



## Conduct of Engineering Formal Clarification or Interpretation Request

Assigned by Responder:  Clarification  Interpretation      Tracking number CIR-16-002

<b>Clarify</b>	To make the CoE document or its references understandable and free from confusion
<b>Interpret</b>	To formally provide an acceptable method of compliance with the document or references

### 1.0 Request

Brief Title: Post-Installed Concrete Anchors, Seismically Exempt – ESR Prohibition			
Affected Document Title, Number, and Rev. No. <u>ICC</u>			
<ul style="list-style-type: none"> <li>• IBC-2015</li> <li>• ESR-2302, Hilti Kwik Bolt 3 (KB3) Concrete Anchors, Feb. 2016</li> </ul>			
<u>LANL</u>			
<ul style="list-style-type: none"> <li>• ESM Chapter 16, Section IBC-GEN r9</li> <li>• Any other LANL Standards documents addressing compliance with ESRs including ESM Ch 5 and 16 and Master Spec Section 05 0520 r3, Post-Installed Concrete and Grouted-Masonry Anchors - Normal Confidence</li> </ul>			
Section/Article/Para and Existing Wording IBC 1901.3 Anchoring to concrete			
<p>“Anchoring to concrete shall be in accordance with ACI 318 as amended in Section 1905, and applies to cast-in (headed bolts, headed studs and hooked J- or L-bolts), post-installed expansion (torque-controlled and displacement-controlled), undercut and adhesive anchors.”</p> <p>ESR-2302 2.0 Uses. “The Hilti Kwik Bolt 3 Concrete Anchor (KB3) is used to resist static, wind, and earthquake (Seismic Design Categories A and B only)...” Para 5.10 states similarly.</p> <p>IBC GEN 8.0 Qualification of Suppliers and Manufactured Products for Structural and other Work 8.1. Under 104.9, 104.11, and the Special Cases section of the IBC (1705.1.1), proprietary products must be approved by the LANL Building Official (LBO). Structural examples are anchor channels and mechanical reinforcing steel splices/couplers. A. Such components are automatically approved by the LBO if:</p> <ol style="list-style-type: none"> <li>1. The components chosen are IBC-compliant-labeled (has been accepted by the most recent ES report from ICC-ES or ER report from IAPMO valid for the code edition in use or newer edition) AND</li> <li>2. The design and installation complies with the conditions of use and restrictions specified in the ICC report (in addition to and including following manufacturers instructions, particularly where more stringent). Installation must be verified by special inspector(s) when required by ICC ES Report and/or IBC Ch.17 on special inspection...</li> </ol>			
Inquiry (describe ambiguity or issue) May Hilti KB3s and other PI anchors that are authorized by ES Reports for Seismic Design Categories A and B only also be used at LANL (which is Seismic Design Category D) in a seismically exempt cracked concrete installation (defined by ESM Ch 5/ASCE 7) given IBC 1901.3 and ESM preference to follow ESRs?			
Requestor (LANL employee) Tobin Oruch	Z Number 120812	Organization ES-DO	Date 2/22/2016

**2.0 Response by Safety (or Security) Management Program Owner Representative (SMPOR/POC)**

Yes.

IBC 1901.3 is misleading/incomplete and the KB3 ESR is similarly so with respect to seismically exempt cracked concrete installation.

IBC 1901.3 would be more clear if it included this statement (and this has been proposed to ICC as an errata):

Exception: The anchorage of nonstructural components to concrete need not be in accordance with the seismic provisions of ACI 318 Chapter 17 if/when such components are exempt from the requirements of ASCE 7 Chapter 13.

Rationale:

The current version of 1901.3 is incorrect w/ regard to concrete anchorage of nonstructural components for the following two (2) reasons:

1. Requiring compliance w/ ACI 318 (as amended in Sect. 1905) conflicts w/ Sect. 1613, which requires seismic design of nonstructural components in accordance w/ ASCE 7 (Chapter 13), since ASCE 7 Ch. 13 (para. 13.4) contains concrete-anchorage provisions that aren't part of the concrete-anchorage provisions of ACI 318 (i.e., Power-Actuated Fasteners).
2. Even if anchorage to concrete is to occur in buildings located in Seismic Design Categories C - F, it doesn't make sense for the anchorage of seismically-exempt nonstructural components to have to comply w/ the seismic-portion of the concrete-anchorage provisions of ACI 318 (i.e., since, per ASCE 7 Ch. 13, the anchorage of such components need not be designed to resist earthquake forces).

Regarding ESRs, LANL Building Official use of same is not an IBC requirement but a convenience promulgated by the LANL Standards, and as such the LBO has authority to accept installations that do not comply with them verbatim.

Given the two 1901.3 rationale statements above, ESRs excluding Hilti KB3s and other PI anchors authorized by ES Reports for Seismic Design Categories C and above in a seismically exempt cracked concrete installation is not logical. Thus, such limitations are not applicable to LANL. This interpretation is valid for all IBC-2012 and IBC-2015 designs and any past and future installations to these codes, and until rescinded or referenced documents are revised as necessary (not an issue with 2009 and before).

Name Glen Pappas	Z Number 194518	Signature signature on file	Date 2/22/16
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**3.0 SMPO Approval (Standards Manual and code and regulation matters only, otherwise N/A)**

Comments
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Name Larry Goen	Z Number 106351	Signature signature on file	Date 2/25/16
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Distribution (may be electronic): Requestor, SMPOR, SMPO, CENG-OFF Program POC