



BUILDINGS 2023-006 BULLETIN O T C R

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PURPOSE: This document clarifies the procedure to obtain approval from the Department for the use of non-sidewalk level pedestrian protection such as containment netting as an alternative to sidewalk sheds. Conditions which are appropriate for the use of containment netting are also outlined.

SUBJECT(S): Safety netting systems; Safeguards during construction or demolition

RELATED CODE SECTIONS

BC 106.8.1, BC 106.8.2, BC 202, BC 1705.37, BC 3307.1, BC 3307.6.2, AC 28-105.4.1, AC 28-113

I. BACKGROUND

NYC BC section 3307.1 requires that pedestrians be protected from unsafe conditions that may occur during construction and demolition activities. In addition, for existing buildings with unsafe exterior wall conditions, public protection is required.

For construction and demolition related projects, sidewalk sheds and fences are the primary Code-prescribed means of providing protections for pedestrians. In certain instances, containment netting may be a viable alternative to a sidewalk shed until permanent repairs can be performed. Because containment netting is not Code-prescribed its use must be treated as an alternative material which per AC 28-113 requires review and approval by the Department.

II. DESCRIPTION

Containment netting systems are used for the temporary containment of debris from construction activities, or to prevent unsafe and deteriorating façade conditions from creating a hazard to pedestrians, providing temporary non-sidewalk level pedestrian protection until a time where permanent repairs can be made. Containment netting is installed at the location and source of such conditions.

Section BC 202 defines safety netting systems, structural netting, and debris netting as follows:

SAFETY NETTING SYSTEM (SAFETY NETTING). Debris or structural nets installed vertically or horizontally, along with all supports, components, and connections.

Horizontal safety netting. A safety netting system, installed horizontally, consisting of structural netting lined with debris netting.

Vertical safety netting. A safety netting system, installed vertically, consisting of debris netting.

STRUCTURAL NET (STRUCTURAL NETTING). A system of nets capable of complying with the prototype test described in ANSI A10.11.

DEBRIS NET or NETTING. A netting of a fine mesh of a size and strength sufficient to catch debris, such as falling tools and materials.

For the purposes of this Bulletin, containment netting shall consist of a structural netting lined with debris netting (dual-layer construction) joined by a webbing to provide maximum strength. Safety netting is not used as containment netting.

III. USES

Installation of containment netting (or containment netting systems), in lieu of sidewalk shed installation, may be considered only when such containment netting is specifically used to provide adequate public protection at overhead conditions; and is necessary for the containment of overhead conditions, such as displaced, deteriorated, or loose facade materials including but not limited to:

- brick
- terra cotta
- natural stone
- metal overhanging cornice assemblies and
- parapet copings

During netting installation, netting removal and condition repair/replacement periods, or during removal of unsafe materials, adequate public safety measures deemed necessary to ensure the safety of the public and not cause undue exposure to pedestrians are required and may include but not be limited to temporary closure of the sidewalk, catchment netting, guards, fencing and/or sheds.

Restrictions

Containment netting shall not be used in lieu of sidewalk sheds required in accordance with BC 3307.6.2.

IV. ACCEPTANCE CRITERIA

AC 28-113.2.2 requires alternative materials to comply *'with the intent'* of the code and to be *'equivalent of that prescribed in the code in quality, strength, effectiveness, fire resistance, durability, and safety'*. The Department tasks the Office of Technical Certification and Research with the evaluation of alternative materials. As such, the following constitute acceptance criteria for containment netting as an alternative to sidewalk sheds and other pedestrian protection:

1. Design

Each design shall be site specific. Containment netting systems shall be designed for debris capturing and retention and shall meet anticipated design loads considering the impact force from falling objects, which increases with distance to impact. The loading criteria for the system should have a safety factor of 1.3 and the design shall consider the containment netting weight, size, and shape; falling distance of a potential hazard; and other possible failures, as well as loads that could result from wind suction effect or outward pressure effects as if the net is a solid material when attached to the façade of a building. The wind loading criteria must conform with Chapter 16 of the NYC Building Code. Containment netting system design calculations shall be prepared by a registered design professional, retained, and provided at the request of the Department.

a. Materials

Netting materials shall be High Density Polyethylene or High Tenacity Polypropylene (HTPP). Both the structural netting and the debris netting shall be flame retardant in accordance with NFPA 701. Border edges shall be reinforced with at least 3" double stitching webbing and stainless-steel grommets at least 2 ft on center.

b. Netting Rated Capacity

The registered design professional shall evaluate potential loads as containment netting system shall be designed to prevent displacement of affected material. However, in no event the maximum rated capacity of the netting shall be less than 6,000 lbs. lateral force over an area no less than 10ft by 10ft.

c. *Maximum Size of Net Openings*

Structural Netting: The largest mesh size for the base netting shall not be larger than 4 square inch (2500 mm²), with no opening larger than 2 inch (50 mm) in the vertical or horizontal dimensions and 2 inch (50 mm) in any other dimension.

Debris Netting: The largest mesh size for the liner netting shall not be larger than 1/16 square inch (36 mm²), with no opening larger than 1/4 inch (6 mm) in the vertical or horizontal dimensions and 1/4 inch (6 mm) in any other dimension except where Chapter 33 of the NYC Building Code would allow a larger mesh size in connection with a specific use contained in that chapter.

d. *Anchoring System*

The registered design professional shall establish anchor and attachment loads based on the hazard expected to be mitigated and designed to resist such loading conditions. When applicable the design shall consider [Buildings Bulletin 2016-005](#) which establishes acceptance criteria for post-installed anchors in masonry. Anchors, fasteners and structural connectors shall be corrosion-resistant or be provided with a corrosion resistant coating, designed and tested to provide site-specific design loads.

The fastening method, lashing, and/or fastening devices must meet or exceed the strength of the netting material. Containment netting shall be installed accounting for the full stretch of the netting when fully loaded.

2. Netting Certification

The netting manufacturer shall supply a certificate of compliance prepared in accordance with ANSI/ASSE A10.11 and the manufacturer's qualification test outlined in ANSI/ASSE A10.37-2016. Such certificate shall include: (1) Name of manufacturer, (2) Identification of net material, (3) Date manufactured, (4) Date of prototype test, (5) Designation of test method, (6) Name of the testing agency, and (7) Serial number or Batch number.

3. Filing Requirements (filed in DOB NOW: *Build*)

For scope of work that includes installation or removal of a temporary construction installation: containment netting system, a Registered Design Professional should file an application in DOB NOW: *Build* with Work Type: Protection and Mechanical Methods, Subcategory: Netting.

When containment netting is installed to relieve an emergency condition, such emergency work can proceed without a permit, if an application for permit is submitted within 2 business days after the commencement of the emergency work in accordance with Section AC 28-105.4.1.

A temporary construction installation permit shall be obtained for the erection, installation and use of containment netting systems as temporary containment and shall be subject to provisions set forth in Section BC 106.8.1 and BC 106.8.2.

4. Construction Documents

Construction documents, including construction drawings prepared by the registered design professional shall be provided at the time of filing. Such documents shall clearly identify and include:

- maximum allowable fastener spacing along the netting webbing
- netting tensile strength
- framing details
- height above ground of the installation
- connections into the building, and other anchoring system details
- netting materials and NFPA 701 compliance statement as required by the **Design** section of this Bulletin
- third-party certification and certificate of compliance as required by the **Netting Certification** section of this Bulletin.

Construction drawings shall also provide description, classification, and mapping of each area where the containment netting system is proposed to be installed along with type and location of additional public protection, if needed.

5. Installation Requirements

The containment netting system shall be installed in accordance with the netting manufacturer's instructions. A competent person designated by the responsible permit holder shall supervise the installation, adjustment, maintenance, and temporary or permanent removal of all containment netting systems, along with any support, connection, or component.

No permanent distortion or damage of the nets or hardware shall be permitted. Overlapping nets shall not cause nets to be unsupported and shall not create gaps in the system.

The containment netting system shall be securely attached with post installed anchors or an anchoring system that conforms to the manufacturers requirement. Anchor locations shall be determined by the registered design professional. Such anchoring system shall cause minimum disruption to where they are being installed, while maintaining the structural integrity of the building. Cables and related hardware maybe used as part of the netting anchoring system.

6. Special Inspection

The containment netting anchoring system shall be subject to the requirements of Section BC 1705.37, where applicable. Installation of post-installed mechanical anchors as part of the containment system anchoring system shall comply with Table 1705.37.

7. Maintenance

In the event of material displacement into the containment netting system, such system shall be inspected and cleared of loose debris. Netting and hardware shall be inspected periodically by a competent person in accordance with manufacturer's recommendation and in accordance with Section 12 of ANSI/ASSE A10.37-2016.

REFERENCES

ANSI/ASSE A10.11-2010 Standard for Safety Requirements for Personnel and Debris Nets

ANSI/ASSE A10.37-2016 standard for Debris Net Systems Used During Construction and Demolition Operations

NFPA 701 Standard Methods of Fire Tests for Flame Propagation of Textiles and Films

Buildings Bulletin 2016-005 This document establishes acceptance criteria for post-installed anchors in masonry in accordance with the NYC Construction Codes