



BUILDINGS BULLETIN 2010-019

Operational

Supersedes: None

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Purpose: This document clarifies the criteria for the design of vertical netting, debris netting and material fall protection devices when installed on a building or construction site.

Related Code/Zoning Section(s):

BC 1609	BC 3308.4	AC 27 RS 19-4
BC 3301.6	BC 3308.5	
BC 3301.7	BC 3310	
BC 3308	BC 3314.2	

Subject(s): Safety netting, vertical netting; Safety netting, alternative methods to vertical netting

Reference: ANSI A10.11-1989, ASCE 7

Definitions.

For the purposes of this bulletin, the following definitions shall apply:

VERTICAL NETTING shall include any netting or debris retention system and their components authorized pursuant to section BC 3308 or debris netting and their components on a supported scaffold or building.

ALTERNATIVE METHODS TO VERTICAL NETTING shall include material fall protection systems (e.g. cocooning system, enclosure panels, climbing formwork, etc.) and their components authorized by the Commissioner under section BC 3308.5.

A. Design Loads.

Vertical netting installed on construction sites shall be designed to meet the anticipated loads during construction pursuant to section BC 3301.6, including wind loads as indicated in section BC 1609. The required minimum 200 lb lateral force required by the provisions of RS 19-4 of the 1968 Code need not be added to wind loading in determining the maximum lateral force. However, in no event shall the maximum design load be less than the 200 lb lateral force required by RS 19-4.

A reduction in the surface area due to the openings in the net fabric is permitted provided that the force at design wind speed is derived from manufacturers test data or other testing or methods, acceptable to the Commissioner. Each element of the vertical netting installation (i.e. netting, anchors, cable, wood plank, ties, etc.) shall be sized to resist the loads discussed above. Nothing in this bulletin is intended to or shall supersede OSHA requirements or any other state or federal law.

Alternative methods to vertical netting installed on construction sites shall be designed to meet the anticipated loads during construction pursuant to section BC 3301.6, including wind loads as indicated in section BC 1609.

A reduction in the surface area due to the openings in the net fabric or partially enclosed perimeter panel is permitted provided that the force at design speed is derived from manufacturers test data or other testing or methods, acceptable to the Commissioner. Each element of the alternative vertical netting installation (i.e. enclosure panels, hardware, netting, anchors, cable, wood plank, ties, etc.) shall be sized to resist the loads discussed above. Nothing in this bulletin is intended to or shall supersede OSHA requirements or any other state or federal law.

B. Required Plans and Calculations:

Vertical netting installations shall be accompanied by plans and calculations prepared by a licensed Professional Engineer. Where no permit is required as outlined in sections C(2)(a) and C(2)(b) below, such plans and calculations may be in the form of a typical design with maximum allowable spans, tie spacing, etc. clearly defined. Such typical design can be used at different sites provided the field conditions (i.e. netting spans, height above ground of the installation, etc.) comply with the maximum spacing provided in the calculations.

Note that wood installations designed with friction connections are not permitted.

Typical design plans for alternative methods to vertical netting are not permitted. Each design of such system shall be site specific.

C. Permit Requirements

1. The following installations shall require work permits and the filing of Alteration Type II applications:
 - a. Vertical netting on supported scaffolds 40 feet or more in height installed in accordance with section BC 3314.2;
 - b. Alternative methods to vertical netting installed in accordance with section BC 3308.5 (i.e. cocoons, full enclosures, forming system enclosure, etc.).
2. Work permits shall not be required for the following installations:
 - a. Vertical netting installed in accordance with section BC 3308;
 - b. Vertical netting on supported scaffolds less than 40 feet in height installed in accordance with BC 3314.2.

D. Filing and Record Keeping Requirements

1. Vertical netting
 - a. Where permits are not required as outlined in sections C(2)(a) and C(2)(b) above, plans and calculations prepared by the licensed Professional Engineer shall be kept on site and made available to the Department upon request in accordance with section BC 3301.7.
 - b. Where permits are required for vertical netting, an Alteration Type II application shall be filed in the respective Borough Office.
2. Alternative methods to vertical netting
 - a. Applications for alternative methods to vertical netting shall be filed in the respective Borough Office as an Alteration Type II, Directive14 application. When such an application is made, sections BC 3308.1.2, BC 3308.1.3, BC 3308.1.4 and BC 3308.1.5 may be deemed inapplicable to such systems.

- b. During plan review, the plan examiner shall select a required item prior to approval, "*CCD-1 for Alternative methods to vertical netting subject to section BC 3308.5*". Such required item shall be satisfied when the applicant obtains an approved CCD-1 from the Department's Office of Engineering and Safety Operations.
- c. During plan review, the plan examiner shall also select a required item for special inspection "*TR-1 Inspection by PE upon installation*". A record of each such inspection shall be maintained on site.

E. Site Safety Requirements

Details of the vertical netting or alternative methods to vertical netting systems shall be shown on the Site Safety Plan or incorporated by reference, as applicable, pursuant to section BC 3310.

Where an alternative method to vertical netting system is used in lieu of vertical netting, the site safety manager or coordinator shall be responsible to inspect such system periodically and record it in his/her log as required for the vertical netting.

F. Inspections and Maintenance

1. Vertical netting systems shall be periodically inspected and maintained in accordance with section BC 3308.4 and the design specifications. Such inspections shall be made by the Construction Superintendent or the Site Safety Manager or Coordinator, as applicable. The Concrete Safety Manager, when required to be present, shall verify the specified inspections have been performed.

Where the design calculation relies upon a taught system, the net and cables shall be maintained taught.

When, during the course of construction operations, vertical netting is temporarily disassembled to allow passage of material or access to specific work areas, the reassembled installation shall be inspected the same day. Alternative fall protection shall be maintained for workers in accordance with OSHA and other applicable laws. A clear zone free of debris shall be established and maintained to prevent material falling from the area where the nets have been temporarily removed.

2. Alternative methods to vertical netting systems shall be periodically inspected and maintained in accordance with section BC 3308.4 and the design specifications. Upon application for permit, the designer shall specify the minimum inspections in accordance with the manufacturers recommended procedures. Such inspections shall be made by the Construction Superintendent, or the Site Safety Manager or Coordinator, as applicable. The Concrete Safety Manager, when required to be present, shall verify the specified inspections have been performed.

TR-1 special inspections as required by section D above (Filing and Record Keeping Requirements) shall be recorded in a log at the site and made available to the Department upon request.

Site Safety Managers and Concrete Safety Managers shall record the inspections in a log which shall be maintained at the job site and made available to the Department upon request.