



BUILDINGS 2020-021 BULLETIN O T C R

ISSUANCE DATE
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EFFECTIVE DATE: Immediately to applications submitted after issuance date

PURPOSE: This document establishes evaluation criteria for glazing systems used for dry floodproofing in special flood hazard areas (“flood-resistant glazing systems”) designed to meet the definition of “substantially impermeable” and to resist site-specific loads pursuant to ASCE 24.

SUBJECT(S): Special floor hazard areas, dry floodproofing, glazing systems; Substantially impermeable

RELATED CODE SECTIONS: BC G104.5.1, BC G304.1.2(2), BC G105.3, BC G501.1, BC G106.4

I. Background

Section G304.1.2 of Appendix G of the 2014 NYC Building Code and ASCE 24 Section 6.2 allow post-FIRM new structures and substantial improvements that are nonresidential (for flood zone purposes) to be dry floodproofed, provided the structures are dry floodproofed to the design flood elevation specified in ASCE 24, Table 6-1 as modified by Appendix G.

The NYC Construction Codes do not prescribe evaluation criteria for glazing systems for dry floodproofing in special flood hazard areas.

This bulletin establishes acceptance criteria for flood-resistant glazing systems that are designed to meet the requirements of dry floodproofing. Acceptable flood-resistant glazing systems must comply with the conditions of this bulletin.

II. Description

Flood-resistant glazing systems may include, but are not limited to, aluminum and protected steel framing, steel reinforcing, water stop gaskets, laminated glass, insulated laminated glass and sealants.

This Buildings Bulletin is not intended to address the following systems: temporary flood shields, flood walls, emergency measures and opening barriers.

III. Uses

Flood-resistant glazing systems are used for dry floodproofing nonresidential (for flood zone purposes) applications up to the design flood elevation. Applications include storefronts at-grade or below the design flood elevation, where solid masonry or concrete impermeable walls are undesirable.

Restriction: Dry floodproofing is not a permitted option for residential (for flood zone purposes) buildings or for structures in the V-Zones.

IV. Evaluation Scope

NYC Construction Codes

V. Evaluation Criteria

Pursuant to AC 28-113.2.2, 28-103.9 and 28-103.10, the Office of Technical Certification and Research (OTCR) recognizes flood-resistant glazing systems that are tested and evaluated in accordance with ANSI/FM 2510 *American National Standard for Flood Abatement Equipment*.⁴

OTCR shall evaluate and approve acceptable flood-resistant glazing systems in accordance with the Conditions of Acceptance, Section A Submittal Requirements and shall comply with the conditions of this bulletin.

VI. Conditions of Acceptance

Acceptable flood-resistant glazing systems shall be designed, installed, inspected, and labelled in accordance with the NYC Construction Codes, and the following provisions:

A. Submittal Requirements

In order for a glazing system to qualify as “substantially impermeable” to the passage of water in accordance with ASCE 24, applicants must submit construction documents that conform with AC 28-104.7 of the 2014 NYC Administrative Code and the following information to OTCR (280 Broadway, 7th Floor, New York, NY 10007, Attn: Office of Technical Certification and Research):

1. OTCR 2 Site-Specific Approval Application
2. Supporting documentation:
 - a. Pursuant to AC 28-113.3.1, product evaluation results from a third-party, approved testing agency to ANSI/FM 2510;
 - b. All documentation must specify the site’s design flood elevations as required by BC Appendix G;
 - c. A registered design professional must sign and seal site-specific data, including calculations based on debris impact, and hydrostatic and hydrodynamic loads per ASCE 7 formulas;
 - d. Infiltration calculation must be based on the infiltration rate determined in testing. The water depth must be calculated based on the area of the building expected to experience infiltration. The calculations must indicate the expected height of water accumulation not to exceed 4 inches in a 24-hour period. Sump pumps shall not be relied upon for maintaining a depth of water at or below 4 inches;
 - e. The structural engineer of record must submit a letter that contains:
 - A statement that the structural engineer of record has reviewed the test data for the proposed glazing system and that the results are acceptable.
 - The letter must also state that the scope of testing is consistent with, or more rigorous than, the anticipated conditions at the site.
 - A certification analogous to the requirements of Section III of FEMA’s Floodproofing Certificate for Non-Residential Structures Form 086-0-34, modified as necessary for the design conditions.
 - The construction documents shall include a scanned image of the statement on the drawing detailing the flood resistant glazing system.
 - f. The registered design professional must identify the flood zone compliance special inspection. The plans must indicate that a special inspector will perform periodic inspections throughout the installation of the system.
 - g. The Schedule A must indicate the products specified for the system per BC G106.4, and include a description of the location in which the system is installed, (e.g. “x square feet along east façade”);
 - h. Detail drawings of proposed system and system tested with corresponding model numbers;
 - i. Documentation from the manufacturer that indicates all required maintenance for the system.
 - j. A letter from the building owner which acknowledges that use of flood-resistant glazing may impact the building’s flood insurance premiums.

B. Design

Flood-resistant glazing systems shall be designed in accordance with the site-specific flood elevations specified in ASCE 24 and the flood loads specified in ASCE 7.

C. Installation Requirements

1. The installation of flood-resistant glazing systems must comply with applicable sections of the NYC Construction Codes, and the manufacturer's instructions.
2. Flood-resistant glazing systems must meet all applicable requirements for exterior walls in accordance with BC Chapter 14.
3. The product installed must be the product approved, tested and accepted in accordance with this bulletin. Any substitutions, or deviations from the assemblies OTCR approves, require separate testing and review by the Department.

D. Special Inspections

1. Pursuant to BC Section 1704.29 and G105.3(2) of the 2014 NYC Building Code, the installation of flood-resistant glazing systems is subject to flood zone compliance special inspections. Glazing systems used in dry floodproofing in special flood hazard areas are subject to periodic inspections during installation.

E. Labeling

Flood-resistant glazing systems used for dry floodproofing in special flood hazard areas must be labeled in accordance with AC 28-113.4. A certificate or label certifying that the materials shipped or delivered are equivalent to those tested and approved must accompany all shipments and deliveries of materials.

REFERENCED STANDARDS

1. ASCE/SEI 24-05 *Flood Resistant Design and Construction*
2. ASCE/SEI 7-10 *Minimum Design Loads for Buildings and Other Structures*
3. FEMA Technical Bulletin 3-93 *Non-Residential Floodproofing – Requirements and Certification- for Buildings Located in Special Flood Hazard Areas in Accordance with the National Flood Insurance Program*
4. ANSI/FM 2510 *Flood Abatement Equipment Test Standard*