

Factors Causing Premature Peeling Of Repair Materials And Key Considerations For Appropriate Repair Methods Of Concrete Pavements

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Concrete pavements are more durable than asphalt pavements; however, after prolonged service, failures, such as joint spalling and potholes, occur that need repair. In general, asphalt-, cement-, and resin-based materials are used for repair. Cement- and resin-based materials do not cause plastic deformation (rutting) at high temperatures as in the case of asphalt-based materials. However, some cases of premature peel-off of cement- and resin-based repair materials have been reported. It is therefore important to develop repair techniques to improve the durability of repaired patches of concrete pavements. In Japan, a durability test was conducted wherein 330 kN vehicles had been driven over a concrete pavement repaired with polymer-cement-based and resin-based materials for approximately three years. The test revealed that some of the repair materials peeled off approximately three months later. Therefore, to propose appropriate repair methods for concrete pavements, the prematurely peeled repair materials are investigated, and the factors that cause premature peeling of the repair materials and the conditions necessary to improve the durability of the repaired patches are summarized. Examples of the factors causing the peeling are the repair material properties such as the difference in the dimensional change of the repair material and the concrete base as well as improper repair practices such as neglecting a weakened base or joint and securing an inappropriate joint width.