Design Standards Letter

Letter Number: G-1994-17

Letter Date: 12/07/1994

Effective Date: 12/07/1994

Section/Plan No.: None

Subject: Pavement Repairs

Body

The department has recently received the attached correspondence from the Federal Highway Administration concerning joint treatment of pavement repairs. In that correspondence FHWA states that future pavement repair placed without the use of dowel bars as load transfer will be considered inadequate and will not be eligible for federal participation in cost. Further, FHWA states that it is their policy to not participate in work built after a non-participating item. Because inadequate pavement repairs affect the subsequent work, they state this policy will apply.

From time to time pavement repairs have been performed without the use of dowel bar load transfer because existing pavement had deteriorated to the point that installation of dowel bars damaged the adjoining pavement. In such projects it is important to identify where pavement repair with dowel bars cannot be performed. We suggest for projects with badly deteriorated pavement that will not support the installation of dowel bars within a reasonable distance of the original joints be identified so they can be taken into consideration during the economic analysis of alternate rehabilitation strategies for the project.

Great care should be taken in the selection of projects that include pavement repair. Badly deteriorated concrete pavements should be either replaced or adequate overlay thickness should be provided to bridge deteriorated pavement.

If you have any questions concerning this matter, please contact this office.

pm/maj

November 7,1994

CONSTRUCTION

Pavement Repairs

Mr. Joseph A. Mickes, P.E., Chief Engineer
Missouri Highway and Transportation Department
Jefferson City, Missouri

Dear Mr. Mickes:

The performance of concrete pavements depends to a large extent upon the satisfactory performance of the joints. Most jointed concrete pavement failures can be attributed to failures at the joint as opposed to inadequate structural capacity. Loads applied by traffic must be effectively transferred from on slab to the next in order to minimize vertical deflections at the joint. This can only be accomplished using dowel bars. Aggregate interlock and undercutting simply do not work.

Line 22 of Change Order 1-Final on Project IM-470-1(155) indicates there is an underrun of dowel bars. The reason for this underrun is because the dowel bars could not be drilled without extensive damage to the patch area because the existing concrete was deteriorated. We suspect that this situation is not that uncommon in D-Crack susceptible areas.

This situation points out two problems:
Not all the deteriorated concrete was removed from the pavement failure area.
Adequate load transfer was not reestablished between the existing pavement and the patch.

The sum of these two problems results in an inadequate pavement repair. Inadequate pavement repairs will result in early failures, increase maintenance costs and cause additional inconvenience and costs to the traveling public.

In the future, inadequate pavement repairs are not eligible for federal-participation. This means that load transfer devices will have to be in place prior to placement of the patch to be an eligible item.

In the past it has been our policy not to participate in work built after a non-participating item. Because inadequate pavement repairs effect the subsequent work, this policy will apply.

If you have any questions, please contact this office.

Gerald J. Reihsen, P.E.
Division Administrator