

**CITY ROADS AND
PAVEMENTS SUITED TO
CITIES OF MODERATE SIZE**

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City roads and pavements suited to cities of moderate size by William Pierson Judson

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WILLIAM PIERSON JUDSON

**CITY ROADS AND
PAVEMENTS SUITED TO
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Road Preservation and Dust Prevention

BY

WILLIAM PIERSON JUDSON, M. Am. Soc. C. E.

Containing illustrated descriptions of the latest methods and materials used in the United States and in Europe for the preservation of surface and the prevention of dust on roads of broken stone, gravel or sand, with details of costs and results, which are here for the first time compiled and condensed into book form.

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CITY

ROADS AND PAVEMENTS

SUITED TO

CITIES OF MODERATE SIZE.

Fourth Edition, Revised.



BY

WILLIAM PIERSON JUDSON,

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Member of the Institution of Civil Engineers (of Great Britain)
Member of the Massachusetts Highway Association
Member of the American Society of Municipal Improvements
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PREFACE TO SECOND EDITION.

The local features of the first edition, having served their purpose, have been omitted, and modifications have been made to show the present applications of general methods, some of which have changed since 1894. The most marked change during the past eight years has been in the increased use of crushed stone for roadways of macadam and of telford construction, on the improved streets of villages and cities. A notable instance is that of the city of Greater New York, which contains outside its parks eight hundred miles of crushed stone roads built since 1894.

This general increase has resulted in part from the work begun in 1893 by the State of New Jersey, followed in 1894 by Massachusetts, in 1895 by Connecticut and in 1898 by New York. The examples given by the governments of these States in building highways by State aid and outside corporate limits, have led to the building by the municipalities of similar roads within many cities and villages, which have thus wisely profited by the experienced methods of State officials.

The results have been an increasing extent of the best kinds of roads of broken stone, and a growing knowledge of the methods and machines by which alone can such roads be built and maintained. These are here described under the heading "Broken Stone Roads," without however differing essentially from the descriptions given in the first edition.

The grade of a city street is usually a fixed condition and not a theory, and it is often difficult to decide which is the best pavement for a fixed steep grade in a given climate, or how steep a grade will give good results with a given pavement. Tables of actual instances are given in order that engineers may know where to find condi-

PREFACE TO SECOND EDITION.

tions similar to their own, and where they may examine certain pavements in actual use. To watch the traffic using a steep paved slope or to examine its condition during a sharp shower or after a heavy rain, will suggest points as to the proper grade and crown which will be worth any amount of theorizing as to maximum grades.

The sections entitled respectively "Concrete Base," "Block Stone," "Wood," "Vitriified Brick," "Asphalt," "Bituminous macadam" and "Broken Stone," are made to accord with the latest records of methods and costs, using illustrations and tables for brevity. These records have been obtained from personal practice and investigation and from the publications and discussions of the several Societies of Civil Engineers, from the reports of the officials of States and Cities, and from the columns of Engineering News, The Engineering Record, Municipal Journal and Engineer, The Engineering Magazine and Municipal Engineering, and also directly from many civil engineers in addition to those whose names are mentioned. The uniform courtesy shown by civil engineers, both in the United States and abroad, in cordially meeting inquiries regarding their works, methods and results, and in freely giving all desired information, is a marked and peculiar characteristic of the Profession.

The statements of facts and opinions are meant for those who wish to profit by the varied experiences of practical road makers.

WM. P. J.

OSWEGO, NEW YORK,-

May 1, 1902.

PREFACE TO FOURTH EDITION.

This edition is prepared in response to the continued call for the book as a guide to the building of rural highways as well as of city pavements. Additions and changes are made on pages 64, 81, 100, 111, 112, 114, 119, 120, 121, 147, 149, 179 and 187, to make the book accord with the latest practice.

WM. P. J.

OSWEGO, NEW YORK,

February 1, 1909.