

# Deleterious Constituents of Indiana Gravels

D. W. LEWIS, Research Engineer  
and

EDUARDS VENTERS, Research Assistant

Joint Highway Research Project, Purdue University

(Synopsis of Paper Presented Also at Highway Research Board  
Meeting in January, 1954\*)

This paper reports the results of tests on Indiana gravels ranging from good to poor in field performance in portland cement concrete. The gravels were separated by heavy liquid flotation into various specific gravity ranges. The gravel fractions thus obtained were tested to determine absorption, specific gravity, degree of saturation, lithologic composition and durability in air entrained concrete subjected to freezing and thawing.

The results show that the principal deleterious constituents of Indiana gravels are sandstones and cherts. They are characterized by low specific gravity, high absorption and degree of saturation and produce nondurable concrete when used as the coarse aggregate. The concrete durability can be improved by heavy media separation of the aggregate. Greater durability is obtained as the specific gravity at which the separation is made is increased.

---

\* Reprints of the complete paper, appearing in the Proceedings, 33rd Annual Meeting Highway Research Board, January 1954, may be obtained from the Joint Highway Research Project, Purdue University. Since it has been printed elsewhere, it is omitted here in the interest of economy.