

General Materials

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The past few years' literature survey would indicate that very little has been said or done about quality assurance and acceptance plans for general materials in highway construction. These general materials cover a wide range of manufactured products including: bituminous materials, hydraulic cements, structural steel, paints, pipes, posts, guardrails, and similar other items.

These items are, for the most part, manufactured under the control of the producer with the state performing acceptance sampling only. In fact, this seems to be the prime reason for the states to steer away from this aspect of quality assurance research. On the other hand, no other highway material category would better fit the total quality assurance program than the general materials.

There is a definite need for development of acceptance sampling plans for material such as asphalt cements or liquid asphalts. The manufacturers of this extensively used material do not have as stringent a quality control set up as some of the other manufactured items. California (1), as a result of a detailed investigation, has set up a tentative method for determining compliance with penetration test requirements for paving grade asphalt. Various factors affect or influence the development of penetration and liquid asphalt specifications. The crude source, method of refining, and performance of asphalt in pavements are some of the major factors that need consideration. Winnitoy (2) has discussed some of the more common tests with respect to the variability and desirable limits.

However, hydraulic cements are purchased under standard specifications, and rarely does a shipment fail to meet the requirements. The reason is that the specifications are too broad. Furthermore, most test results quoted are on composite samples that easily hide the variations. In view of this, a systematic acceptance plan, which would reduce the testing time (and consequently, savings in dollars), would seem justified at the present time (3).

In the manufacture of steel, rigid inspection and control procedures are exercised by the various steel mills. Qualified national organizations such as ASTM, AASHTO, AWS, and AISC, representing producers and consumers, have thoroughly prepared specifications for practically all phases of construction. As a result of their efforts, duplication by state agencies would result in increased cost due to testing and inspection. Brumer and Stahl (4) discuss some of the problems involved in quality control of structural steel.

All in all, it can be said that (a) a need exists for development of suitable acceptance plans for some of the manufactured products, (b) the reduced sampling plan of ASTM and AASHTO for some of the manufactured products should be utilized by the states until such time as additional research would dictate otherwise, (c) information on the performance of tests on traffic paints should be made available for adequate development of acceptance specifications, and (d) national organizations such as ASTM and AASHTO should be made cognizant of the problems of acceptance of manufactured products and should be asked to help in the solution.

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