*** DRAFT – NOT FOR FILING ***

3745-511-40 **Static stability analysis and reporting.**

(A) The static analyses required by this rule shall be used to demonstrate the following:

(1) The minimum interface and internal shear strengths of engineered components and the materials will provide the factors of safety required by this rule.

(2) The minimum factors of safety are met using shear strengths for the in situ foundation materials. Shear strength is determined by the laboratory testing performed during the site investigation conducted in accordance with Chapter 3745-510 of the Administrative Code.

(B) An assessment using a two dimensional limit equilibrium method of failure modes and conditions that at a minimum shall include the following:

(1) Short-term deep-seated translational and rotational failure. This analysis shall demonstrate, using total stress shear strengths and appropriate pore water pressures, that the following slopes have a factor of safety of at least 1.30 against failure:

(a) Internal slopes.

(b) Excavated slopes.

(c) Interim slopes.

(d) Final slopes.

(2) Long-term deep-seated translational and rotational failure. This analysis shall demonstrate, using effective stress shear strengths, that the following slopes have a factor of safety of at least 1.50 against failure:

(a) Interim slopes.

(b) Final slopes.

This analysis is not required if either the pore water pressure will dissipate within one year and the factor of safety of the static stability analysis described in paragraph (B)(1) of this rule is at least 1.50 or if the construction and filling sequence or features of the facility will buttress the slope.

(3) Shallow translational and rotational failure for drained conditions. This analysis shall demonstrate that the following slopes have a factor of safety of at least 1.50 against failure:

(a) If the design includes a liner system, internal slopes.

(b) Final slopes.

(4) Shallow translational and rotational failure of final slopes for saturated conditions. This analysis shall demonstrate that, with the head on the cap barrier layer equivalent to the thickness of the drainage layer, the cap system has a factor of safety of at least 1.10 against failure.

(5) Shallow translational and rotational failure of the leachate collection system drainage layer and protective layer and of the cap system drainage layer and cap system protection layer. This analysis shall demonstrate that these layers have a factor of safety of at least 1.10 against failure using residual shear strengths and static equipment loading.

(6) Dynamic loading on access roads built into or onto excavated slopes, internal slopes, or the cap system. This analysis shall demonstrate that the integrity of the liner system, leachate management system, and cap system will not be impaired using anticipated dynamic loading.

(C) For all slopes greater than 5.0 per cent that may be loaded with one thousand four hundred forty pounds per square foot or more of vertical compressive stress, the residual shear strength shall be used during the assessment of failure mechanisms for all interfaces between geosynthetics and for all interfaces between a geosynthetic and another material.

(D) The geotechnical and stability analyses of the liner system or the cap system shall not rely on any of the tensile strength properties of any of the geosynthetic engineered components included in the design other than those engineered components used primarily for tensile reinforcement.

(E) The geotechnical and stability analyses report identified in rule 3745-511-10 of the Administrative Code shall contain a section titled "Static Stability Analysis" which shall contain the following information:

(1) The scope, extent, and findings of the site investigation and earthen materials testing program bearing on static stability.

(2) A description of the rationale used for the selection of the analysis input parameters.

(3) A description of the method used to calculate static stability.

(4) For each of the failure modes and conditions assessed, a description of the rationale used for the selection of the critical cross sections for the excavated slopes, internal slopes, interim slopes, and final slopes.

(5) A drawing of each critical cross section that fully depicts the analysis input model including the following:

(a) The material boundaries.

(b) The highest temporal phreatic surfaces and highest temporal piezometric surfaces.

(c) The material types.

(d) The in situ weights and the saturated unit weights of the materials.

(e) The material shear strengths.

(6) The plan view showing the locations of the critical cross sections that includes the northings and eastings for the endpoints of the critical cross sections.

(7) A summary of the results using a two dimensional limit equilibrium method for each of the critical cross sections.

(8) All inputs, outputs, and calculations used for the static stability analysis. If a computer was used for any calculations, the computer inputs and outputs shall also be included.