Guide to Concrete Repair

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This guide presents recommendations for the selection and application of materials and methods for repairing, protecting, and strengthening concrete structures. An overview of materials and methods is presented as a guide for selecting a particular application. References are provided for obtaining in-depth information on the selected materials or methods.

Keywords: anchorage; coating; concrete repair; joint sealant; placement; polymer; protective systems; repair materials; structural strengthening.

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During the condition assessment, conditions discovered that pose an immediate safety issue should be identified and reported to the owner for mitigation. Local building codes may require that the licensed design professional (LDP) report unsafe conditions to the authorities and typically require that the owner take measures to protect the public safety where hazardous conditions exist. For example, if loose concrete on overhead or vertical surfaces is discovered, access should be limited in the areas adjacent to and below until the hazards are removed or stabilized. If structural members exhibit compromised integrity, these members should be stabilized or the affected areas removed from service.

1.2.1.2 Global issues—The performance of a structure depends on maintaining the integrity of the structure and envelope of the building. If the LDP becomes aware of an item of concern outside the assigned scope of work that could compromise the integrity of the structure or jeopardize public safety, the appropriate parties should be notified for implementation of remedial action.

1.2.1.3 Determination of cause and extent—During the condition assessment of a structure, the cause of distress, deterioration, or deficiency should be determined. Because many deficiencies are caused by more than one mechanism, a basic understanding of the causes of concrete deterioration is essential to determine what has happened to a particular concrete structure. After completing the assessment, a suitable remedial action plan can be developed, repair applications and materials selected, and contract documents prepared. If a delay occurs between the condition survey and performing the repair work, additional deterioration and distress could occur and consideration should be given to updating the condition survey to minimize variations between estimated and actual quantities of repair work.

1.2.2 Design considerations—When designing a concrete repair, strengthening system, or protective system, the LDP should consider the safety and serviceability of the structure.