

# Expanded Shale, Clay, and Slate Reference Manual

for

## **Asphalt Pavement Systems**

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# Section 1

## Introduction

For the purposes of this manual, the term *ESCS* means expanded shale, clay, and slate lightweight aggregates. *ESCS* is a unique ceramic lightweight aggregate prepared by expanding select minerals in a rotary kiln at temperatures over 1000° C.

The Expanded Shale, Clay, and Slate Institute (ESCSI) produced this reference manual to provide an educational reference for ESCS aggregate producers and users in the asphalt pavement market. This manual serves to educate and guide designers, engineers, students, government agencies, and contractors on the advantages, applications, and performance of ESCS aggregate. It is especially useful to designers and contractors who are specifying and using ESCS aggregates for the first time and need guidelines to assure a successful project.

This manual will be particularly valuable to government agencies responsible for the preparation of pavement designs and materials specifications. The design engineers responsible for the introduction and proper use of such materials should also find this manual helpful.

What is more important however, are the public safety benefits of ESCS aggregates that produce long-lasting, high-friction surfaces that are economical, easy to construct, durable, and have a proven performance. Properly designed and constructed ESCS pavement surfaces retain frictional properties (high-friction resistance) for the life of the surface, even under heavy traffic.

Although the information in this manual is current and factual, there are specific differences associated with given materials, environments, and services that require engineering judgment, and construction control to produce a quality job. (Indeed, this is true for any quality product, whether it is a pavement, bridge, or sky scraper).

The physical properties for ESCS aggregate will vary because they are manufactured over a wide geographical area. For precise information on mix design, unit weight, and other physical properties of a particular ESCS material, consult the individual expanded shale, clay, or slate producers. ESCS is available throughout the United States, Canada, and much of the world.

ESCS's low-unit weight require bid forms, bid evaluations, and mix designs to be adjusted or converted to include an equivalent volume measurement rather than by only a weight measurement. This requirement keeps all materials on an equal competitive basis by correctly adjusting for the large difference in yield, caused by ESCS high volume to weight ratio.