Technical Report Documentation Page

1. REPORT No.

2. GOVERNMENT ACCESSION No.

3. RECIPIENT'S CATALOG No.

4. TITLE AND SUBTITLE

Comments on ASTM Standards For Highway

5. REPORT DATE

October 1959

6. PERFORMING ORGANIZATION

7. AUTHOR(S)

F.N. Hveem

8. PERFORMING ORGANIZATION REPORT No.

9. PERFORMING ORGANIZATION NAME AND ADDRESS

State of California
Department of Public Works
Division of Highways

10. WORK UNIT No.

11. CONTRACT OR GRANT No.

13. TYPE OF REPORT & PERIOD COVERED

12. SPONSORING AGENCY NAME AND ADDRESS

14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

This is an advance copy of a paper to be presented at the Third Pacific Area National Meeting of the American Society for Testing Materials (1916 Race St., Philadelphia 3, Pa.) to be held in San Francisco, Calif., Oct. 11-16, 1959. This advance copy is issued primarily to stimulate discussion. Discussion is invited and may be transmitted to the Executive Secretary. The paper is subject to

16. ABSTRACT

As my part of this symposium on ASTM Standards, I have been asked to present the viewpoint of a state agency. My remarks are further confined to the field of highway materials. In this particular field, it so happens that there is an alternative source of nationwide specifications; namely, in the publications of the American Association of State Highway Officials. While AASHO specifications are modeled after ASTM and in many cases are identical; nevertheless, it is possible to introduce additional tests and modifications if need be that are more agreeable to the highway engineer than may be the case with some of the ASTM requirements. Therefore, a state highway agency has considerable latitude or choice in the form of specifications which may be used, and so far as the department which I represent is concerned, we have the option of following ASTM, AASHO or our own special requirements and are not seriously inconvenienced by any inadequacies in ASTM Standards.

It goes without saying, of course, that there are not many points which will merit legitimate criticism and therefore these comments should be interpreted as saying that in general we fully appreciate the value of the ASTM Standards, and, in common with most other technical organizations in the U.S.A., we fully realize the tremendous value and dependability and general suitability of ASTM methods.

17. KEYWORDS

Paper No. 125

18. No. OF PAGES:

8

19. DRI WEBSITE LINK

http://www.dot.ca.gov/hq/research/researchreports/1959-1960/59-09.pdf

20. FILE NAME

59-09.pdf

Paper No. 125

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

COMMENTS ON ASTM STANDARDS FOR HIGHWAY MATERIALS

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This is an advance copy of a paper to be presented at the Third Pacific Area National Meeting of the American Society for Testing Materials (1916 Race St., Philadelphia 3, Pa.) to be held in San Francisco, Calif., Oct. 11-16, 1959. This advance copy is issued primarily to stimulate discussion. Discussion is invited and may be transmitted to the Executive Secretary. The paper is subject to modification and is not to be published as a whole or in part pending its release by the Society through the Executive Secretary.

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F. N. Hveem*

As my part of this symposium on ASTM Standards, I have been asked to present the viewpoint of a state agency. My remarks are further confined to the field of highway materials. In this particular field, it so happens that there is an alternative source of nationwide specifications; namely, in the publications of the American Association of State Highway Officials. While AASHO specifications are modeled after ASTM and in many cases are identical; nevertheless, it is possible to introduce additional tests and modifications if need be that are more agreeable to the highway engineer than may be the case with some of the ASTM requirements. Therefore, a state highway agency has considerable latitude or choice in the form of specifications which may be used, and so far as the department which I represent is concerned, we have the option of following ASTM, AASHO or our own special requirements and are not seriously inconvenienced by any inadequacies in ASTM Standards.

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Presented at Third Pacific Area National Meeting of American Society for Testing Materials, San Francisco, California, October 11-16, 1959

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We hold the view that the organization plan of ASTM committees is excellent providing as it does for representation on each committee of producers, consumers and other general interests with producers in the minority. In spite of the soundness of this theoretical setup of the committees, like many human activities the actual operation at times is something less than ideal. Thus, there have been occasions when producing interests have been able to obstruct desirable changes in standards. This situation usually comes about as a simple matter of practicability. When the question of test requirements is all important, manufacturers and producers usually see to it that they are well represented at committee meetings where the business is transacted. This is in no sense a reflection on the producers, rather it testifies to the importance which they attach to ASTM Standards and committee activities. In contrast, many consumer representatives, especially those representing public agencies, often find it very difficult or impossible to secure approval for travel expense to attend ASTM committee meetings.

All ASTM specifications are the result of a joint effort on the part of producers and consumers. A typical and characteristic picture however places the user in the role of trying to write definite and relatively restrictive specifications in order to make sure that the agencies paying for the material will get what they want. It is also almost universally true that producer members of such a group will be seeking for greater tolerances, more latitude and in general trying to broaden the specifications so that they often become ineffective or meaningless. It is also true that certain producers have sought to promote ASTM test methods that were more restrictive in certain respects than appear to be necessary simply because they were able to meet the restrictive specifications with ease and therefore in certain cases were able to gain an advantage over their competitors.

One good illustration of obstructive tactics has been in the consideration of establishing limitations on the alkali content of portland cement. The original working committee was composed of seven members, three of whom were producers. The consumers performed a tremendous amount of work and produced exhaustive data to prove that there was a need for restricting the alkali content of cements when reactive aggregates were involved. One of the producer members produced data to show that simply restricting the alkali content might not be a complete solution to the problem.

This was, of course, a proper field of activity. However, the other two producer representatives did no work, entered into no discussion, but when the time came for a final decision within the subcommittee, they voted "No" and the three negative votes were sufficient to kill a recommendation that an optional limitation on alkalies be included in ASTM specifications for portland cement. As a result of this action, ASTM specifications still do not recognize the alkali constituent in portland cement as an important factor in the performance. While it now seems probable that the Society will ultimately approve specifications providing for limitation on alkalies, this important step has long been delayed primarily because of producer opposition.

In most instances, the Society will not adopt specification requirements in the face of determined opposition by a vocal minority even though there is strong sentiment for adoption on the part of the great majority. A case in point is the move to relegate the tensile strength test for portland cement to a secondary position. The specifications now provide that unless otherwise stipulated by the purchaser, the requirements for tensile strength only shall apply. It has been the desire of the majority to provide that the compressive requirement shall apply unless otherwise specified. Convincing data have been presented to show that the compressive test is a better indicator of the strength producing properties of the cement in concrete both in compression and flexure. In this case, it appears that the commercial laboratories are the chief opponents of the move to indicate preference for compression tests. Their

action presumably has stemmed from the fact that compression testing requires more costly equipment. To date, the specifications still state that tensile requirements only will apply unless otherwise specified. In contrast, the AASHO specifications provide that the compressive requirements shall apply unless otherwise stipulated.

There are a number of specific examples where we feel that ASTM Standards could be changed or improved to the advantage of most of those who pay for the materials. For example, there should be a more significant method for limiting the amount of clay-like particles in concrete aggregates than by simply stipulating the amount passing a No. 200 sieve. The present Mortar Strength Test, C 87, tells very little about the strength producing properties of sands in concrete. Ready-Mixed Concrete, C 94, should be more specific with respect to means for recording the number of revolutions of a truck mounted mixer. Freeze-thaw Tests, C 290, C 291, C 292 and C 310, are believed to be unrealistically severe.

There is another criticism which can be made and is somewhat similar to the foregoing; namely, that in most specifications, if there is a choice of direction it will always lean in favor of the manufacturer. This point may be illustrated by the following quotation relating to structural steel:

> "All tests and inspection shall be made at the place of manufacture prior to shipment, unless otherwise specified, and shall be so conducted as not to interfere with the operation of the works."

It has been our experience that in the majority of manufacturing and fabricating plants it is impossible to comply literally with this wording and still do an efficient job of inspection. We think that a more realistic and equitable balance would exist if the last part of the paragraph would be changed to read:

> ". . . and shall be so conducted by cooperation between the manufacturer and the representative of the purchaser that interference with the operation of the works shall be held to the minimum compatible with good inspection."

Another field for criticism is the fact that there is often overlapping and lack of clear-cut objectives for some of the subcommittees. Admittedly, it is a difficult matter to prevent such overlapping but it would seem that at times insufficient thought has been given to the scope of the committees and they have been set up without realization of the direction in which the work would inevitably lead. For example, in 1957, Subcommittee B-18 and Subcommittee B-19 were simultaneously working on the design of an oven for the thin film test for paving asphalts. There have been criticisms because of failures of committees to come up with workable specifications. For example, in a paper by W. B. Warren entitled "Quality of Asphalt Cements as Reflected by Specifications" presented at the Canadian Technical Asphalt Association, November 1958, Mr. Warren stated:

> "Standing committees of ASTM . . . have worked on this problem for years. Why then have these efforts not been more productive?"

Mr. Warren went on to say:

> "Such committees are composed of men who have full time jobs and responsibilities elsewhere. Meetings are held normally only once or possibly twice a year. Customary committee activities in any group on a part time voluntary basis are just not conducive to rapid progress by reason of its physical makeup."

I have dealt mainly with the content of ASTM specifications for materials. The other important activity of the Society is in the field of developing methods of test. As a testing agency, we are fully aware of the pitfalls that arise from ambiguous or incomplete statements of test conditions. In this respect, I can offer little but praise for the conscientious and time-consuming work of the committees.

It is, of course, much easier to criticize than it is to suggest how conditions may be improved or drawbacks be eliminated. With respect to specifications for materials, it does appear that the Society should not lean any further than it now does in the direction of protecting or favoring the producer or manufacturing interests.