

Specifications for Crack Repair

ASCC Position Statement #5

Some specifications hold concrete contractors responsible for crack repair as shown by the following examples:

- Prior to filling any structure with water, cracks 0.01 in. (0.3 mm) in width or greater shall be “vee’d” as indicated and filled with specified sealant;
- Repair isolated random horizontal cracks:
 - Less than 0.01 in. wide, using specified silane sealer;
 - 0.01 in. to less than 0.03 in. (0.7 mm) wide, using specified methyl methacrylate; and
 - 0.03 to 0.06 in. (1.5 mm) wide, using rout and seal with specified sealant.

Repair isolated random vertical cracks more than 0.01 in. wide using specified epoxy injection product; and

- Formed concrete surfaces requiring repairs shall include cracks in excess of 0.01 in. Unformed surfaces requiring repair shall include all surface defects such as crazing, cracks in excess of 0.01 in. wide, or cracks that penetrate to the reinforcement or through the member.

These specifications don’t address how, where, and when the cracks will be measured. Because the warranty period is typically at least 1 year, contractors also can be held responsible for repairing cracks that grow to the specified width while the facility is in operation.

In bidding jobs with such specification requirements, it’s difficult to estimate the total length of cracks that will require repair because the number and width of cracks are affected by the design and construction methods. The Commentary for ACI 318-02, “Building Code Requirements for Structural Concrete,” states: “Crack widths in structures are highly variable. In previous codes, provisions were given for distribution of reinforcement that were based on empirical equations using a calculated maximum crack width of 0.016 in. The current provisions for spacing are intended to limit surface cracks to a width that is

generally acceptable in practice but may vary widely in a given structure.”

ACI 224R-01, “Control of Cracking in Concrete Structures,” indicates that there are many specific causes of cracking and the document is “...designed to help the engineer and the contractor in developing crack-control measures.” Designers and contractors can develop crack-control measures, but contractors are not responsible for, nor can they estimate, the amount of cracking that may occur as a result of design decisions.

Contractor compliance with the plans and specifications will produce a structure with a cracking potential that is determined by the designer’s and specifier’s decisions regarding reinforcement, joint spacing, concrete properties, and other variables. It is impossible for a prudent contractor to make a reasonable estimate of the amount of cracking of a certain width for a given contract and warranty period. Therefore, ASCC contractors will exclude provisions requiring such estimates from their bids.

Noncompliance with the project plans and specifications doesn’t always cause cracks, but ASCC contractors will assume responsibility for cracks that are a direct result of such noncompliance. We suggest providing a project allowance for crack repair or requesting a unit price for horizontal, vertical, and overhead crack repair.

If you have any questions, contact your ASCC concrete contractor or the ASCC Technical Hotline at (800) 331-0668.

Update: The Commentary for ACI 318-10 differs slightly from the originally quoted ACI 318-02 Commentary.

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