

*** DRAFT – NOT FOR FILING ***

3745-512-223 Structural fill.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, test methods, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-500-03 of the Administrative Code titled "Incorporation by reference."]

(A) Structural fill shall conform to the following:

- (1) Be free of foreign material and deleterious material.
- (2) Be free of industrial waste, solid waste, and C&DD. Clean hard fill may be used.
- (3) The material specifications established in paragraphs (B) to (F), as applicable.

(B) Structural fill consisting of rocks shall meet the following criteria:

- (1) Each lift shall be constructed by the owner or operator with the size and type of construction equipment, lift thickness, number of passes, and use of water in accordance with corresponding construction details as established by the pre-construction test fill in accordance with rule 3745-512-15 of the Administrative Code.
- (2) Rocks shall not exceed two-thirds the lift thickness in any direction.

[Comment: If structural fill consisting of rocks becomes part of the uppermost aquifer system, then the separation distance between the uppermost aquifer system and liner system is reduced. Possible consequences of the reduction are that the facility no longer meets siting criteria or the design is no longer appropriate for waste or C&DD to be disposed.]

(C) Structural fill consisting of soil with more than thirty per cent of the material retained on the 0.75-inch sieve shall be constructed by the owner or operator in lifts to attain uniform compaction. Each lift shall meet the following criteria:

- (1) Be constructed with the size and type of construction equipment, lift thickness, number of passes, and use of water in accordance with corresponding construction details as established by the pre-construction test fill in accordance with rule 3745-512-15 of the Administrative Code.
- (2) Rocks shall not exceed two-thirds the lift thickness in any direction.
- (3) If used as subbase under a geosynthetic clay liner or flexible membrane liner, be constructed of a soil with a maximum clod size that does not exceed the lift thickness.

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(D) Structural fill consisting of soil with less than thirty per cent of the material retained on the 0.75-inch sieve shall be constructed by the owner or operator in lifts to attain uniform compaction. Each lift shall meet the following criteria:

(1) Be constructed in loose lifts of twelve inches thick or less.

(2) Rocks shall not exceed two-thirds the lift thickness in any direction.

(3) Be compacted to either at least ninety-five per cent of the maximum dry density as determined by ASTM D698 (standard proctor) or at least ninety per cent of the maximum dry density as determined by ASTM D1557 (modified proctor), or the density established in accordance with rule 3745-512-10 of the Administrative Code if that density is greater.

(4) If used as subbase under a geosynthetic clay liner or flexible membrane liner, be constructed of a soil with a maximum clod size that does not exceed the lift thickness.

(E) If a geosynthetic clay liner or flexible membrane liner is to be placed upon structural fill, at a minimum the top 1.0 feet of structural fill shall consist of soil.

(F) If a vegetated surface is specified in the authorizing document, the top lift of the structural fill shall meet the following criteria:

(1) Be of sufficient thickness and fertility to support a complete and dense cover of vegetation.

(2) Be comprised of soil that shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" corresponding to the maximum slope length between ditches and assuming disturbed soils and that the soils are highly susceptible to rill erosion.

(3) Not later than seven days after construction, be covered by the owner or operator with mulch or other material. The mulch or other covering material shall result in an erosion rate of not more than five tons per acre per year as calculated using the "Universal Soil Loss Equation," "Revised Universal Soil Loss Equation," or the "Water Erosion Prediction Project Model" corresponding to the maximum slope length between ditches and assuming the mulch or other material is a disturbed soil that is highly susceptible to rill erosion.

(G) The owner or operator shall perform testing of structural fill in conformance with the following:

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(1) For structural fill using soil, pre-construction testing on representative samples to determine shear strength in accordance with rule 3745-512-10 of the Administrative Code.

(2) Pre-construction testing performed by the owner or operator on representative samples in accordance with rule 3745-512-15 of the Administrative Code.

(3) For structural fill using soil with less than thirty per cent of the material retained on the 0.75-inch sieve, construction testing on the constructed lifts to determine the density and moisture content according to ASTM D6938 (nuclear method), ASTM D1556 (sand cone), ASTM D2167 (rubber balloon), or ASTM D6780 (TDR) at a frequency of not less than one test per acre per lift. The locations of the individual tests shall be adequately spaced to represent the constructed area and shall be offset from one lift to the next lift. When used under geosynthetic clay liner, any penetration shall be repaired by the owner or operator using bentonite.

(H) Certification of structural fill by the owner or operator shall include the following:

(1) Record drawings showing the location and plan views with topographic representation of final elevations of the structural fill, as constructed.

(2) For structural fill using soil with less than thirty per cent of the material retained on the 0.75-inch sieve, results of all construction testing performed under paragraph (G)(3) of this rule.

(3) Results of all testing and verification that the structural fill meets the standards in paragraphs (A) to (F) of this rule and the specifications in the authorizing document.