



Standard Guide for Design and Construction of Coal Ash Structural Fills¹

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1. Scope

1.1 This guide covers procedures for the design and construction of engineered structural fills using coal combustion products (CCPs) including but not limited to fly ash, bottom ash, boiler slag or other CCPs that can meet the requirements of an engineered fill as described herein. CCPs may be used alone or blended with soils or other suitable materials to achieve desired geotechnical properties.

1.2 This guide describes the unique design and construction considerations that may apply to engineered structural fills constructed of with CCPs that have been adequately characterized as being suitable for this beneficial use.

1.3 Beneficial utilization of CCPs consistent with this standard conserves land, natural resources, and

1.4 This guide applies only to CCPs produced primarily by the combustion of coal.

1.5 The testing, engineering, and construction practices for coal ash fills are similar to generally accepted practices for natural soil fills. Coal ash structural fills should be designed using generally accepted engineering practices. However, when CCPs are used in saturated conditions such as ponds or impoundments, the potential for liquefaction may need to be considered.

1.6 Laws and regulations governing the use of coal ash vary by state. The user of this guide has the responsibility to determine and comply with applicable requirements.

1.7 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.8 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appro-*

priate safety and health practices and determine the applicability of regulatory requirements prior to use.

2. Referenced Documents

2.1 ASTM Standards:²

- C150/C150M Specification for Portland Cement
- C188 Test Method for Density of Hydraulic Cement
- C311 Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete
- C593 Specification for Fly Ash and Other Pozzolans for Use With Lime for Soil Stabilization
- C595/C595M Specification for Blended Hydraulic Cements
- C618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
- C1157 Performance Specification for Hydraulic Cement
- C1600 Specification for Rapid Hardening Hydraulic Cement
- D75 Practice for Sampling Aggregates
- D422 Test Method for Particle-Size Analysis of Soils
- D653 Terminology Relating to Soil, Rock, and Contained Fluids
- D698 Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³))
- D854 Test Methods for Specific Gravity of Soil Solids by Water Pycnometer
- D1195/D1195M Test Method for Repetitive Static Plate Load Tests of Soils and Flexible Pavement Components, for Use in Evaluation and Design of Airport and Highway Pavements
- D1196/D1196M Test Method for Nonrepetitive Static Plate Load Tests of Soils and Flexible Pavement Components, for Use in Evaluation and Design of Airport and Highway Pavements
- D1452 Practice for Soil Exploration and Sampling by Auger Borings
- D1556 Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method
- D1557 Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))

¹ This guide is under the jurisdiction of ASTM Committee E50 on Environmental Assessment, Risk Management and Corrective Action and is the direct responsibility of Subcommittee E50.03 on Pollution Prevention/Beneficial Use.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.