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3745-512-15 Pre-construction testing.

[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) Any material used to construct an engineered component of the facility shall undergo pre-construction testing by the owner or operator in accordance with this rule prior to use of the construction material. The owner or operator shall not use any material to construct the facility unless the results of the pre-construction testing meet all applicable specifications in this chapter and the material specifications that were established by the authorizing document.
- (B) The evaluation of the construction material shall be signed and sealed by a professional engineer. The evaluation shall determine whether all applicable specifications in this chapter and the material specifications established by the authorizing document are being met.
- (C) For added geologic material, the owner or operator shall perform pre-construction testing on representative samples of the soil to determine the following:
 - (1) The maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor) at a frequency of not less than once for every ten thousand cubic yards of soil.
 - (2) The recompacted laboratory hydraulic conductivity using ASTM D5084 (falling head permeameter) at a frequency of not less than once for every ten thousand cubic yards of soil. Sample preparation and compaction shall model the construction requirements established in paragraphs (A)(5) to (A)(8) of rule 3745-512-222 of the Administrative Code.
- (D) For structural fill using rocks or using soil with more than thirty per cent material retained on the 0.75-inch sieve, the owner or operator shall construct a test fill as described in "Test Quarries and Test Fills" to determine the size and type of construction equipment to be used, lift thickness, number of passes, and use of water.
- (E) For structural fill using soil with not more than thirty per cent material retained on the 0.75-inch sieve, the owner or operator shall perform pre-construction testing on representative samples of the soil to determine the following:
 - (1) The maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor) at a frequency of not less than once for every ten thousand cubic yards of soil.

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- (2) If a vegetated surface is specified in the authorizing document, the grain size distribution of soil used in the top lift according to ASTM D422 (sieve and hydrometer) at a frequency of not less than once for every three thousand cubic yards of soil.
- (F) For embankment material, the owner or operator shall perform pre-construction testing on representative samples of the soil to determine the following:
- (1) The maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor) at a frequency of not less than once for every ten thousand cubic yards of soil.
- (2) The grain size distribution according to ASTM D422 (sieve and hydrometer) at a frequency of not less than once for every three thousand cubic yards of soil.
- (G) For geosynthetic clay liner, the owner or operator shall perform pre-construction testing on representative samples to determine the dry bentonite mass per square foot according to ASTM D5993 at a frequency of not less than once per fifty thousand square feet of geosynthetic clay liner.
- (H) For granular material used as leachate collection system drainage layer, the owner or operator shall perform pre-construction testing on representative samples at a frequency of not less than once for every three thousand cubic yards of granular material to determine the following:
- (1) Hydraulic conductivity using ASTM D2434 (constant head).
- (2) Grain size distribution using ASTM C136 (sieve).
- (3) Carbonate content using ASTM D3042 at a pH of 4.0.
- (I) For tire shreds used as leachate collection system drainage layer, the owner or operator shall perform pre-construction testing on representative samples at a frequency of not less than once for every seven thousand five hundred cubic yards of tire shred material to determine the following:
- (1) Hydraulic conductivity at the maximum projected normal compressive stress using a method prescribed by the professional engineer that will provide accurate and representative results.
- (2) Size distribution using a method prescribed by the professional engineer that will provide accurate and representative results. This paragraph does not apply if the tire shred drainage layer is placed above a cushion layer that is a leachate collection system drainage layer comprised of granular material.

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(J) For geocomposite, the owner or operator shall perform pre-construction testing on representative samples to determine the following:

(1) Apparent opening size of the filter fabric component of the geocomposite according to ASTM D4751 at a frequency in accordance with ASTM D4354 (sampling geosynthetics) "Procedure B" where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet.

(2) Transmissivity using ASTM D4716 at the maximum projected normal compressive stress and at a frequency in accordance with ASTM D4354 (sampling geosynthetics) "Procedure B" where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet. The substrate and superstrate used in the testing shall be significantly similar to or adequately represent the engineered components being used below and above the geocomposite.

(K) For tire shreds used for the permeable material overlying a geocomposite drainage layer, the owner or operator shall perform pre-construction testing on representative samples of the shredded tires for size distribution using a method prescribed by the professional engineer that will provide accurate and representative results.

(L) For material used to surround leachate pipes, the owner or operator shall perform pre-construction testing on representative samples at a frequency of not less than once for every three thousand cubic yards of granular material to determine the following:

(1) Grain size distribution according to ASTM C136 (sieve).

(2) Hydraulic conductivity using ASTM D2434 (constant head).

(3) Carbonate content using ASTM D3042 at a pH of 4.0.

(M) For material for the granular filter layer, the owner or operator shall perform pre-construction testing on representative samples at a frequency of not less than one test per ten thousand cubic yards of material to determine the following:

(1) Grain size distribution according to ASTM C136 (sieve).

(2) Hydraulic conductivity using ASTM D2434 (constant head).

(3) For granular filter layers over the leachate collection system drainage layer or within the disposal limits, carbonate content using ASTM D3042 at a pH of 4.0 .

(N) For geotextile filter layer, the owner or operator shall perform pre-construction testing to determine the apparent opening size according to ASTM D4751 at a frequency in accordance with ASTM D4354 (sampling geosynthetics) "Procedure B"

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where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet.

(O) For transitional cover, the owner or operator shall perform pre-construction testing on representative samples at a frequency of not less than one test per ten thousand cubic yards of material to determine the following:

(1) The grain size distribution according to ASTM D422 (sieve and hydrometer).

(2) The atterberg limits according to ASTM D4318.

(3) For soil used in the top lift, if any soil amendment is necessary to provide sufficient fertility to support a dense and complete cover of vegetation.

(P) For material for the recompacted soil layer of a cap system, the owner or operator shall perform pre-construction testing on representative samples of the soil. The pre-construction testing shall determine the following:

(1) The maximum dry density and optimum moisture content according to ASTM D698 (standard proctor) or ASTM D1557 (modified proctor) at a frequency of not less than once for every three thousand cubic yards of soil.

(2) The grain size distribution according to ASTM D422 (sieve and hydrometer) at a frequency of not less than once for every three thousand cubic yards of soil.

(3) The atterberg limits according to ASTM D4318 at a frequency of not less than once for every three thousand cubic yards of soil.

(4) The recompacted laboratory hydraulic conductivity according to ASTM D5084 (falling head permeameter) at a frequency of not less than once for every ten thousand cubic yards of soil. Sample preparation and compaction shall model the construction requirements established in paragraphs (A)(5) to (A)(8) of rule 3745-512-611 of the Administrative Code.

(Q) For material used for granular drainage layer in the cap system, the owner or operator shall perform pre-construction testing on representative samples at a frequency of not less than once for every ten thousand cubic yards of granular material to determine the following:

(1) Hydraulic conductivity using ASTM D2434 (constant head).

(2) Grain size distribution using ASTM C136 (sieve).

(R) For cap protection layer, the owner or operator shall perform pre-construction testing on the soil to determine the following:

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- (1) The atterberg limits according to ASTM D4318 at a frequency of not less than once for every five thousand cubic yards of soil.
 - (2) Organic content according to "Test Method C" of ASTM D2974 at a frequency of not less than once for every five thousand cubic yards of soil.
 - (3) The grain size distribution according to ASTM D422 (sieve and hydrometer) at a frequency of not less than once for every five thousand cubic yards of soil.
 - (4) The per cent dispersion according to ASTM D4221 at a frequency of not less than once for every five thousand cubic yards of soil.
 - (5) For soil used in the top lift, at a frequency of not less than once for every ten thousand cubic yards of soil, if any soil amendment is necessary to provide sufficient fertility to support a dense and complete cover of vegetation.
- (S) For the separation layer of the gas collection layer, the owner or operator shall perform pre-construction testing on representative samples to verify the separation layer meets the following specifications:
- (1) For granular material, grain size distribution according to ASTM C136 (sieve) at a frequency of not less than once for every ten thousand cubic yards of material.
 - (2) For a geotextile, apparent opening size according to ASTM D4751 at a frequency in accordance with ASTM D4354 (sampling geosynthetics) "Procedure B" where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet.
- (T) For granular material for the gas collection layer in the cap system, the owner or operator shall perform pre-construction testing on representative samples to verify the gas collection layer meets the specifications in the authorizing document at a frequency of not less than once for every ten thousand cubic yards of granular material.
- (U) For geocomposite used as a gas collection layer in the cap system, the owner or operator shall perform pre-construction testing on representative samples to determine the following:
- (1) Apparent opening size according to ASTM D4751 at a frequency in accordance with ASTM D4354 (sampling geosynthetics) "Procedure B" where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet.
 - (2) Transmissivity using ASTM D4716 at the maximum projected normal compressive stress and at a frequency in accordance with ASTM D4354

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(sampling geosynthetics) "Procedure B" where a unit is considered one roll and a lot size shall not exceed one hundred thousand square feet.