

## HILTI TECHNICAL BULLETIN

October 21, 2013

**Subject: Adhesive Anchors and the 2012 IBC Recognition by ICC Evaluation Services**

This bulletin addresses the 2012 International Building Code (IBC) recognition for adhesive anchor manufacturers who currently possess an ICC Evaluation Services Report (ESR). Currently, adhesive anchor manufacturers test their product in accordance with ICC-ES Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements (AC308). Once this data has been reviewed by ICC-ES, an ESR is published for the product that reflects the code edition for which that product is recognized. Most adhesive anchor manufacturers have reports that the product has been evaluated in accordance with the 2009 IBC as the latest code edition. As of the date of this bulletin, no manufacturers have an ESR with 2012 IBC recognition. We will now explain how adhesive anchor manufacturers will obtain an ESR with 2012 IBC recognition.

For Hilti, the following adhesive anchor products have a current published report with ICC-ES, according to AC308:

- Hilti HIT-HY 200 (ESR-3187)
- Hilti HIT-RE 500-SD (ESR-2322)
- Hilti HIT-HY 150 MAX-SD (ESR-3013)
- Hilti HIT-HY 150 MAX (ESR-2262)

Prior to the publication of ACI 318-11 Appendix D, AC308 had established testing procedures for the manufacturer of the adhesive anchor system. AC308 also established design procedures for the designer of the adhesive anchor systems. With the publication of ACI 318-11 App. D, design and testing provisions were finally included into the ACI document. The new testing procedure reference in ACI 318-11 App. D for post-installed adhesive anchors is ACI 355.4-11.

While ACI 355.4-11 was based largely on AC308 and while the two documents are similar, ICC-ES had to update AC308 to harmonize the two documents. In June, 2013, ICC-ES completed the revision to AC308 and will begin a two phase process for manufacturers to add the 2012 IBC recognition based on ACI 318-11 App. D.

Phase I, design equation compliance with ACI 318-11 App. D – compliance date of January 15, 2014

All adhesive anchor Evaluation Service Reports (including the above referenced Hilti reports) will have a change in section 4.1 of each ESR. Currently, this section is the design provision for the designer to calculate the capacity of the adhesive anchor system. This design provision includes references to ACI 318-08 Appendix D and supplementary design provisions from AC308 which were the additional equations needed for bond strength calculations. Since ACI 318-11 App. D now includes bond strength design provisions for adhesive anchors there

will be no additional references to AC308 for calculation of bond strength. Thus, the designer will be able to use the design provisions of ACI 318-11 Appendix D with the bond stress parameters in the specific ESR. The code reference will continue to be the 2009 IBC.

Phase II, testing compliance with AC308, revised June, 2013 – compliance date of January 15, 2015

As noted above, AC308 has been revised as of June, 2013, and there were some differences in the testing procedure. ICC-ES has required that manufacturers comply with the revisions in testing and this must be complete by July 15, 2014, so that ICC-ES has time to review the testing and assessment of results and re-publish the ESR by January 15, 2015.

There will be jurisdictions that adopt the provisions of the 2012 IBC prior to the testing compliance date of January 15, 2015. Unfortunately, this is unavoidable as there are many adhesive anchor products and many manufacturers that will submit new test data to ICC-ES at relatively the same time. That is why ICC-ES has offered as a temporary solution to add the design provisions of ACI 318-11 App. D for Phase I.

It is the position of Hilti that the stepped adoption process by ICC-ES is an acceptable way for the designer to perform calculations according to ACI 318-11 App. D since AC308 prior to June 2013 was the state-of-the-art test criteria for post-installed adhesive anchors. Use of post-installed adhesive anchors with published ESR's in jurisdictions where the 2012 IBC is recognized will still be a reliable and safe fastening solution during this transition period. Building officials and designers in regions where the 2012 IBC has been adopted should continue to accept post-installed adhesive anchor products with current published ESR's during this transition period since this affects all manufacturers equally.

Please feel free to contact our Engineering Technical Services department for more information or any questions.

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