

UNIFORMITY IN HIGHWAY DATA

THE following extracts from a paper read at the recent Pan-American Road Congress at San Francisco, Cal., describe the method employed by the Commission of Highways of the State of New York. The author is Mr. H. E. Breed, First Deputy Highway Commissioner, and in his preliminary remarks he strongly emphasizes the necessity for uniformity in highway data. Continued neglect of this important branch of the work means waste of experience, energy and resources. The necessity for uniformity is obvious. Under the present system, many different highway departments are doing similar work without any basis for comparison. The records of one are unintelligible to others. Mistakes made in one department are duplicated by many another. Experiments are repeated, often with unsatisfactory or disastrous results, in a dozen different places. Every department, every engineer, has to learn largely through his own experience, and when this process involves the huge sums now being expended upon highways, it is entirely too costly. Were comparative

sidered in part under three heads: First, the treatment of maps; second, the tests and tabulation of stone and sand; and, third, the actual highway construction and maintenance data.

The Treatment of Maps.—The department has three different styles of maps: a large map of the state on a scale of five miles to the inch; 57 county maps on a scale of two miles to the inch; and additional county maps made from the U.S. Government geological sheets on a scale of approximately one mile to the inch. On the large state map projected state highways are shown by two green lines; projected county highways are shown by a single red line; state highways under construction are shown by a black dash line between two green lines; county highways under construction, by a black dash line over a red line; completed state highways by a solid black line and green border; and completed county highways by a plain black line. Finished, this shows the projected state highway system as prescribed by legislative enactment, and county highways as petitioned for and laid out by legislative enactment and county boards of supervisors. In addition to the information given on the large state

(FRONT)		(BACK)	
STATE OF NEW YORK COMMISSION OF HIGHWAYS		NOTES.	
STONE, GRAVEL AND SAND SAMPLE INFORMATION BUREAU OF TESTS Albany, N.Y.		(1) Give title of person who took sample.	
Gentlemen:		(2) State whether quarry, ledge, or field stone, or in case of sand or gravel whether bank or creek bed.	
There has this day been shipped Division Sample No. of taken, 191..		(3) State whether limestone, trap, syenite, etc., etc.	
SAMPLE taken by (1) from property of		(4) State whether plentiful or limited. If limited give approximate estimate in cubic yards.	
Village or City of Town of County of		(5) State whether top, bottom or concrete.	
Character of supply is (2) Its location by Index No. is Quad. Sec. Letter No.		(6) State name of road.	
General classification of stone is (3) The available supply is (4) The results of its use were		(7) Wherever information called for on this form cannot be given, draw a line in the following blank space. Wherever there is insufficient space for information in the form give the additional information under "Remarks," also any information regarding the accessibility of the quarry, character of haul, amount of stripping necessary or other information deemed advisable.	
It has been used for (5) Course on Road Nos.			
SAMPLE is submitted for use in (5) Culverts Course of the (6) Sec No County of Road			
Pet. No. Road No. Repair Contract No. Route No.			
From Sta. to Sta. Haul to nearest point on road which is Sta. miles. Road extends from Sta. to Sta.			
The kind of stone specified for use on this road for top course is (3) and for bottom course is (3) Binder to be used is			
The type of construction of this road is			
Remarks (7)			
SAMPLE is herewith recommended for use in the (5) course Signed			
SEE NOTES ON OTHER SIDE OF THIS FORM.		Engineer Division No.	

Fig. 1.

statistics available, every department would be an experiment station; every experiment station an illumination to the whole field. The conscientious engineer, consulting such statistics upon the inception of any new work could determine, far more accurately than he can to-day, factors making for success or failure in it.

Granted the necessity of having a uniform system for keeping statistics and data, we must consider its scope. It should be broad and comprehensive enough to be of relative worth, without tying itself up into an agglomeration of red-taped detail. Simplicity should be its keynote and motive. It should be devised in such a way as to be intelligible to anyone without the department who came thither for information, and it should give to all employees within the department adequate knowledge of the work; its preliminaries, its progress and its results. In such a system, only approximate cost data could be sought, for varying local conditions would so change many items as to make them inconclusive.

The Commission of Highways of the State of New York, on July 15 had \$14,000,000 worth of construction work going on, plus \$1,325,000 worth of maintenance work. Its statistical problem, therefore, is large. For the purposes of this paper this problem has been con-

sidered in part under three heads: First, the treatment of maps; second, the tests and tabulation of stone and sand; and, third, the actual highway construction and maintenance data.

Tabulation of Stone and Sand.—The large amount of stone and sand that passes through the testing laboratory makes uniformity in the keeping of accurate data essential in order to avoid duplication of work and to preserve information that will increase economic construction and assist anyone engaged in the building of public highways. In order to handle the work expeditiously and to make it valuable to all the employees of the department, it has been necessary to make a number of comprehensive forms for the correlation of the results of the different tests.

With every specimen of stone submitted for test, the engineer sends with the sample definite information about the location and available supply, giving its exact location on the United States topographic sheet, as well as the character of rock or material in question, the type of construction for which the same is intended, and the results