EF 9: ENSURE OPERABLE WINDOWS IN RESIDENTIAL BUILDINGS

New York City Building Code; New York City Health Code
Proposal developed by the Climate Adaptation Committee

Summary

Issue:
Operable windows permit cooling without power, which saves energy and allows buildings to remain habitable during power outages. Builders have misinterpreted Health Code regulations to limit window openings to 4.5 inches, which is inconsistent with the Building Code.

Recommendation:
DOB should require documentation showing that residential properties provide window openings as required by code, counting only the actual area that can be opened with window stops, if stops are provided.

Proposed Legislation, Rule or Study

Amendments to the New York City Building Code:

1. Amend Section 1203.4.1 as follows:

1203.4 Natural ventilation. Natural ventilation of occupiable and habitable space shall be through openings to the outdoors. The openings shall be of a type permitted under Sections 1203.4.1.1, 1203.4.1.2, 1203.4.1.3 and 1203.4.1.4. The operating mechanism for such openings shall be provided with ready access so that the openings are readily controllable by the building occupants. Compliance of all permitted openings with this section shall be demonstrated in a form acceptable to the commissioner.

Amendments to New York City Health Code:

1. Add a new paragraph (6) to subdivision G of Section 12-10 as follows:

6. Notwithstanding the requirements of this section, stops shall not limit the openable area to less than the minimum required by Section 1203.4.1 of the New York City Building Code and Section 27-2058 of the New York City Housing Maintenance Code.

2. Add a new paragraph (3) to subdivision B of Section 12-11 as follows:

3. Notwithstanding the requirements of this section, stops shall not limit the openable area to less than the minimum required by Section 1203.4.1of the New York City Building Code and Section 27-2058 of the New York City Housing Maintenance Code.

Supporting Information

Issue - Expanded
For many years the New York City Building Code has required naturally ventilated buildings to provide a minimum openable area to the outdoors that is equivalent to 5 percent of floor area. Buildings that mechanically supply fresh air into habitable spaces must also provide openable windows (though the minimum operable area required is reduced to 2½ percent of the floor area if a minimum of 40 cubic feet per minute of fresh air is supplied). The advantage of natural ventilation is that it does not use energy or fail during blackouts.

In 1976, in response to children accidentally falling out of apartment windows, the New York City Department of Health and Mental Hygiene enacted Window Guard Regulations to require landlords, building managers or owners (in condominium units) to install window guards and/or stops. They are required in all windows of apartments where
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Children 10 years or younger reside, except at fire escapes, and must reject the passage of a solid 5 inch sphere. This is straightforward for some windows as guards on double hung windows are now common in the city. Depending on the configuration, some pivot windows present particular complications for using guards, in which case window stops must be installed to prevent the window opening beyond 5 inches.

Window stops are inexpensive, simple to install and not unsightly as are guards. For these reasons, many developers are installing all windows with stops in order to comply with the Department of Health, whether or not children reside in the apartment. Even manufacturers of double hung windows are incorporating them as an option in the window assembly.

Windows with stops, however, do not provide the amount of ventilation required under the Building Code. While tenants or owners of apartments without children 10 years or younger can remove window stops, those with children 10 years or younger cannot. Moreover, the use of stops has grown more widespread as recent residential construction has incorporated large fixed expanses of glass with minimal openings, increasingly turning to pivot-style windows.

There is a lack of coordination between the window requirements in the Health and Building codes. Windows are being installed that open a maximum of 5”, resulting in less available ventilation than the Building Code requires.

Environmental & Health Benefits
Before mechanical means, natural ventilation via windows and skylights was the only way to flush stale, hot or dirty air out of an interior space and New York City’s ground-breaking Tenement House Act of 1901 ensured that all apartments would have access to fresh air and natural light. Operable windows are still the most efficient way to provide fresh air and the NYC Building Code still requires that residential spaces have operable windows.

Using natural ventilation can substantially reduce energy use, especially during spring and fall when the temperature and humidity match human comfort levels.

This proposal was found to have a low, positive environmental impact per building and to impact a small number of buildings. It was thus given an environmental score of 1.

This proposal was found to have a low positive health impact per building and to impact a small number of buildings. It was thus given an health score of 1.

Cost & Savings
As described in the Executive Summary, Bovis Lend Lease prepared cost estimates for each Task Force proposal in the context of well-defined construction projects in specific buildings. Where possible, members of the Technical Committees prepared savings estimates for some of these projects and buildings. These cost and savings estimates are presented in the February 1st draft version of Appendix A. The innate uncertainty in how construction and operation will vary from one building to another, the complexity of the Task Force proposals, and the wide range of applications in which the proposals may be realized mean these figures are truly estimates.

This proposal is not expected to have any significant impact on capital costs.

Precedents
This proposal clarifies existing regulations under New York City law.

LEED
All projects pursuing LEED certification must meet minimum indoor air quality performance (AE Prerequisite 1), in conformance with ASHRAE Standard 62.1-2004. Buildings that are not mechanically ventilated are required in Section 5.1 to have all naturally ventilated spaces permanently open to and within 25 feet of operable wall or roof openings and that the opening area be at least 4% of the net occupiable floor area.

Implementation & Market Availability
Marvin Windows manufactures all of its sashes with optional limiters that are installed in the field. They can be removed with normal tools. Pella Windows produces vent stops for their double hung windows only. The vent stops can be popped out and are not tamper proof. Their double hung windows require guards or stops as per the requirements of the Department of Health.

ENDNOTES:
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1 City of New York, NY, Housing Maintenance Code §1203.4.1.2 (2009) available at http://www.nyc.gov/html/dob/downloads/pdf/cc_chapteri2.pdf. (The minimum operable area to the outdoors shall be 5 percent of the floor area of the habitable space to be ventilated. Every opening providing required natural ventilation shall be at least 12 square feet, providing a minimum of six square feet of openable space. Exceptions: 1. Where fresh air is furnished in any habitable room or space by mechanical means supplying a minimum of 40 cubic feet per minute, the free openable area of the openings may be reduced to 2 ½ percent of the floor area but each such opening shall provide not less than 5 ½ square feet of openable area. 2. The minimum free openable area of a mullioned casement window shall be 5 ½ square feet provided that the minimum ratio of floor area to operable area is met; City of New York, NY, Housing Maintenance Code § 27-2058(c) (2009) available at http://www.nyc.gov/html/dob/downloads/pdf/cc_chapteri2.pdf. (1. The total area of all windows in the room shall be at least one-tenth the floor area of such room... 3. At least one-half of every required window shall open, except that for a mullioned casement window a minimum of five and one-half square feet is sufficient. In a room where a centralized mechanical ventilating system provides forty cubic feet of air per minute, twenty-five percent of the window area or five and one-half square feet of such area, whichever is greater, shall be operable).

2 City of New York, NY, Housing Maintenance Code § 12, (2009). (Requires the installation of window guards “on all windows except fire escape access windows and secondary egress windows in first floor apartments, where the fire escapes are on the upper floors. Choice of unguarded window is optional in latter cases.” Section 12-10 specifies that window guards must be at least 15 inches high and capable of rejecting “the passage of a solid five (5) inch sphere at every space and interval.” That section also requires the installation of stops to prevent “the lower window from being raised more than 4 ½ inches above the lowest section of the top horizontal bar of the window guard.”).


iv Telephone Interview with Doug Andersen, Technical Staff, Marvin Windows (June 10, 2009).

v Telephone Interview with Mr. Cricket, Technical Staff, Pella Windows (June 10, 2009).