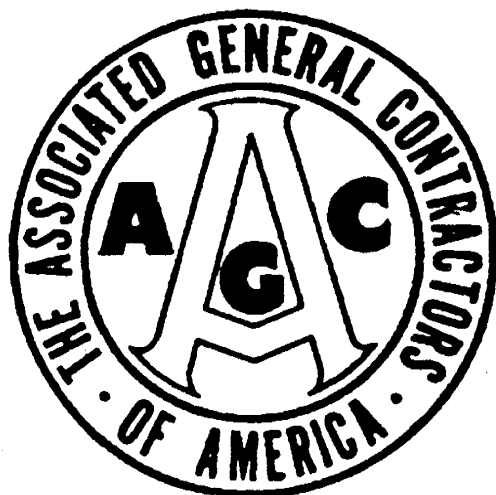

AASHTO-AGC-ARTBA Joint Committee

Subcommittee On New Highway Materials

Task Force 31 Report

GUIDE SPECIFICATIONS POLYMER MODIFIED ASPHALT



INTRODUCTION

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TASK FORCE 31

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AASHTO-AGC-ARTBA JOINT COMMITTEE PROPOSED SPECIFICATIONS FOR POLYMER MODIFIED ASPHALT

INTRODUCTION

The American Association of State Highway and Transportation Officials, the Associated General Contractors, and the American Road and Transportation Builders Association formed a working relationship called the AASHTO-AGC-ARTBA Joint Committee whose functions according to the by-laws are:

- A. To promote harmonious relations between state highway and transportation officials and highway contractors that are in the public interest;
- B. To discuss jointly those matters which relate to or affect the actual construction of highways. To this end the Joint Committee shall be responsible for considering any matters of general interest and application that affect both contractors and state highway officials; and
- C. To promote an increased scope of joint cooperative activities between state highway departments and highway contractors at the state level.

The Subcommittee on New Highway Materials under the auspices of the AASHTO-ARTBA-AGC Joint Committee authorized the formation of a task force to develop generic guide specifications for polymer modified asphalts. Task Force No. 31 - Polymer Modified Asphalts was formed as a result. Members of the Task Force were selected from industry, user-agencies and academic interests in an attempt to tap resources of as much technical expertise regarding polymer modified asphalts as possible. In this sense, the resulting guide specification represents a consensus of those involved with pavement construction utilizing these types of modified asphalt products.

Work by the task force to develop a generic, performance-based specification for polymer modified asphalts has resulted in three descriptive specifications for polymer modified asphalts. Although these specifications are not performance

oriented in a mechanistic sense, materials which could meet these specifications are being used in the construction of asphalt concrete pavements, and therefore, have an empirical connection with field performance.

Each of the materials described are generic in the sense that requirements for a specific polymer, its quantity and its method of manufacture are not included in the specification. A wide variety of materials, material quantities and methods of manufacture can be used to meet these specifications.

It is the hope of the Task Force that the polymer modified asphalt guide specifications provided will aid user agencies in the development of their specifications for polymer modified asphalts.

SPECIFICATION DEVELOPMENT

There are hundreds of potential polymers which can be used to modify asphalt cement properties. The specification described herein has been developed to describe the characteristics of certain specific types of polymer modified asphalt (PMA) which have been used successfully in practice, to date. The list of potential polymer modified asphalts was limited to include:

- those used in practice with success on at least a semi-routine basis and,
- those for which specifications had been written which describe properties of the resulting modified binder in common terms which could be verified by users.

The result of this work is a guide specification describing three types of polymer modified asphalts each based on different types of commonly used polymers. Therefore, this specification is not a performance-based document in the sense that fundamental material properties are described which might be satisfied by any type or combination of materials. Instead, the specification describes materials for which satisfactory performance has been documented. It is the hope of the task force that this information will be used as a guide for agencies wishing to use polymer modified asphalts. A more desirable, generic specification will only be possible as

additional field experience is gained by practitioners or as truly fundamental material properties emerge from ongoing research in asphalt technology, for example the Strategic Highway Research Program (SHRP).

Each of the three types of polymer modified asphalts are specified differently due to the various types of polymers which could be used for modification. Therefore, the guide specifications do not necessarily have common tests or test requirements. At first, these differences make the specification seem less objective, by describing specific types of products. However, one premise of the guide specification that various polymers may provide beneficial asphalt behavior by different mechanisms. Therefore, setting the same tolerances in a given empirical test for each type of polymer modified binder did not seem rational. Until additional data is collected for the various modified systems which can be correlated to field performance, a truly performance oriented specification will not be possible. This information is being collected in the SHRP program, and when the specifications from SHRP are generated they should be incorporated into this guide specification, as well. The guide specification is designed for such modification.

The properties of the binders have been described, in most cases, by conventional ASTM or AASHTO test procedures, or by procedures that are currently being evaluated by these organizations for standardization. It is realized that more sophisticated evaluation procedures could, and in the future should, be used to describe properties of polymer modified binders. However, much of the equipment necessary to conduct more fundamental evaluations is not readily available to user agencies and perhaps, more importantly, have not been developed fully in a theoretical sense so that limiting criteria could be applied in a practical specification.

The specifications include several grades of polymer modified asphalt within each type. This grading is an attempt to describe polymer modified binders which might be usable in different climates. A significant amount of work by the West Coast User-Producer Group has been done to develop a performance-based asphalt specification for differing climatic conditions. The activities of this group have been observed closely with respect to specifying for specific purposes and climates, in fact some of the materials described herein agree closely with certain materials described in the sixth version of the West Coast User-Producer PBA specifications.