An ACI Standard

Specification for Unreinforced Concrete Parking Lots and Site Paving

Reported by ACI Committee 330

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This specification covers minimum requirements for the construction of unreinforced concrete parking lots on grade. Included are requirements for submittals, testing and inspection, concrete materials, embedded reinforcement at joints, jointing and sealant material, forms, subgrade preparation, subbase, placing, texturing, curing, jointing, tolerances, and opening to traffic. This specification does not cover requirements for pervious concrete.

Keywords: construction; curing; inspection testing; jointing; pavements; site paving; texturing.

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(mandatory portion follows)

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PART 1—GENERAL

1.1—Scope

1.1.1 This specification covers requirements for the construction of unreinforced concrete parking lots and site paving on grade, including attached and integral curbs. Site paving includes entrance and exit lanes as well as drive lanes within parking areas.

1.1.2 Values in this specification are stated in inch-pound units. A companion specification in SI units is also available.

1.1.3 The Notes to Specifiers are not part of this specification.

1.2—Definitions

The following definitions govern in this specification. For definitions not given below, refer to "ACI Concrete Terminology (ACE CT)", http://www.concrete.org/Tools/ConcreteTerminology.aspx

accepted—determined to be satisfactory by Architect/Engineer or Owner.

Architect/Engineer—the architect, engineer, architectural firm, or engineering firm developing Contract Documents or administering the Work under Contract Documents, or both.

cold weather—a period when the average daily ambient temperature is below 40°F (5°C) for more than three successive days. Note: The average daily temperature is the average of the highest and lowest temperature during the period from midnight to midnight. When temperatures above 50°F (10°C) occur during more than half of any 24-hour duration, the period shall no longer be regarded as cold weather.

construction joint—the surface where two successive placements of concrete meet, where the first placement has hardened before the next placement.

Contract Documents—set of documents supplied by Owner to bidders during bidding phase of construction project. These documents include general requirements, contract forms, contract conditions, specifications, drawings, and addenda.

contraction joint—formed, sawed, or tooled groove in a concrete structure to create a weakened plane to regulate the location of cracking resulting from the dimensional change of different parts of the structure. (Commonly referred to as "control joints.")

Contractor—the person, firm, or entity under contract for construction of the Work.

dowels—smooth bars or plates, usually steel placed across a joint to transfer vertical load while allowing the joint to open and close.

free edge—the edge of pavement abutting an isolation joint or the edge of the pavement against which no concrete is placed.

hot weather—job-site conditions that accelerate the rate of moisture loss or rate of cement hydration of freshly mixed concrete, including an ambient temperature of 27°C (80°F) or higher, and an evaporation rate that exceeds 1 kg/m^2/h, or as revised by the Architect/Engineer.

isolation joint—a separation between adjacent parts of a structure that allows relative movement in two or more directions. Isolation joints are usually vertical planes located to avoid formation of cracks in the structure.

mild exposure condition—an environment in which the concrete will not be exposed to freezing and thawing or to deicing agents.

moderate exposure condition—an environment, normally in temperate climate regions, in which concrete will only occasionally be exposed to moisture and will not be saturated prior to freezing and where no deicing agents or other aggressive chemicals are used.

Owner—the corporation, association, partnership, individual, public body, or authority with whom the Contractor enters into an agreement and for whom the Work is constructed.

panel—an individual concrete pavement slab bordered by joints or slab edges.

permitted—accepted by or acceptable to Architect/Engineer, usually pertaining to a request by Contractor, or when specified in Contract Documents.

Project Drawings—graphic presentation of project requirements.

Project Specification—written document that details requirements for the Work in accordance with service parameters and other specific criteria.

referenced standards—standardized documents of a technical society, organization, or association, including the building codes of local or state authorities, which are referenced in Contract Documents.

severe exposure condition—an environment, normally in cold climate regions, in which concrete may be saturated, or in almost continuous contact with moisture prior to freezing, and where deicing agents are used.

site paving—paved areas intended for uses other than vehicle parking or access drives; for example, pedestrianor wheeled traffic or storage of products, materials, or trailers.

subbase—the layer in the pavement system between the subgrade and the concrete pavement.

subgrade—the soil prepared and compacted to support a structure or a pavement system.

submit—provide to Architect/Engineer for review.

submittal—document or material provided to Architect/Engineer for review and acceptance.

supplementary cementitious material (SCM)—inorganic material such as fly ash, silica fume, metakaolin, or slag cement that reacts pozzolanically or hydraulically.

testing agency—the person, firm, or entity under contract for providing testing services.

tie bar—a reinforcing bar, commonly a deformed reinforcing bar, intended to transmit tension through a contraction or construction joint.

unreinforced concrete pavement—concrete pavement that does not contain distributed deformed reinforcing bars or welded-wire reinforcement.

Work—the entire construction or separately identifiable parts thereof required to be furnished under Contract Documents.

1.3—Referenced standards

American Concrete Institute

117-10—Specification for Tolerances for Concrete Construction and Materials and Commentary

301-10—Specifications for Structural Concrete

305.1-06—Specification for Hot Weather Concreting

306.1-90(02)—Standard Specification for Cold Weather Concreting

308.1-11—Specification for Curing Concrete

311.6-09—Specification for Ready Mixed Concrete Testing Services

ASTM International

A36/A36M-12—Standard Specification for Carbon Structural Steel

A615/A615M-14—Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

C33/C33M-13—Standard Specification for Concrete Aggregates

C94/C94M-14a—Standard Specification for Ready-Mixed Concrete

C150/C150M-12—Standard Specification for Portland Cement

C173/C173M-14—Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method

C231/C231M-14—Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method

C309-11—Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

C595/C595M-14—Standard Specification for Blended Hydraulic Cements

C618-12a—Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

C920-14a—Standard Specification for Elastomeric Joint Sealants

C989/C989M-13—Standard Specification for Slag Cement for Use in Concrete and Mortars

C1157/C1157M-11—Standard Performance Specification for Hydraulic Cement

C1567-13—Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar Bar Method)

D994/D994M-11—Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)

D1751-04(2013)$^{\varepsilon 1}$—Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

D1752-04a(2013)—Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

D5893M-10—Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements

D6690-12—Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

1.4—Submittals

1.4.1 Submit drawings and documentation as required in this specification.

1.4.2 Obtain written acceptance of submittals from the Architect/Engineer before using the materials or methods requiring acceptance.

1.5—Storage and handling

1.5.1 Store construction materials in a clean, dry location.

1.6—Testing and inspection

1.6.1 *General*

1.6.1.1 Tests required to document submittals, certify product compliance with this Specification before use in construction, establish concrete mixture proportions, provide acceptability of changes requested by the Contractor, or appeal rejection of material found defective by Owner's testing agency shall be performed by accredited laboratories using ACI-certified technicians.

1.6.1.2 The Work in progress will be inspected, and materials, equipment, and procedures will be evaluated for quality and acceptability by representatives of the Owner or as designated in the Contract Documents.

1.6.2 *Contractor's responsibilities*—Contractor shall permit and facilitate access of Owner's testing agency to the construction site for the performance of all activities for quality assurance and quality control by these representatives, including inspection and testing required in these specifications.

1.6.3 *Responsibilities of Owner's testing agency*

1.6.3.1 Concrete shall be tested in accordance with ACI 311.6.

1.6.3.2 Concrete test results shall be distributed to Owner, Architect/Engineer, Contractor, and concrete supplier.

1.6.4 *Acceptance of pavement*—Failure to detect defective work or material shall not prevent later rejection if defects are discovered, nor shall it constitute final acceptance by Architect/Engineer.

PART 2—PRODUCTS

2.1—Concrete

2.1.1 *General*—Provide concrete meeting the requirements of 4.2.2.7 of ACI 301 based on the exposure classes defined in the Contract Documents. Concrete shall comply with ASTM C94 and the following requirements.

2.1.2 *Cementitious material*—Cement shall comply with ASTM C150, ASTM C595, or ASTM C1157. Supplementary cementitious materials (SCMs) are permitted to be used to replace cement. Fly ash to meet requirements of ASTM C618 when used. Slag cement to meet requirements of ASTM C989 when used. The maximum replacement rates