

**Agenda  
Item  
VII.A.**

**State of Oregon**

**Board memo**

**Building Codes Division**

**August 6, 2008**

**To:** Building Codes Structures Board

**From:** Richard Rogers  
Structural Program Chief

**Subject:** Alternate method request for the continued use of adhesive anchors  
Statewide Alternate Method No. OSSC 08-04

**Statewide alternate methods:**

*Statewide alternate methods are approved by the division administrator in consultation with the appropriate advisory board. The advisory board's review is limited to the technical and scientific facts of the proposal. In addition:*

- *Building officials shall approve the use of any material, design or method of construction addressed in a statewide alternate method*
- *The decision to use a statewide alternate method is at the discretion of the designer*
- *Statewide alternate methods do not limit the authority of the building official to consider other proposed alternate methods encompassing the same subject matter*

**Action requested:**

A board recommendation to the division as to the scientific and technical facts of this proposed alternate method to allow the continued use of adhesive anchors without current reports in concrete subject to certain considerations for an interim period.

**History:**

Beginning with the 2003 International Building Code (IBC), the use of all post-installed anchors in concrete came under increased scrutiny. The IBC references ACI 318, Appendix D as the appropriate standard for these anchors.

Consistent with the IBC's "*strength design*" methodology, Appendix D requires that the design consider nominal tension and shear strength values for post-installed mechanical anchors used in cracked and un-cracked concrete. This is in contrast to the "*allowable stress design*" methodology used under previous codes, which considered the use of post-installed anchors in un-cracked concrete only.

The International Codes Council Evaluation Service (ICC-ES) has established acceptance criteria (ref.; AC 308) for the consideration of adhesive anchors in cracked and un-cracked concrete. As of the date of issuance of this ruling, there is only one adhesive anchor available with an AC 308 listing. Several other manufacturers have completed their third party testing per the new criteria and are waiting for ICC-ES review and listing. However, ICC-ES is reporting a significant backlog of work and anticipates up to a years delay in issuing reports.

In the interim period, this alternate method will allow the continued use of adhesive anchors without current reports, subject to certain considerations including special inspections and a required reduction in listed values.

At the May 7, 2008 board meeting, the Building Codes Structures Board concurred with the technical and scientific basis for [Statewide Alternate Method OSSC 08-03](#) for screw anchors. This alternate method is based on the same criteria.

**Proposed statewide alternate method concerning 2007 Oregon Structural Specialty Code, section 1613.1:**

*Adhesive Anchors.* In the absence of an approved ICC-ES report under the new ICC acceptance criteria, adhesive anchors may be used subject to the following scientific and technical facts:

1. Continuous special inspections are required.
2. For legacy reports approved under the 1997 Uniform Building Code or 2000 International Building Code; design shall be based on 50% of the value listed.
3. For anchors currently submitted to ICC-ES for evaluation under the new ICC acceptance criteria per the 2003/2006 International Building Code Design shall be based on 80% of the value stated in the report. A copy of the report shall be provided to the jurisdiction having authority.
4. Engineering design calculations must be submitted.
5. This alternate method is applicable to projects submitted for plan review prior to May 1, 2009.

**Alternatives:**

1. Concur with the proposed scientific and technical facts of the proposed alternate method.
2. Suggest additional scientific and technical language for the proposed alternate method.

**Recommendation:**

Staff recommends that the Building Codes Structures Board concur with the proposed scientific and technical facts of the proposed alternate method.

State of Oregon  
Building Codes Division

Contact: Richard S. Rogers, Structural Program Chief  
(503) 378-4472 or richard.rogers@state.or.us

Statewide Alternate Method OSSC No. 08-04  
(Ref.: ORS 455.060)

*Issued August 6, 2008*

**ADHESIVE ANCHORS**

Oregon Structural Specialty Code, Section 1613.1

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- *The decision to use a statewide alternate method is at the discretion of the designer,*
- *Statewide alternate methods do not limit the authority of the building official to consider other proposed alternate methods encompassing the same subject matter*

**Requested by:** Bob Sinclair, P.E.  
Field Engineer Northwest  
Powers Fasteners

**Background:**

Beginning with the 2003 International Building Code (IBC), the use of all post-installed anchors in concrete came under increased scrutiny. The IBC references ACI 318, Appendix D as the appropriate standard for these anchors.

Consistent with the IBC's "*strength design*" methodology, Appendix D requires that the design consider nominal tension and shear strength values for post-installed mechanical anchors used in cracked and un-cracked concrete. This is in contrast to the "*allowable stress design*" methodology used under previous codes, which considered the use of post-installed anchors in un-cracked concrete only.

The International Codes Council Evaluation Service (ICC-ES) has established acceptance criteria (ref.: AC 308) for the consideration of adhesive anchors in cracked and un-cracked concrete. As of the date of issuance of this ruling, there is only one adhesive anchor available with an AC 308 listing. Other manufacturers have completed their third party testing per the new criteria and are waiting for ICC-ES review and

listing. However, ICC-ES is reporting a significant backlog of work and anticipates up to a years delay in the issuance of the same.

In the interim period, this alternate method will allow the use of adhesive anchors with existing legacy reports subject to certain considerations including special inspections and a required reduction in listed values.

The scientific and technical facts of this alternate method ruling have been reviewed by the Building Codes Structures Board.

**Applicable code citation**

2007 Oregon Structural Specialty Code, section 1613.1

**Statewide alternate method:**

*Adhesive Anchors.* In the absence of an approved ICC-ES report under the new ICC acceptance criteria, adhesive anchors may be used subject to the following scientific and technical facts:

1. Continuous special inspections are required
2. For legacy reports approved under the 1997 Uniform Building Code or 2000 International Building Code; design shall be based on 50% of the value listed
3. For anchors currently submitted to ICC-ES for evaluation under the new ICC acceptance criteria per the 2003/2006 International Building Code; design shall be based on 80% of the value stated in the report. A copy of the report shall be provided to the jurisdiction having authority
4. Engineering design calculations must be submitted
5. This alternate method is applicable to projects submitted for plan review prior to May 1, 2009.

The recommendation and findings of the Building Codes Structures Board are accepted and are adopted:

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Mark Long, Administrator  
Building Codes Division

August 6, 2008  
Date