade" the following symbol: [c]

Add after the table 502.1.2 footnotes to read as follows:

[b] The opaque elements of *curtain walls* and *window walls*, including spandrel panels, are included in this category. Horizontal framing members between opaque elements and vision glazing must be included in the *fenestration* calculation (See Section 502.3).

[c] Slab edges and shelf angles must be included in all *above grade wall U-factor* calculations. Exposed slab

edges are to be considered mass walls with a horizontal dimension equal to the horizontal dimension of the thicker of the adjacent *exterior walls*.

Table 502.2(1) Add after "Metal framed" the following symbol: [f]

Add after "Walls, Above Grade" the following symbol: [g]

Add after the table 502.2(1) footnotes to read as follows:

[f] The opaque elements of *curtain walls* and *window walls*, including spandrel panels, are included in this category. Framing members for vision glazing and framing members between opaque elements and vision glazing are not included as part of the opaque assembly.

[g] In this table slab edges and shelf angles are considered to be part of the opaque assembly. Where continuous insulation is required, the c.i. must cover all exposed surfaces of the slab and must not be interrupted by a shelf angle, even if the slab edge is the only opaque wall element. Exposed slab edges are to be considered mass walls with a horizontal dimension equal to the horizontal dimension of the thicker of the adjacent *exterior walls*.

Add a new Section 502.2.3.1 to read as follows:

502.2.3.1 ***Mechanical wall penetrations*** **in** ***above grade walls*****.** The *U-factor* and/or *R-value* of *mechanical wall penetrations* and other wall penetrations, including intake or exhaust louvers, HVAC equipment, and the through-the-wall sleeves built into the wall into which the equipment is inserted, must be included when calculating the *U-factor* or *R-value* of the total wall assembly of an *above grade wall* in determining compliance with either Table 502.2(1) or Table 502.1.2.

502.2.3.1.1 Determination of *U-factors* and *R-values* for *mechanical wall penetrations* in *above grade walls*. The *U-factor* of a *mechanical wall penetration*, including the HVAC equipment, louvers, and the through-the-wall sleeve built into the wall into which the equipment is inserted, shall be assumed to be 0.5 Btu/hr-ft^2-^{o}F (or an *R-value* of 2.0 hr-ft^2-^{o}F/Btu), or as certified by the manufacturer in accordance with standards established by rules of the department.

502.4.3 Add a new item 5 to read as follows:

5. Through-the-wall penetrations for mechanical equipment and intake or exhaust louvers shall be sealed between the sleeve and the adjacent wall assembly to maintain the integrity of the continuous air barrier.

Add a new Section 502.4.8 to read as follows:

502.4.8 HVAC assemblies in *mechanical wall penetrations*. The air leakage of HVAC assemblies, comprising both the HVAC unit itself and the wall sleeve into which it is inserted, that are part of the *building thermal envelope*, shall not exceed 0.2 cfm/sq. ft. of penetration area at a pressure of at least 1.57 pounds per square foot (psf) (1.0 L/s/m^2 of penetration area). Installations are subject to inspection in accordance with the rules of the department.

Appendix A - Modified Energy Standard

Chapter 3 - Definitions, Abbreviations, and Acronyms

3.2 Add a new definition "curtain wall" after "cooling design wet-bulb temperature" to read as follows:

curtain wall: *fenestration* products used to create an external nonload-bearing wall that is designed to separate the exterior and interior environments.

Add a new definition "mechanical wall penetration" after "mechanical cooling" to read as follows:

mechanical wall penetration: an opening in an exterior wall filled by a piece of heating, ventilating and/or air conditioning (HVAC) equipment.

Add a new definition "window wall" after "water heater" to read as follows:

window wall: panelized cladding or *fenestration* products used to create an external nonload-bearing wall that is designed to separate the exterior and interior environments and that rests on the floor slab instead of hanging from it.

Chapter 5 - Building Envelope

5.4.3.1 Reletter item g as item h and add a new item g to read as follows:

g. *mechanical wall penetrations*

Add a new Section 5.4.3.5 to read as follows:

5.4.3.5 HVAC Assemblies in *Mechanical Wall Penetrations*. The air leakage of HVAC assemblies, comprising both the HVAC unit itself and the wall sleeve into which it is inserted, that are part of the *building envelope*, shall not exceed 0.2 cfm/sq. ft. of penetration area at a pressure of at least 1.57 pounds per square foot (psf) (1.0 L/s/m^2 of penetration area).

Add a new Section 5.5.3.7 to read as follows:

5.5.3.7 *Mechanical Wall Penetrations*. The *U-factor* of any *mechanical wall penetration*, including HVAC equipment and the through-the-wall sleeve built into the wall into which the equipment is inserted, must be included when calculating the *U-factor* of the total wall assembly of an *above-grade wall* in determining compliance with Table 5.5-4. Where thermal performance data are not available, the *U-factor* of the penetration, including the HVAC unit and the through-the-wall sleeve, shall be assumed to be 0.5 Btu/hr-ft^2-^{o}F (or an *R-value* of 2.0 hr-ft^2-^{o}F/Btu).

Table 5.5-4 Add after "*Walls, Above-Grade*" the following symbol: [e]

Add after "Steel-Framed" the following symbols: [f] and [g]

Add after the table 5.5-4 footnotes to read as follows:

[e] Slab edges must be included in all *above-grade wall U-factor* calculations. Exposed slab edges are to be considered *mass walls* with a horizontal dimension equal to the horizontal dimension of the thicker of the adjacent exterior walls.

[f] *Curtain wall* and *window wall* opaque elements, including spandrel panels, are included in this category.

[g] In this table slab edges are considered to be part of the opaque assembly. Where continuous insulation is required, the c.i. must cover all exposed surfaces of the slab even if the slab edge is the only opaque wall element.

§ 3. This local law shall take effect on January 1, 2015 except that the commissioner of buildings shall take such measures as are necessary for its implementation, including the promulgation of rules,

prior to such effective date.

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