Preparing Activity: USACE Superseding without Revision
UFGS-02 56 14 (February 2010)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2023
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02/21

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SECTION 02 56 13.16

CLAY WASTE CONTAINMENT
02/21

****
NOTE: This guide specification covers the requirements for construction of a clay barrier layer to isolate contaminated material from the environment.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).
****

PART 1 GENERAL

1.1 UNIT PRICES

****
NOTE: Delete this paragraph when work is covered by a lump sum contract price. Weight measurement may be used to supplement volume measurement surveys if significant subgrade settlement (landfill cover applications) is anticipated.
****

Base measurement and payment for the clay barrier layer on the unit price schedule for each cubic m cubic yard of clay in place. Include the cost for development of the clay borrow source, cost of clay, excavation, hauling, equipment, placement, testing, and other incidental work required

to construct the clay barrier layer in this unit cost.

1.2 REFERENCES

****

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

****

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D698	(2012; E 2014; E 2015) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m.))
ASTM D1140	(2017) Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing
ASTM D1556/D1556M	(2015; E 2016) Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method
ASTM D1557	(2012; E 2015) Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3) (2700 kN-m/m3)
ASTM D1587/D1587M	(2015) Thin-Walled Tube Sampling of Soils for Geotechnical Purposes
ASTM D2167	(2015) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D2216	(2019) Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

ASTM D2488	(2017; E 2018) Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)
ASTM D3740	(2019) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM D4220/D4220M	(2014) Preserving and Transporting Soil Samples
ASTM D4318	(2017; E 2018) Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D5084	(2016a) Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter
ASTM D6938	(2017a) Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
ASTM D7928	(2017) Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis

1.3 SUBMITTAL REQUIREMENTS

Submit Materials Handling Plan describing the following: processing and placement of the clay; type, model number, weight and critical dimensions of equipment to be used for soil processing, compaction, scarification, and smooth rolling; method of protecting clay from changes in moisture content and freezing after placement. Also, submit the following:

a. Borrow Source Assessment Report at least [15] [_____] days prior to clay placement. Do not place clay until the Borrow Source Assessment Report is approved. Include the following in the report: location of each borrow source; plan view and estimated available quantity of clay; locations and logs of subsurface explorations; laboratory test results; moisture-density curves showing the "Acceptable Zone" of moisture contents and densities which achieve the required hydraulic conductivity for each principal type of material or combination of materials.

b. A minimum of 46 kg 100 pounds of each principal type of material or combination of materials to the Government's designated laboratory at least [30] [_____] days prior to placement.

c. Name and qualifications of the proposed commercial testing laboratory.

1.4 SUBMITTALS

****

NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item, if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.
****

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Protection

Equipment

Commercial Testing Laboratory

SD-04 Samples

Clay

Quality Assurance Samples

SD-06 Test Reports

Borrow Source Assessment

Assessment Tests

Moisture Content and Density Tests of Clay

Hydraulic Conductivity Tests of Clay

PART 2 PRODUCTS

2.1 CLAY

****

NOTE: The physical criteria listed in Table 1 are minimum requirements. More restrictive criteria may be appropriate depending on local soils. For composite geomembrane/clay covers and liners, the maximum particle size should be reduced to 13 mm 0.5 inches in the upper lift of clay layer to prevent puncturing of the geomembrane.

Bentonite is often added to soils that do not contain enough clay to achieve the desired hydraulic conductivity. Refer to EPA/600/R-93/182 - Quality Assurance and Quality Control for Waste Containment Facilities if bentonite will be used as an additive to the available soils.

****

Provide clay that is free of roots, debris, organic or frozen material, and has a maximum clod size of 50 mm 2 inches at the time of compaction. Clay material must comply with the criteria listed in Table 1.

TABLE 1 REQUIRED PHYSICAL PROPERTIES OF CLAY

Property	Test Value	Test Method
Max. particle size (mm) Max. particle size (inches)	25 1	ASTM D7928
Min. percent passing 4.75 mm sieve Min. percent passing No. 4 sieve	80	ASTM D7928
Min. percent passing 0.075 mm sieve Min. percent passing No. 200 sieve	50	ASTM D1140
Min. liquid limit	35	ASTM D4318
Min. plasticity index	10	ASTM D4318

TABLE 1 REQUIRED PHYSICAL PROPERTIES OF CLAY		
Max. plasticity index	40	ASTM D4318

2.2 EQUIPMENT

****
NOTE: A soil stabilizer or road regrader is often specified for use on soils that have clods or particles which are difficult to reduce to an acceptable size.
****

Do not use equipment to place the clay barrier layer that brakes suddenly, turns sharply, or operates at speeds exceeding 8 km 5.0 miles per hour.

2.2.1 Compaction Equipment

Use compaction equipment consisting of tamping foot rollers which have a minimum weight of 18,140 kg 40,000 pounds. Provide at least one tamping foot for each 71,000 square mm 110 square inches of drum surface. The length of each tamping foot, from the outside surface of the drum, must be equal to or greater than the loose lift thickness. During compaction operations, keep the spaces between the tamping feet clear of materials which would impair the effectiveness of the tamping foot rollers.

2.2.2 Scarification Equipment

****
NOTE: Tamping foot rollers create a roughened surface on each lift of clay. The designer must determine if scarification is required to further roughen the surface of the clay layer prior to placement of additional lifts of clay. If additional scarification is not required, omit this paragraph and other references to scarification throughout this section.
****

Provid disks, rotor tillers, or other approved means to scarify the surface of each lift of clay prior to placement of the next lift. Provide scarification equipment capable of uniformly disturbing the upper 25 mm 1 inch of the clay surface to provide good bonding between lifts.

2.2.3 Steel Wheeled Rollers

****
NOTE: The upper surface of the clay layer must be smooth rolled if a geosynthetic will be placed on top of the clay layer. Remove this paragraph and all other references to smooth rolling if a geosynthetic will not be placed on top of the clay layer.
****

Use a smooth, non-vibratory steel wheeled roller to produce a smooth compacted surface on the clay barrier layer. Steel wheeled rollers less

than 9,070 kg 20,000 pounds are not acceptable.

2.2.4 Hand Operated Tampers

Provide hand operated tampers consisting of rammers or other impact type equipment. Vibratory type equipment will not be allowed.

PART 3 EXECUTION

3.1 BORROW SOURCE ASSESSMENT

****
NOTE: Shear strength testing is often required for landfill covers and liners placed on steep slopes which contain geosynthetics. Criteria for shear strength testing is described in Section 02 56 13.13 GEOMEMBRANE WASTE CONTAINMENT or Section 02 56 13.19 GEOSYNTHETIC CLAY LINER WASTE CONTAINMENT.
****

Perform borrow source assessment tests on each principal type or combination of materials proposed for use in the clay barrier layer to assure compliance with specified requirements and to develop compaction requirements for placement. Perform a minimum of one set of borrow assessment tests for each borrow source proposed. A set of borrow source assessment tests is comprised of classification testing, moisture-density (compaction) testing, and hydraulic conductivity testing.

3.1.1 Classification Testing

****
NOTE: Test pits should be used, if possible, because they provide a better method of characterizing borrow sources than borings.
****

Use [test pits] [borings] placed in a grid pattern to characterize each proposed borrow source. Extend the [test pits] [borings] extend to the full depth of the proposed borrow source. Perform visual classification as described in ASTM D2488 over the full depth of each [test pit] [boring] by a [qualified] [registered] geologist or geotechnical engineer. Group soils into "principal types" based on visual classification. Perform classification testing on representative samples of each principal type or combination of materials. At a minimum, perform one set of classification tests per 5000 cubic m 6500 cubic yards of proposed borrow. Classification testing consists of liquid and plastic limits in accordance with ASTM D4318 and particle size analysis in accordance with ASTM D7928. Perform moisture content testing of proposed borrow at a frequency of once per 2000 cubic m 2600 cubic yards in accordance with ASTM D2216.

3.1.2 Compaction Testing

****
NOTE: A minimum of two compaction efforts are recommended to adequately define the relationship between moisture-density and hydraulic conductivity. A reduced compaction procedure may also be used. The reduced compaction procedure is the same as ASTM D698 except 15 drops of the hammer

per lift are used instead of 25. The reduced compactive effort is expected to correspond to a reasonable minimum level of compactive energy for a typical soil liner or cover.
****

Test a representative sample from each principal type or combination of borrow materials to establish compaction curves using [_____], ASTM D698 and ASTM D1557. Develop a minimum of one set of compaction curves per 5,000 cubic m 6,500 cubic yards of each proposed borrow material. Use a minimum of [5] [_____] points to develop each compaction curve. Plot the compaction curves for each principal type or combination of borrow materials on a single graph of dry density versus moisture content.

3.1.3 Hydraulic Conductivity Testing

****
NOTE: When performing hydraulic conductivity testing, the average effective confining pressure should be representative of post construction conditions. The minimum effective confining pressure should be equal to or greater than 21 kpa (3 psi) to avoid side wall leakage.

If the clay layer will be placed beneath hazardous waste, chemical compatibility testing may be appropriate. Chemical compatibility testing consists of performing hydraulic conductivity tests on the clay liner material using a representative leachate sample as the permeant.
****

Perform a set of hydraulic conductivity tests on representative samples of each principal type or combination of borrow materials. Perform a minimum of one set of tests per 5,000 cubic m 6,500 cubic yards of proposed borrow material. A set of tests is comprised of one hydraulic conductivity test run on a representative sample corresponding to each point from each compaction curve at or above ASTM D1557 optimum moisture content. Conduct hydraulic conductivity testing referenced in this section in accordance with ASTM D5084. In addition, adhere to the following procedures when performing the hydraulic conductivity testing:

a. Verify saturation of test specimens by determining the B coefficient. The B coefficient must be at least 0.95. The B coefficient is defined as the change in pore water pressure divided by the change in confining pressure.

b. During consolidation of the test specimens, record outflow volumes versus time on a semi-log graph to confirm primary consolidation has been completed prior to permeation of the specimens.

c. Use a permeant of 0.01 molar calcium chloride solution created from deaired, distilled water as specified in ASTM D5084 for back pressure saturation and permeation.

d. Provide an average effective confining pressure of [_____] kPa psi.

3.1.4 Acceptable Zone Development

****

NOTE: Additional testing may be required to determine the "Acceptable Zone" based on shear strength considerations.

****

Develop an "Acceptable Zone" of moisture contents and densities and display with the compaction curve graphs for each principal type of borrow material or combination of borrow materials. The "Acceptable Zone" is comprised of moisture-density values that meet the following requirements:

a. Maximum Allowable Hydraulic Conductivity = [1 x 10 to the -7 cm per second] [_____].

b. The minimum allowable moisture content must be no less than [optimum moisture content] [_____] based on ASTM D1557.

c. The minimum allowable density must be no less than [90] [_____] percent of maximum dry density based on ASTM D698.

3.1.5 Chemical Contamination Testing

Use uncontaminated borrow for the clay barrier layer. Sample and analyze each proposed borrow source for chemical contamination in accordance [_____].

3.1.6 Commercial Testing Laboratory

Perform tests for the clay barrier layer using an approved testing laboratory furnished by the Contractor. No testing will be permitted until the facilities have been inspected and approved. The inspection will be performed to determine if the laboratory has a quality system in place for personnel, equipment, reporting procedures, record keeping, and equipment calibration that ensures the laboratory is capable of accurately performing the specified testing. Furnish a quality system in accordance with ASTM D3740 or approved by the Government Inspector. The first inspection will be at the Government's expense. Cost incurred for subsequent inspections required because of deficiencies found during the first inspection will be charged to the Contractor.

3.2 INSTALLATION

3.2.1 Clay Placement

****

NOTE: Verify subgrade requirements are covered in another section of the specification package. The subgrade must provide adequate support for compaction of the clay barrier layer.

For clay barrier layers placed above geosynthetics, require the placement and compaction equipment work from the base of the slope up to prevent damage to underlying geosynthetics.

Clay is generally placed parallel to the direction of maximum slope. Clay placement parallel to the

slope becomes difficult on slopes steeper than 3 horizontal on 1 vertical. Horizontal lifts should be considered for clay placement on slopes steeper than 3 horizontal on 1 vertical.

The U.S. Environmental Protection Agency document, EPA/600/R-93/182 Quality Assurance and Quality Control for Waste Containment Facilities discourages the use of grade stakes which penetrate the clay layer to control lift thickness.

****

Place clay to the lines and grades shown on the drawings. Place the clay in loose lifts not to exceed 200 mm 8 inches in thickness. In areas where hand operated tampers must be used, the loose lift thickness exceeding 100 mm 4 inches is not acceptable. [Do not drive grade stakes into the clay layer.] [If grade stakes are driven into the clay layer to control lift thickness, number and account for them at the end of each shift. When removing grade stakes, do not leave roken portions of the grade stakes in the clay layer. Backfill and compact holes left by grade stakes.]

3.2.2 Moisture Control

Place and compact clay within the "Acceptable Zone" moisture content range in the approved Borrow Source Assessment Report. Maintain uniform moisture content throughout each lift. Add and thoroughly incorporate water into the clay to ensure uniformity of moisture content prior to compaction.

3.2.3 Compaction

****

NOTE: Special compaction procedures are required if geosynthetic layers are located immediately beneath the clay layer. The minimum initial lift thickness over geosynthetic layers is typically 300 mm 12 inches. This lift of soil is typically placed with low ground pressure track mounted equipment with a track pressure of 21 to 41 kPa 3 to 6 psi. No compaction requirements are generally specified for this first lift of clay.

For clay barrier layers placed on soft subgrades, lighter equipment and the relaxation or elimination of compaction criteria is often specified for the first lift of clay.

****

Compact clay to meet the density requirements in the approved Borrow Source Assessment Report and by at least [5] [_____] passes of the approved compaction equipment over all areas of each lift. For self-propelled compactors, one pass is defined as one pass of the entire vehicle. For towed rollers, one pass of the drum constitutes a pass. Use hand operated tampers in areas where standard compaction equipment cannot be operated.

3.2.4 Scarification

****

NOTE: For geomembrane/clay composites, the final lift of clay is generally smooth rolled instead of being scarified to allow intimate contact between the clay surface and the overlying geomembrane. Smooth rolling also helps to prevent desiccation during delays in construction.

****

Perform scarification on all areas of the upper surface of each clay lift prior to placement of the next lift. Accomplish scarification with approved equipment. Do not scarify the final lift of clay. Roll the final lift smooth with at least [3] [_____] passes of the approved smooth steel wheeled roller to provide a smooth surface with no ridges or depressions.

3.2.5 Repair of Voids

Repair voids created in the clay barrier layer during construction (including, but not limited to, penetrations for test samples, grade stakes, and other penetrations necessary for construction) by removing sand or other non-clay material, placing clay backfill in lifts no thicker than 76 mm 3 inches and tamping each lift with a steel rod. Tamp each lift a minimum of 25 times altering the location of the rod within the void for each blow. Scarify, fill and compact to grade other ruts and depressions in the surface of the lift.

3.3 CONSTRUCTION TOLERANCES

The top surface of the clay barrier layer greater than [76] [_____] mm [3] [_____] inches above the lines and grades shown on the drawings is prohibited. No minus tolerance will be permitted.

3.4 CONSTRUCTION TESTS

3.4.1 Clay Material Tests

****

NOTE: The definition of unclassified materials must be determined on a site specific basis. Unclassified materials are typically defined using Atterberg limits, grain size distribution, or compaction testing.

****

During construction of the clay barrier layer, take representative samples for testing at the frequencies listed in Table 2 [from the borrow source] [from onsite stockpiles] [after a loose lift of clay has been placed] [_____]. Test results must meet the requirements listed in Table 1. Unclassified material is defined as follows: [_____]. Where test results indicate an unclassified material type, perform additional testing described in paragraph BORROW SOURCE ASSESSMENT.

TABLE 2 CLAY MATERIAL PROPERTIES		
Property	Frequency	Test Method
Particle size analysis (Note 1)	800 cubic meters 1,000 cubic yards	ASTM D7928
Atterberg limits (Note 1)	800 cubic meters 1,000 cubic yards	ASTM D4318
Compaction (Note 2)	5,000 cubic meters 6,500 cubic yards	ASTM D698
Note 1: Perform at least one test each day that soil is placed. Note 2: Compare compaction test results to previous results on the same material type to verify the compaction characteristics have remained the same.		

3.4.2 Moisture Content and Density Tests of Clay

****

Note: Test results using ASTM D6938 may show a significant amount of scatter in some situations. ASTM D4643 (microwave method) can be used as an alternative to ASTM D6938 for quick determinations of moisture content.

Density and hydraulic conductivity testing requirements are often waived for the first lift of clay placed on a soft subgrade or above a geosynthetic layer which could be damaged by compaction equipment.

****

Perform moisture content and density tests, for clay in-place, in a grid pattern staggered for successive lifts, so that sampling points are not at the same location in each lift. Perform moisture content and density tests in accordance with Table 3.

TABLE 3 MOISTURE CONTENT AND DENSITY TESTS OF IN-PLACE CLAY		
Property	Frequency Per Lift	Test Method
Rapid Moisture Content	800 square meters 8,500 square feet	ASTM D6938
Standard Moisture Content	1 for every 10 rapid tests	ASTM D2216

TABLE 3 MOISTURE CONTENT AND DENSITY TESTS OF IN-PLACE CLAY		
Rapid Density	800 square meters8,500 square feet	ASTM D6938
Standard Density	1 for every 20 rapid tests	ASTM D1556/D1556M or ASTM D2167

3.4.2.1 Rapid Tests

Each day that clay is compacted, perform a minimum of one set of moisture content and density tests using standard procedures. Check rapid tests at the frequencies shown in Table 3. Perform standard tests at locations which are as close as possible to the location of the rapid tests being checked.

3.4.2.2 Nuclear Density and Moisture Content Tests

Take nuclear density readings in the direct transmission mode. When ASTM D6938 is used, check and adjust the calibration curves using only the sand cone method as described in ASTM D1556/D1556M. ASTM D6938 results in a wet unit weight of soil and when using this method, use ASTM D6938 to determine the moisture content of the soil. Also, check the calibration curves furnished with the moisture gauges along with density calibration checks as described in ASTM D6938; make the calibration checks of both the density and moisture gauges at the beginning of a job on each different type of material encountered and at intervals as directed by the Contracting Officer.

3.4.2.3 Test Results

Plot the field moisture content and density test results on the "Acceptable Zone" plot that corresponds to the appropriate material type being tested. If test results are not within the "Acceptable Zone" for moisture content or density, perform [3] [_____] additional tests near the location of the failed parameter. If all retests pass, take no additional action. If any of the retests fail, repair the lift of soil out to the limits defined by passing tests for that parameter. Retest the area as directed. Document repairs to the clay layer including location and volume of soil affected, corrective action taken, and results of retests.

3.4.3 Hydraulic Conductivity Tests of Clay

****

NOTE: Laboratory hydraulic conductivity tests constitute a major inconvenience because the tests usually take several days to perform. For this reason, the use of laboratory hydraulic conductivity tests should be minimized or eliminated if possible.

****

Take undisturbed samples from the in-place clay for hydraulic conductivity testing at a frequency of once per 3,720 square m 40,000 square feet for each lift of clay placed. Cut samples from the lift in accordance with ASTM D1587/D1587M and transported in the vertical position in accordance with ASTM D4220/D4220M, Group C. Test each undisturbed sample for

hydraulic conductivity in accordance with ASTM D5084, [moisture content in accordance with ASTM D2216], [particle size analysis in accordance with ASTM D7928], and [liquid and plastic limits in accordance with ASTM D4318]. Conduct hydraulic conductivity testing in accordance with the requirements in paragraph Hydraulic Conductivity Testing. If any test result is greater than the "Maximum Allowable Hydraulic Conductivity", modifications must be proposed and approved for future placement of clay of that type. If the hydraulic conductivity of any test is more than one-half of one order of magnitude greater than the "Maximum Allowable Hydraulic Conductivity", perform [3] [_____] additional tests near the location of the original failed test. If all retests pass, take no additional action. If any of the retests fail, repair the area out to the limits defined by passing hydraulic conductivity tests. Retest the area as directed. Document repairs to the clay layer including location and volume of soil affected, corrective action taken, and results of retests.

3.4.4 Quality Assurance Samples

****

NOTE: Remove or modify this paragraph if the quality assurance laboratory will not perform hydraulic conductivity testing. On some projects, the Contractor is also tasked to periodically provide samples of borrow soil to the quality assurance laboratory for classification testing.

****

Take quality assurance samples at locations as directed. Take samples at a frequency of once per [_____] square m square feet for each lift of clay placed. Cut samples from the lift in accordance with ASTM D1587/D1587M and shipped in the vertical position in accordance with ASTM D4220/D4220M, Group C.

3.5 PROTECTION

3.5.1 Moisture Content

****

NOTE: Smooth rolling or other measures may be necessary to limit moisture loss and/or promote run-off of surface water.

****

After placement, maintain or adjust moisture content to meet the acceptable zone criteria.

3.5.2 Erosion

Repair erosion that occurs in the clay layer and re-establish grades.

3.5.3 Freezing and Desiccation

Prevent freezing and desiccation of the clay layer. If freezing or desiccation occurs, remove or recondition the affected soil as directed.

3.5.4 Retests

Retest areas that have been repaired as directed. Document repairs to the clay layer including location and volume of soil affected, corrective

action taken, and results of retests.

-- End of Section --