

4160601 Installing Adhesive Bond Anchors and Dowels for Structural Applications.
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

Steven Nolan, P.E.

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Comments: (3-2-11) This provision could be interpreted that the contractor must proof test every day. Is the intention to have an independent testing agency on-site every day?

Based on the cover memo, it appears that the intent was perhaps to have the anchors grouped by the day of installation of the adhesive. The standard Origination Form may have helped to clarify this. Based on this assumption, my opinion is that this could be achieved more effectively by limiting a LOT to one day's production. That is not the anticipated interpretation of this provision as currently proposed.

Additionally the definition of installation "per day", may be unclear. The anchor holes could be drilled on one day, and then the adhesive installed over several days or weeks?

My recommendation is to modify this provision to require that a LOT consist of one days adhesive installation not to exceed the current limit of 100 anchors.

Divide the anchors and dowels into LOTs for testing and acceptance. Each LOT must contain a maximum of 100 anchors or dowels, of the same diameter, embedment length and Adhesive Bonding Material System installed on the same day. Randomly select four of the anchors and dowels in each LOT for testing, except if there are three or less in the LOT, in which case, test all anchors, unless otherwise directed by the Engineer. If three consecutive LOTs have no failing tests, sample the next three LOTs at a 2% rate and if these LOTs have no failing tests, sample at a rate of 1% for the remaining LOTs unless there is a failure; however, regardless of LOT size ~~or~~ sampling frequency, sample at least one dowel per LOT, per day. For every failed field test, perform two additional field tests on adjacent untested anchors or dowels within the LOT. Continue additional field tests until no more test failures occur, or all anchors and dowels within the LOT are tested. For the next LOT after a failed LOT, the sampling rate must be 4% but not less than one dowel per LOT and conform to the sampling rate procedure above including rate reductions as appropriate.

Response: Agree will revise

Dan L. Hurtado, P.E.

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Comments: (3-2-11) The author may want to revisit the requirement to "sample at least one dowel per LOT, per day". As written, it requires the contractor to perform this test every day over the duration of the entire contract.

If this is not the intention, it could be written "sample at least one dowel per LOT, each day that dowels are installed."

Response: Agree will revise

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Comments: (4-12-11) The installation of epoxy set anchor bolts is a very detailed procedure with several critical steps. In addition to the pull out test, I suggest to have a competent/accountable person witness that installation steps are in accordance with manufacturer recommendations and document the location and how many anchor bolts are installed each day. The competent/accountable person may document questionable installations for testing in addition to the random testing. With regards to the installation of traffic barrier anchor bolts I will suggest increasing the random testing frequency.

Questions:

Is there a register of “Independent Testing Agencies” doing business with the State and is the contractor obligated to use them?

Is the Professional Engineer directing the test and signing/sealing the report an employee of the testing agency/contractor or an independent service provider.

An installation may come under review at the time of a vehicular crash and any/all shortcomings will be dissected by the many experts. Can we emphasize that the Contractor is solely responsible/accountable for the installation.

Response:

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Comments: (4-13-11) I DID NOT BELIEVE IT POSSIBL TO MAKE THIS ONEROUS SPECIFICATION WORSE. CONGRATULATION!

Response:

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Comments: (5-5-11) Comments from Daniel Haldi D5 Materials Concrete Technogist 416 – as follows:<<>> 1. 416-6.1, 2nd paragraph, 2nd sentence ... “Each LOT must contain a maximum of 100 anchors or dowels ...”. Seems misleading to me, as if LOT must be 100 (whenever LOT could be less). Language change could be “Each LOT shall [or] may [or] must not contain more than 100 ...” [whatever word is permitted], implying better that a LOT could be lesser.<<>> 2. Same paragraph; the 2% and 1% should be changed to “randomly select 2 ... and randomly select 1 , so that lesser than 100 piece LOTs have whole number rather than an interpretable rounded numeral that could lead to under-testing frequency.<<>> 3. Also same paragraph, at end, 4% should be numeral 4, for same reasoning as above (whole number rather than subjective fraction that lends to inconsistency, possible under – testing).

Response:
