



NYC Buildings Department
280 Broadway, New York, NY 10007

Robert D. LiMandri, Commissioner

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OTCR

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Issuer: Alan Price, P.E.
Director, Office of Technical Certification and Research

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Purpose: This bulletin establishes acceptance criteria for screw anchoring systems installed in concrete elements as alternative materials in the 2008 NYC Construction Codes.

Related Code Section(s): BC 1704.13 MC 1210.3
BC 1913

Subject(s): Concrete, Anchors, Screw Anchoring; Post-installed anchors

Description: Screw anchoring systems are post-installed, threaded mechanical fasteners placed in predrilled holes in concrete elements. The anchors derive their tensile holding strengths from the mechanical interlock of the fastener threads with the grooves cut into the concrete during the anchor installation.

Evaluation Scope: 2008 NYC Construction Codes

Evaluation Criteria: Pursuant to AC 28-113, the Office of Technical Certification and Research recognizes screw anchoring systems tested and evaluated in accordance with ICC-ES AC193 "Acceptance Criteria for Mechanical Anchors in Concrete Elements"¹. Acceptable screw anchoring systems shall have an ICC-ES Evaluation Service Report (ESR) issued in accordance with Annex 1 of AC193 and shall comply with the conditions of this bulletin.

Uses: Screw anchors are used to resist the loading conditions of static or seismic loads in tension, shear, or combined tension and shear in cracked and uncracked, low-strength concrete and high-strength concrete. The ICC-ES ESR issued for the product provides qualification criteria for the anchor for each loading condition.

Conditions of Acceptance: Screw anchors shall be designed and installed in accordance with the 2008 NYC Construction Codes and other applicable provisions including but not limited to the

following:

A. Design

1. Screw anchoring systems shall be designed in accordance with ACI 318 Appendix D² as per section 2.5 and 2.6 of AC193.
2. Anchorage used in high pressure steam piping systems shall comply with the following:
 - a. New and existing anchorage shall be subject to annual inspection per section MC 1210.3.1, and
 - b. Repair, replacement and relocation of anchorage shall not be permitted without department approval as per section MC 1210.3.2.

B. Installation Requirements

1. Installation requirements shall be in accordance with the manufacturer's instructions, the applicable ICC-ES ESR, and the conditions of this bulletin.
2. Pursuant to section BC 1704.13, the installation of screw anchors shall be subject to special inspection requirements of Chapter 17 of the Building Code and 1 RCNY section 101-06. Special Inspectors of adhesive anchoring systems shall:
 - a. Maintain the same qualification requirements for the "Concrete – Cast-in-place and Precast" category as defined in 1 RCNY section 101-06, Appendix A.
 - b. Have duties and responsibilities in accordance with, but not limited to, the ICC-ES ESR issued for the installed product, and,
 - c. Complete the statement of special inspection by referencing this Bulletin under the Special Inspection Item for "Alternative Materials" in section 3.0 of the TR1 form.
3. Screw anchor shall be labeled as per ICC ES AC193 Section 2.1.3. All shipments and deliveries of materials shall be accompanied by a certificate or label certifying that the materials shipped or delivered are equivalent to those tested and approved.

Reference Standards:

1. ICC-ES AC193 "*Acceptance Criteria for Mechanical Anchors in Concrete Elements*" (<http://www.icc-es.org/>) effective March 1, 2009.
2. ACI 318 – 05, Appendix D "*Anchoring to Concrete*". (<http://www.concrete.org/general/home.asp>)