Stalite Rotary Kiln Expanded Lightweight Aggregate has been used in geotechnical applications for nearly fifty years. It reduces the weight of compacted fills, provides thermal stability, is free draining, chemically inert, strong, durable and environmental friendly. Because it is not a soil, the objective in compacting structural grade lightweight aggregate fill is not to aim for maximum in place density, but to strive for an optimum density that provides high stability without unduly increasing compacted density. Two to four passes of compaction equipment commonly achieve optimum field density. Structural grade lightweight aggregates provide an essentially non-cohesive, granular fill that develops stability from inter-particle friction.**1** The Stalite gradation produces a specific weight that remains constant regardless of compactive effort. These properties are generally not understood by contractors. Test results indicate that specific weight of the aggregate is solely controlled by Mother Nature's geometry and cannot be influenced by additional compaction until crushed. Once the aggregates are settled in place they can no longer move vertically. The addition of water or additional compaction won't change it. The factors of horizontal displacement does not affect the compaction of the aggregate. This hexagonal closed pack system is the densest possible geometric configuration. Once contained horizontally, a simple proof roll will resolve any questions about the need for any additional compaction. Results of compacted lightweight aggregate density tests conducted in accordance with laboratory procedures (Proctor tests) should be interpreted differently from those for natural soils. For field density test, using the balloon method or sand cone may be helpful. I have attached a report from our quality control lab on Stalite compressive strength testing pertaining to this matter.

1. Holm, T. A., and A. J. Valsangkar. Lightweight Aggregate Soil Mechanics: Properties and Applications, *Transportation Research Record 1422*, National Research Council, Washington, D.C., 1993

Attachments:

MSDS
Compressive Strength
Void Ratio