

Final Report

The task of the technical panel was to decide if research is necessary to investigate the problem of Roughness in PMBS Thin Lift Overlays Due to Underlying Crack Sealant. To be more specific, when paving over an existing bituminous surface that has cracks that have been sealed, frequently the sealant expands or rises through the hot overlay causing a bump in the finished surfacing.

Early in the process the panel solicited information from other government transportation agencies to see if they were experiencing this problem and if so how they handled it. Responses were received from Oregon, Washington, Nebraska, Arizona, and Maine. We also asked for and received information from CRAFCO, Inc. the chief supplier of crack sealants in Montana. The responses received (attached) agreed that the best method to prevent the bump is to avoid using an overband when crack sealing. Leaving the crack seal flush or below the surface also reduces the problem. The majority also felt that sealing of cracks should be accomplished 6 to 12 months before the overlay is anticipated. Some of the responses also stated that multiple lifts lessen the effect of the crack seal.

The panel attempted to find a future project on which we could experiment with several types of crack sealing process and overlay methods. We had little response to our request, but in the mean time a project in the Great Falls District came up that had a sealant that was several years old and a sealant less than one month old. Some of these sealed cracks were overbanded, some were flush, and others were recessed. The project was a thin lift overlay (0.15') and the contractor was willing to work with us as long as we didn't delay his operations. The results of this project follow:

The contractor began operations in a normal manner using steel breakdown, a pneumatic, and a steel finish roller. The result was a noticeable bump at all but the recessed cracks and some times a very minor bump occurred on them. It was noted that the age of the sealant didn't seem to make a difference. Changes in the roller pattern had little effect on the resulting ride. The bumps left during this operation were removed by a motor patrol the same day we paved leaving a smooth ride on this portion of the project.

Next the surface was pre-leveled, with a thin lift of mix placed, with a motor patrol and rolled with a pneumatic roller. The lift was so thin that it had a very rough marble like texture. We then paved over this section and found no recurrence of the bumps noted early in the day. We continued pre-leveling for the remainder of the project and noted no bumps in the pavement.

Conclusions

The method used to seal cracks needs to leave the sealant slightly recessed. This seems to eliminate the bump in thin lift overlays. In areas where crack sealants is overbanded the use of either a thin pre-level lift described above or the removal of the bump with a motor patrol works effectively. Both of these methods seem to have little or any effect on the contractors production so should not increase the cost of the overlay.