

# RESEARCH NOTES

OREGON DEPARTMENT OF TRANSPORTATION  
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The Research Unit recently published the construction report entitled *Evaluation of PBA-6GR Binder for Open-Graded Asphalt Concrete*. The report covers construction of open-graded asphalt concrete ("F" Mix) pavements with an asphalt-rubber binder, PBA-6GR. The PBA-6GR is manufactured at a refinery and delivered to the jobsite like conventional asphalt cement. Test sections and control sections were constructed in the fall of 1993, and summer and fall of 1994. One site is located in central Oregon on the Warm Springs Highway, US Route 26; the second site is located on Interstate 84 near Boardman; and the third site is located on Interstate 5, north of Grants Pass. The results of the study follow.

The PBA-6GR binder specifications are the same as the PBA-6 conventional asphalt specifications with the following exceptions: the kinematic viscosity on the original binder specification and the ductility test on the rolling thin film oven aged residue specification were deleted, following a written request by the contractor, as allowed in the Special Provisions.

Conventional open-graded mix design procedures were used to determine the optimal asphalt binder content. Since the binder did not drain down like PBA-6, analysis of void content and voids filled with asphalt (VFA) were used for binder content determination.

Construction of the asphalt-rubber mix progressed smoothly and the mix appeared to be easier to handle than the asphalt concrete with PBA-6 binders. The binder was not sticky and stringy; it did not collect on the truck dump gates; it did not allow the paver to settle into the mat during delays; it did not shove laterally during compaction; and it did not separate at higher temperatures. The mix was also easier to handle than other types of asphalt-rubber mixes. The contractor needed no extra mixing or handling equipment.

For the projects in the study, the asphalt-rubber mix cost per ton was 16% more than the "F" mixes constructed with PBA-6. When compared to 1994 bid prices for "F" mixes, however, the PBA-6GR mix costs were only 12% more. Advantages of the PBA-6GR mix, such as thick films, ease in construction, and ease in handling, may make the binder preferable to "F" mix with PBA-6.

Additional testing is needed to establish a suitable mix design. Also, the Brookfield viscometer should be evaluated as a means to determine the temperature viscosity properties of the binder. To determine the cold temperature properties of the binder, the SHRP Bending Beam Rheometer should be evaluated.

If you want additional information regarding this project or a copy of the report, please contact:

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***SUMMARIES OF CURRENT TRANSPORTATION RESEARCH***