MICHIGAN
STATE HIGHWAY DEPARTMENT
Charles M. Ziegler
State Highway Commissioner

REPORT ON RESEARCH LABORATORY

1946 - 1947

By

E. A. Finney

Research Laboratory
Testing and Research Division
Report No. 100
July 1, 1947

MICHIGAN
STATE HIGHWAY DEPARTMENT
LANSING 13

CHARLES M. ZIEGLER
STATE HIGHWAY COMMISSIONER

HARRY T. WARD
CHIEF DEPUTY COMMISSIONER

HARRY C. COONS
DEPUTY COMMISSIONER,
CHIEF ENGINEER

August 8, 1947

H. B. Dirks
Dean of Engineering
Olds Hall of Engineering
Michigan State College
East Lansing, Michigan

Dear Dean Dirks:

It is my pleasure to submit the following report covering the activities of the Research Laboratory, Testing and Research Division for the year ending June 30, 1947.

During the year just concluded the accomplishments of the Laboratory have been somewhat curtailed by the migration of personnel to positions outside of State Service and by the fact that replacements have been difficult in the face of existing employment and wage conditions. However, with the aid of sufficient part-time student help it has been possible to maintain satisfactory progress on the major research projects.

Considerable progress has been made on the two cooperative projects which have been established between the Laboratory and the Engineering Experiment Station. All laboratory work in connection with the investigation on curing concrete pavements with impervious membrane compounds has been completed. A report is being prepared for publication as a bulletin of the College. The work has disclosed significant information on the matter of curing concrete pavements, especially from the standpoint of using impervious membranes. In regard to the investigation concerning the design and construction of pavement foundations, valuable information is continually being collected from construction projects, especially with respect to present consolidation practices employed on bridge backfills and highway embankments.

The laboratory work in connection with the cooperative research project between the Engineering Research Laboratory of the University of Michigan and the Highway Department on the study of load deflections and stress measurements on a full scale pavement slab has been completed. The work has resulted in a better understanding of the relative destructive effect of multiple axles and spacing versus single axles with equivalent loadings.

The laboratory has been actively engaged in the collection and interpretation of data for the preparation and publishing of the first complete report on the Michigan Test Road. The report will cover a five year period from time of construction to 1946. The work is rapidly nearing completion.

CURRENT RESEARCH PROGRAM, AUGUST 8, 1947

A. Aggregates
    47 A-7 Evaluation of Aggregate Sources
    47 A-8 Material Surveys

B. Cement and Concrete
    39 B-11 Concrete Durability Investigation
    41 B-14(a) Curing of Concrete Pavements
    42 B-14 Effect of Low Temperatures on Concrete Containing Admixtures
    45 B-18 Preserving and Reconditioning of Concrete Structures
    46 B-19 Concrete Failure, F 15-11,C4, US-131
    47 B-21 Control of Autogenous Volume Change in Concrete

C. Bituminous Materials
    38 C-1 Changes in Characteristics of Slow Curing Oils
    47 C-8 Use of Inhibitors to Control Weathering of Bituminous Materials

D. Bituminous Mixtures
    43 D-13 Experimental Bituminous Surface Treatments
    46 D-14 Bituminous-Rubber Mixtures for Pavement Surfaces

E. Soil
    37 E-3 Soil Stabilization
    43 E-7 Turf Growth on Highway Shoulders
    44 E-10 Soil Action Under Bridge Piers
    45 E-11 Design and Construction of Pavement Foundations
    47 E-12 Chemical Stabilization of Granular Materials

F. Structural
    38 F-1 Evaluation of Load Transfer Devices
    43 F-6 Structural Failure, F 40-11,C1 and F 5-15,C2
    39 F-7 Concrete Pavement Design
    39 F-7(5) Grand Rapids Experimental Project, F 41-34,C6
    44 F-11 Model Study of Slab Action
    47 F-13 Slab Action Under Dynamic Loads
    47 F-14 Distribution of Stresses in Bridge Structures

G. Miscellaneous
    38 G-3 Snow Removal and Ice Control
    38 G-4 Joint Seal Investigation
    43 G-28 Guard Rail Expansion Take-Up and Anchorage Design