



# Standard Guide for In-ground Concrete Skatepark<sup>1</sup>

This standard is issued under the fixed designation F2480; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This guide covers safety and performance guidelines pertaining to in-ground skatepark facilities built primarily out of concrete and other designed materials. This guide pertains to any concrete materials and other designed materials intended to be used in the performance of the sports including skateboarding, inline skating and BMX biking. Items such as fencing, lighting, and operational structures are not intended to be a part of this guide.

1.2 *Tolerance: General Measures, Tolerances, and Conversions*—General dimensional tolerances for this guide (unless otherwise noted) follow. These tolerances still apply to a dimension even when terms like greater than, less than, minimum, or maximum are used.

Dimension	Tolerance
X in. or ft	$\pm 0.5$ in.
X.X in.	$\pm 0.05$ in.
X.XX in.	$\pm 0.005$ in.

1.3 The values stated in inch-pound units are to be regarded as standard.

1.4 *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 appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

**A184/A184M** Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement

**A185/A185M** Specification for Steel Welded Wire Reinforcement, Plain, for Concrete (Withdrawn 2013)<sup>3</sup>

**A497/A497M** Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete (Withdrawn 2013)<sup>3</sup>

**A615/A615M** Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

**A616/A616M** Specification for Rail-Steel Deformed and Plain Bars for Concrete Reinforcement (Withdrawn 1999)<sup>3</sup>

**A617/A617M** Specification for Axle-Steel Deformed and Plain Bars for Concrete Reinforcement (Withdrawn 1999)<sup>3</sup>

**C33** Specification for Concrete Aggregates

**C94/C94M** Specification for Ready-Mixed Concrete

**C125** Terminology Relating to Concrete and Concrete Aggregates

**C150** Specification for Portland Cement

**C260** Specification for Air-Entraining Admixtures for Concrete

**C494/C494M** Specification for Chemical Admixtures for Concrete

**C1116** Specification for Fiber-Reinforced Concrete and Shotcrete

**C1141** Specification for Admixtures for Shotcrete

**C1436** Specification for Materials for Shotcrete

**C1480** Specification for Packaged, Pre-Blended, Dry, Combined Materials for Use in Wet or Dry Shotcrete Application

**C1582/C1582M** Specification for Admixtures to Inhibit Chloride-Induced Corrosion of Reinforcing Steel in Concrete

**E1155** Test Method for Determining  $F_F$  Floor Flatness and  $F_L$  Floor Levelness Numbers

### 2.2 ACI Standards:<sup>4</sup>

**ACI 117–90** Specifications for Tolerances for Concrete Construction and Materials

**ACI 302.1R-04** Guide for Concrete Floor and Slab Construction

**ACI 309R** Guide for Consolidation of Concrete

### 2.3 ANSI Standards:<sup>5</sup>

**ANSI 2535.4** Product Safety Signs and Labels

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee F08 on Sports Equipment, Playing Surfaces, and Facilities and is the direct responsibility of Subcommittee F08.66 on Sports Facilities.

Current edition approved July 1, 2012. Published August 2012. Originally approved in 2006. Last previous edition approved in 2006 as F2480–06. DOI: 10.1520/F2480-06R12.

<sup>2</sup> 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.

<sup>3</sup> The last approved version of this historical standard is referenced on www.astm.org.

<sup>4</sup> Available from American Concrete Institute (ACI), P.O. Box 9094, Farmington Hills, MI 48333-9094, http://www.aci-int.org.

<sup>5</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

### 3. Terminology

#### 3.1 Definitions:

3.1.1 *bowl*—fully enclosed or partially enclosed free-flowing form with specific transitions.

3.1.2 *coping*—circular pipe or other material installed on some features.

3.1.3 *extension*—additional elevation of the top-riding surface within the platform area.

3.1.4 *features*—sections of the skate surface, which is level, inclined, or curved solid surface on which the user of skateboards, inline skates, and BMX bicycles can maneuver.

3.1.5 *flat bottom*—horizontal part of the riding surface between the transitions.

3.1.6 *flat ground*—flat, horizontal space, which is greater than 12 in. long.

3.1.7 *flatness*—degree to which a line or surface approximates a plane and is a measurement of local surface bumpiness/undulation.

3.1.8 *free falling height*—perpendicular distance between the floor space and an adjacent low-lying space.

3.1.9 *in-ground concrete skatepark*—any concrete structure placed in ground that is to be used for skateboarding, inline skating, and BMX bicycles.

3.1.10 *levelness*—degree to which a line or surface parallels horizontal or design grade; and is a measurement of local conformance to design grade over a distance.

3.1.11 *performance edging*—durable material installed on the accessible edges or surfaces of intersecting and terminating planes on features for performance purposes.

3.1.12 *pool coping*—manufactured masonry product similar in shape and function to that typically manufactured for swimming pools. (See *coping* in 3.1.2.)

3.1.13 *protective edging*—durable material that protects accessible edges of intersecting and terminating planes on the riding surfaces for the purposes of reducing wear.

3.1.14 *transition/radius*—radial change in slope between two elevations.

3.1.15 *resting area*—sport-functional clearance required for standing out of the flow of active skaters and clearing the active skating zone to avoid a collision.

3.1.16 *riding surface*—part of skatepark structure on which the skater will be in contact.

3.1.17 *skatepark*—element, feature, structure, or group of elements, features, structures within a defined boundary for use by skateboarders, inline skaters, or BMX bikers.

3.1.18 *specified surface, plane, or line*—surface, plane, or line specified by the contract documents; specified planes and lines may slope and specified surfaces may have curvature.

3.1.19 *tolerance*—(1) the permitted variation from a given dimension or quantity; (2) the range of variation permitted in maintaining a specified dimension; and (3) A permitted variation from location or alignment.

3.1.20 *vert*—vertical part of the riding surface.

3.1.21 *vertical alignment*—location relative to specified vertical plane or a specified vertical line or from a line or plane reference to a vertical line or plane. When applied to battered walls, abutments, or other nearly vertical surfaces, vertical alignment is defined as the horizontal location of the surface relative to the specified profile.

### 4. Materials

4.1 *General*—All materials used shall fulfill the sport-specific requirements for skatepark facilities.

4.2 *Steel Elements*—All exposed steel shall be inherently corrosion resistant or be provided with a corrosion resistant coating.

#### 4.3 Concrete:

4.3.1 All concrete should consider the following, which is not necessarily all-inclusive: compressive strength, flexural strength, or both, and finishability; maximum size, grading, and type of coarse aggregate; grading and type of fine aggregate; combined aggregate grading; air content of concrete, if applicable; slump of concrete; water-cement ratio or water-cementitious material ratio; and preplacement soaking requirement for lightweight aggregates; and should conform to but are not limited to the requirements of Specifications C33 and C94/C94M, Terminology C125, Specifications C150, C260, C494/C494M, C1116, C1141, C1436, C1480, C1582/C1582M, and ACI 302.1R-04.

4.3.2 Design details, site preparation, type of concrete and related materials should be provided by the designer of the concrete skatepark prior to bid documents and be applicable to the local environmental conditions. Design details should reference specifications for concrete strength characteristics, use of admixtures for freezing exposure, use of reinforcing steel, testing and inspection requirements. Concrete shall be manufactured to meet the specifications of the designer, method of concrete construction—ready-mix, precast or shotcrete concrete should comply with applicable specifications.

4.4 *Steel Reinforcing*—Steel reinforcing should conform to but are not limited to the following specifications: deformed bars should conform to the requirements of Specifications A615/A615M, A616/A616M, or A617/A617M. Bar mats conforming to Specification A184/A184M can also be used. Welded wire reinforcing should conform to Specifications A185/A185M or A497/A497M.

4.5 *Synthetic Fibers*—Synthetic fibers for use in concrete slabs should meet the requirements outlined in Specification C1116 or ACI 302.1R-04-26.

4.6 *Other Materials*—Utilization of other materials is admissible.

### 5. Physical Properties

5.1 In general, physical properties outline characteristics best suited for skateboard, roller blade, and BMX activities.

5.2 *Concrete Finish*—The concrete surface should provide a smooth and nonslip surface characteristic (see ACI 302.1R-04 Class 9 Finish).