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Standard Specification for Application of Portland Cement-Based Plaster¹

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1. Scope*

1.1 This specification covers the minimum technical requirements for the application of full thickness portland cement-based plaster for exterior (stucco) and interior work. These requirements do not by default define a unit of work or assign responsibility for contractual purposes, which is the purview of a contract or contracts made between contracting entities.

1.2 This specification sets forth tables for proportioning of various plaster mixes and plaster thickness.

NOTE 1—General information will be found in [Annex A1](#). Design considerations will be found in [Annex A2](#).

1.3 The text of this specification references notes and footnotes that provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the specification.

1.4 Details of construction for a specific assembly to achieve the required fire resistance shall be obtained from reports of fire-resistance tests, engineering evaluations, or listings from recognized fire testing laboratories.

1.5 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.

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This specification is under the jurisdiction of ASTM Committee C11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.03 on Specifications for the Application of Gypsum and Other Products in Assemblies.

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2. Referenced Documents

2.1 *ASTM Standards*:²

- C11 Terminology Relating to Gypsum and Related Building Materials and Systems
- C25 Test Methods for Chemical Analysis of Limestone, Quicklime, and Hydrated Lime
- C35 Specification for Inorganic Aggregates for Use in Gypsum Plaster
- C91/C91M Specification for Masonry Cement
- C150/C150M Specification for Portland Cement
- C206 Specification for Finishing Hydrated Lime
- C207 Specification for Hydrated Lime for Masonry Purposes
- C219 Terminology Relating to Hydraulic and Other Inorganic Cements
- C260/C260M Specification for Air-Entraining Admixtures for Concrete
- C578 Specification for Rigid, Cellular Polystyrene Thermal Insulation
- C595/C595M Specification for Blended Hydraulic Cements
- C631 Specification for Bonding Compounds for Interior Gypsum Plastering
- C897 Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters
- C932 Specification for Surface-Applied Bonding Compounds for Exterior Plastering
- C1063 Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
- C1116/C1116M Specification for Fiber-Reinforced Concrete
- C1328 Specification for Plastic (Stucco) Cement
- C1787 Specification for Installation of Non Metallic Plaster Bases (Lath) Used with Portland Cement Based Plaster in Vertical Wall Applications
- E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

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.

*A Summary of Changes section appears at the end of this standard

E119 Test Methods for Fire Tests of Building Construction and Materials

E492 Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine

2.2 *ANSI Standard*.³

A108.1 Specification for Installation of Ceramic Tile

3. Terminology

3.1 Definitions:

3.1.1 Terms shall be defined as in Terminology **C11** and Terminology **C219**, except as modified herein.

3.1.2 *contract documents, n*—a series of several individual items that generally include drawings and specifications. Either or both of these documents may exist for any particular project.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *accelerator, n*—an admixture that will shorten the setting time of plaster.

3.2.2 *acid etching, n*—the cleansing and controlled erosion of a solid surface, using an acid wash.

3.2.3 *admixture, n*—a material other than water, aggregate, or basic cementitious material added to the batch before or during job mixing.

3.2.4 *air entrainment, n*—the use of an air-entraining admixture or air-entraining cementitious material in a plaster mix to yield a controlled quantity of minute (typically between 10 µm and 1000 µm in diameter) disconnected air bubbles in the plaster (see *entrapped air*).

3.2.5 *back wrap, n*—a means of terminating a polymer-modified, fabric reinforced cementitious base coat by wrapping the reinforcing mesh, which has been affixed to the substrate onto the outboard surface of the foam plastic core to provide continuity of the reinforced base coat and protection for the foam plastic core.

3.2.6 *backplaster, n*—plaster applied to the face of metal lath opposite a previously applied plaster.

3.2.7 *barrier wall, n*—type of wall system that is intended to block or interrupt the movement of water to the interior.

3.2.8 *bond, n*—the state of adhesion between plaster coats or between plaster and plaster base.

3.2.9 *bonding compound or agent, n*—compounds surface applied or integrally mixed with plaster to improve the quality of bond between plaster and plaster base or between plaster coats.

3.2.10 *cementitious material, n*—a material that, when mixed with water and with or without aggregate, provides the plasticity and the cohesive and adhesive properties necessary for placement and the formation of a rigid mass.

3.2.11 *coat, n*—a thickness of plaster applied in a single operation.

3.2.11.1 *basecoat, n*—all plaster applied before the application of the finish coat.

3.2.11.2 *bedding coat, n*—a plaster coat that receives aggregate or other decorative material impinged into its surface before it sets.

3.2.11.3 *brown coat, n*—in three-coat work, the second coat, applied over the scratch coat. In two-coat work, brown coat refers to the double-up basecoat. In either use, the brown coat is the coat directly beneath the finish coat.

3.2.11.4 *dash-bond coat, n*—a thick wet mixture of portland cement and water, with or without aggregate, dashed onto the surface of a plaster base such as smooth monolithic concrete or concrete block surfaces to improve the mechanical key for subsequent plaster coats.

3.2.11.5 *double-up coat, n*—the brown-coat plaster applied to the scratch coat plaster before the scratch-coat plaster has set.

3.2.11.6 *finish coat, n*—the final layer of plaster applied over basecoat plaster.

3.2.11.7 *fog coat, n*—a light coat of cement and water, with or without aggregate or color pigment, applied by machine spray to improve color consistency.

3.2.11.8 *scratch coat, n*—the first coat of plaster applied to a plaster base.

3.2.11.9 *skim coat, n*—a thin finish coat applied to an existing plaster surface or other substrate to improve appearance.

3.2.11.10 *three-coat work, n*—application of plaster in three successive coats with time between coats for setting or drying, or both.

3.2.12 *cold joint (“joining” or “jointing”), n*—the juncture of fresh plaster application adjacent to set plaster, in the same plane.

3.2.13 *curing, v*—the act or processes of producing a moisture environment favorable to cement hydration, resulting in the setting or hardening of the plaster.

3.2.14 *drainage wall, n*—a wall system in which the cladding provides a substantial barrier to water intrusion, and which also incorporates a concealed water-resistive barrier over which drainage will occur.

3.2.15 *entrapped air, n*—unintentional air voids in the plaster generally larger than 1 mm.

3.2.16 *factory prepared (“mill-mixed” or “ready mixed”), adj*—pertaining to material combinations that have been formulated and dry-blended by the manufacturer, requiring only the addition of and mixing with water to produce plaster.

3.2.17 *fiber, natural or synthetic, n*—an elongated fiber or strand admixture added to plaster mix to improve cohesiveness or pumpability, or both.

3.2.18 *floating, v*—act of compacting and leveling brown-coat plaster to a reasonably true surface plane using a float tool or the act of bringing the aggregate to the surface of finish-coat plaster.

3.2.19 *key (also mechanical key), n*—plaster that physically surrounds, penetrates, or deforms to lock onto the perforations or irregularities of the plaster base or previous coat of plaster.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

3.2.20 *lath*, *n*—a mechanically attached base material used to support plaster including metal plaster bases (expanded metal lath, woven wire plaster base, and welded wire lath) and non-metallic plaster bases.

3.2.21 *lathing*, *n*—plural for lath.

3.2.22 *lathing*, *v*—a process of installing lath.

3.2.23 *metal plaster base*, *n*—expanded metal lath, or welded or woven wire lath.

3.2.24 *plaster*, *n*—portland cement-based cementitious mixture (see *stucco*).

3.2.25 *polymer modified cementitious base coat*, *n*—A base coat containing portland cement modified with chemical admixtures (typically polymer latexes) to improve characteristics of the finished product, such as workability, plasticity, water resistance, and adhesion.

3.2.26 *required*, *adj*—pertaining to a mandatory obligation imposed by a force outside of this specification, such as a building code, project specification, contract, or purchase order.

3.2.27 *rustication* (also “*break*”), *n*—an interruption or change in plane of a plastered surface.

3.2.28 *scoring* (also known as “*scratching*”), *n*—the grooving of the surface of an unset plaster coat to provide a key for a subsequent coat.

3.2.29 *set*, *n*—the chemical and physical change in plaster as it goes from a plastic, workable state to a rigid state.

3.2.30 *solid plaster bases*, *n*—substrates that do not require lath, including cast in place and precast concrete, concrete and stone masonry, clay brick, and tile.

3.2.31 *stucco*, *n*—portland cement-based plaster used on exterior locations.

3.2.32 *stucco finish*, *n*—a factory-prepared, dry blend of materials for finish coat applications.

3.2.33 *temper*, *v*—to mix or restore unset plaster with water to a workable consistency.

3.2.34 *texture*, *n*—any surface appearance as contrasted to a smooth surface.

4. Delivery and Storage of Materials

4.1 Delivery:

4.1.1 Packaged materials shall be delivered in factory-sealed, unopened, and unbroken packages, containers, or bundles.

4.1.2 Bulk materials shall be delivered in clean transport vessels, free of contaminates.

4.2 Storage:

4.2.1 Weather-sensitive materials shall be kept in a dry condition until ready for use. (See A2.4.)

4.2.2 Bulk materials shall be stored to prevent subsequent contamination and segregation.

5. Materials

5.1 Materials shall conform to the requirements of the referenced specifications and standards and to the requirements specified herein.

5.2 Cement:

5.2.1 *Portland Cement*—Specification C150/C150M, Type I, II, and III, as specified. White where specified.

5.2.2 *Air-entraining Portland Cement*—Specification C150/C150M, type as specified. White where specified.

5.2.3 *Masonry Cement*—Specification C91/C91M, Types N, S, and M. White where specified.

5.2.4 *Blended Hydraulic Cement*—Specification C595/C595M, Type IP, IS(<70), IL, and IT(S<70), as specified.

5.2.5 *Air-entraining Blended Hydraulic Cement*—Specification C595/C595M, Type IP-(A), IS(<70)-(A), IL-(A), and IT (S<70)-(A), as specified.

5.2.6 *Plastic Cement*—Plastic Cement shall meet the requirements of Specification C1328, Standard Specification for Plastic (Stucco) Cement.

NOTE 2—Plastic cements are not available nationally.

5.3 *Type “S” Hydrated Lime*—A hydrated lime that contains not more than 8 % unhydrated oxides when tested in accordance with Test Methods C25. See Specifications C206 and C207 for a complete description of a Type “S” hydrated lime.

5.4 Aggregates:

5.4.1 *Sand for Base Coats*—Specification C897. Aggregate failing to meet gradation limits in Specification C897 shall be permitted to be used, provided the plaster made with this sand has an acceptable demonstrated performance record in similar construction and climate conditions.

5.4.2 *Perlite*—Specification C35.

5.4.3 *Sand for Job-mixed Finish Coats*—Specification C897.

5.5 *Water*—Water used in mixing, application, and finishing of plaster shall be clean, fresh, suitable for domestic water consumption, and free of such amounts of mineral or organic substances as would affect the set, the plaster, or any metal in the system.

5.6 *Admixtures*—See 3.2.3 and A2.5.

5.7 *Fibers*—Specification C1116/C1116M on alkali-resistant fibers, glass fibers, nylon, polypropylene, or carbon fibers.

5.8 *Product Marking*—Packaged materials shall be clearly marked or labeled to indicate product, brand name, the manufacturer, and the weight of the material contained therein. Similar information shall be provided in the shipping advices accompanying the shipment of bulk materials.

6. Requirements for Bases to Receive Portland Cement-Based Plaster

6.1 Lathing accessories, furring accessories, and accessory fasteners used to receive plaster shall be installed in conformance with Specification C1063, except as otherwise specified.

NOTE 3—Plaster bases and lathing accessories shall be free of deleterious amounts of rust, oil, or other foreign matter, which could cause bond failure or unsightly discoloration.

6.1.1 Metallic lath and lath fasteners used to receive plaster shall be installed in conformance with Specification C1063, except as otherwise specified.

6.1.2 Non-metallic lath and lath fasteners shall be installed in conformance with Specification C1787, except as otherwise specified.

6.2 Surfaces of solid bases to receive plaster, such as masonry, stone, cast-in-place or precast concrete shall be straight and true within 1/4 in. (6 mm) in 10 ft (3 m) and shall be free of form oil or other elements, which would interfere with bonding. Conditions where the surfaces are out of tolerance shall be corrected prior to the application of the plaster. Ferrous-containing form ties or other obstructions shall be removed or receded a minimum 1/8 in. (3 mm) below the surface of the solid base and treated with a corrosion-resistant coating. Non-ferrous protuberances shall be permitted to be trimmed back even with the surface of the solid base.

TABLE 1 Plaster Bases—Permissible Mixes

NOTE 1—See Table 2 for plaster mix symbols.

Property of Base	Mixes for Plaster Coats	
	First (Scratch)	Second (Brown)
Low absorption, such as dense, smooth clay tile, brick, or concrete	C	C, CL, M, or CM
	CM or MS	CM, MS, or M
	P	P
High Absorption, such as concrete masonry, absorptive brick, or tile	CL	CL
	M	M
	CM or MS	CM, MS, or M
Lath	P	P
	C	C, CL, M, CM, or MS
	CL	CL
	CM or MS	CM, MS, or M
	M	M
	CP or P	CP or P
	P	P

6.2.1 Solid surfaces shall have the suction (ability to absorb water) or surface roughness, or both, to provide the bond required for the plaster.

6.2.2 Smooth or nonabsorbent solid surfaces, such as cast-in-place or precast concrete, shall be prepared to receive portland cement plaster by one of the following methods:

6.2.2.1 Sandblasting, wire brushing, acid etching, or chipping or a combination thereof,

6.2.2.2 Application of a dash-bond coat applied forcefully against the surface, left untraweled, undisturbed, and moist cured for at least 24 h, or

6.2.2.3 Application of a bonding compound suitable for exterior or interior exposure solid surfaces in accordance with the manufacturer’s written directions.

6.2.3 Where bond cannot be obtained by one or more of the methods in 6.2.2, a furred or self-furring plaster base shall be installed in accordance with Specification C1063 or C1787 as appropriate. Where plaster base is used in areas where bond cannot be obtained by one or more of the methods in 6.2.2, accessories shall be installed in accordance with Specification C1063 or C1787 as appropriate.

7. Application

7.1 Plaster Proportions:

7.1.1 All portland cement plasters shall be mixed and proportioned in accordance with the following tables and accompanying requirements, using measuring devices of known volume with successive batches proportioned alike.

7.1.2 Plaster mix used shall be as designated and referenced to Table 1.

7.1.3 Base-coat proportions shall be as shown in Table 2 for the mix specified from Table 1.

7.1.3.1 Measurement of Materials—The method of measuring materials for the plaster shall be such that the specified proportions are controlled and accurately maintained. The weights per cubic foot of the materials are considered to be as follows:

Material	Weight, lb/ft ³ (kg/m ³)
Portland cement	94 (1505)
Blended cement	Weight printed on bag
Masonry or plastic cement	Weight printed on bag
Hydrated Lime	40 (640)
Lime Putty	80 (1280)
Sand, Damp and Loose (7.1.3.2)	80 (1280) of dry sand

7.1.3.2 For purposes of this specification, a weight of 80 lb (1280 kg) of oven-dried sand shall be used. This is, in most cases, equivalent to one cubic foot of loose, damp sand.

7.1.4 Finish-coat proportions for job-mixed finish coats shall be as specified in Table 3.

7.1.5 Factory-Prepared Finish Coats—See 3.2.16.

7.1.6 Dash-bond coat proportions shall be 1 volume part portland cement and not more than two volume parts of aggregate mixed to a consistency that will permit application as specified in 7.3.5.

TABLE 2 Base-coat Proportions,^A Parts by Volume^B

Plaster Mix Symbols	Cementitious Materials					Volume of Aggregate per Sum of Separate Volumes of Cementitious Materials	
	Portland Cement or Blended Cement	Plastic Cement	Masonry Cement		Lime	1st Coat	2nd ^C Coat
			N	M or S			
C	1	...	...	...	0–3/4	2 1/2 –4	3–5
CL	1	...	...	...	3/4 –1 1/2	2 1/2 –4	3–5
M	...	...	1	...	...	2 1/2 –4	3–5
CM	1	...	1	...	...	2 1/2 –4	3–5
MS	...	...	...	1	...	2 1/2 –4	3–5
P	...	1	...	...	...	2 1/2 –4	3–5
CP	1	1	...	...	...	2 1/2 –4	3–5

^A The mix proportions for plaster scratch and brown coats to receive ceramic tile shall be in accordance with the applicable requirements of ANSI A108.1 series applicable to specified method of setting time.

^B Variations in lime, sand, and perlite contents are allowed due to variation in local sands and insulation and weight requirements. A higher lime content will generally support a higher aggregate content without loss of workability. The workability of the plaster mix will govern the amounts of lime, sand, or perlite.

^C The same or greater sand proportion shall be used in the second coat than is used in the first coat.

TABLE 3 Job-mixed Finish Coat Proportions, Parts by Volume

Plaster Mix Symbols ^A	Cementitious Materials					Volume of Aggregate per Sum of Separate Volumes of Cementitious Materials ^B
	Portland Cement or Blended Cement	Plastic Cement	Masonry Cement ^A		Lime	
			N	M or S		
F	1	...	...	...	3/4 – 1 1/2	1 1/2 – 3
FL	1	...	...	...	1 1/2 – 2	1 1/2 – 3
FM	...	...	1	...	...	1 1/2 – 3
FCM	1	...	1	...	...	1 1/2 – 3
FMS	...	...	...	1	...	1 1/2 – 3
FP	...	1	...	...	...	1 1/2 – 3

^A Additional portland cement is not required when Type S or M masonry cement is used.

^B In areas not subject to impact, perlite aggregate shall be permitted to be used over base-coat plaster containing perlite aggregate.

7.1.7 Admixtures shall be proportioned, mixed, and applied in accordance with the printed directions of the manufacturer. (See A2.5.)

7.1.8 Where specified, natural or synthetic fibers shall be free of contaminants and used only in the base coat(s). The quantities per batch shall be in accordance with the published directions of the fiber manufacturer.

7.2 Mixing:

7.2.1 All plaster shall be prepared in a mechanical mixer, using sufficient water to produce a workable consistency and uniform color. (See X1.1.)

7.2.2 Base-coat plasters that have stiffened because of evaporation of water shall be permitted to be tempered one time only to restore the required consistency. Plaster not used within 1 1/2 h from start of initial mixing shall be discarded.

NOTE 4—Severe hot, dry climate conditions accelerate the stiffening of plaster and require reduction of this limit. The use of cold waters will slow the stiffening process.

7.2.3 Finish-coat plaster shall not be tempered.

7.3 General Application:

7.3.1 Portland cement plaster shall be applied by hand trowel or machine to the nominal thickness specified in Table 4. The nominal values expressed in Table 4 represent neither a maximum nor minimum value. They consider the inherent variation of thickness due to the nature of the application

process, and the allowable variation of the substrate and the finished plane of the plaster.

7.3.2 Plaster nominal thickness shall be measured from the back plane of the metal plaster base, exclusive of ribs or dimples, or from the face of the solid backing with or without metal plaster base, to the outer surface exclusive of texture variations.

7.3.3 Portland cement-based plaster shall be applied on furred lath when the surface of solid backing material consists of gypsum board, gypsum plaster, wood, or rigid foam board-type products.

NOTE 5—On horizontal ceiling supports or roof soffits protected by a drip edge or designated drainage screed, gypsum board products shall be permitted to be used as backing for metal base to receive portland cement plaster.

7.3.4 Separation shall be provided where plaster abuts dissimilar construction materials or openings. (See A2.1.3.)

7.3.5 Each plaster coat shall be applied to an entire wall or ceiling panel without interruption to avoid cold joints and abrupt changes in the uniform appearance of succeeding coats. Wet plaster shall abut set plaster at naturally occurring interruptions in the plane of the plaster, such as corner angles, rustications, openings, expansion joints, and control joints where this is possible. Joinings, where necessary, shall be cut square and straight and not less than 6 in. (152 mm) away from a joining in the preceding coat.

TABLE 4 Nominal Plaster Thickness^A for Three- and Two-coat Work, in. (mm)

BASE	Vertical				Horizontal			
	1st Coat	2nd Coat	3rd Coat ^B	Total	1st Coat	2nd Coat	3rd Coat ^B	Total
Three-coat work: ^{C,D}								
Lath	3/8 (10)	3/8 (10) ^D	1/8 (3)	7/8 (22)	1/4 (6)	1/4 (6) ^D	1/8 (3)	5/8 (16)
Solid plaster base:								
Unit masonry	1/4 (6)	1/4 (6) ^D	1/8 (3)	5/8 (16)	Use two-coat work			
Cast-in-place or precast concrete	1/4 (6)	1/4 (6) ^D	1/8 (3)	5/8 (16)				3/8 (10), max
Lath over solid base	1/2 (13)	1/4 (6) ^D	1/8 (3)	7/8 (22)	1/2 (13)	1/4 (6) ^D	1/8 (3)	7/8 (22)
Two-coat work:								
Solid plaster base:								
Unit masonry	3/8 (10)	1/8 (3)		1/2 (13)				3/8 (10)
Cast-in-place or pre-cast concrete	1/4 (6)	1/8 (3)		3/8 (10)				3/8 (10)

^A Exclusive of texture variations.

^B For solid plaster partitions, additional coats shall be applied to meet the finished thickness specified.

^C For exposed aggregate finishes, the second (brown) coat shall become the "bedding" coat and shall be of sufficient thickness to receive and hold the aggregate.

^D The basecoat thickness of three-coat work is the sum of the first and second coats combined.

7.3.6 Lath shall be covered with three-coat work. The combined total nominal thickness shall be as shown in **Table 4**. A dash-bond coat shall not replace one of the specified number of coats.

7.3.7 Two-coat work shall be used only over solid bases meeting the requirements of **6.2**. The combined total nominal thickness shall be as shown in **Table 4**. A dash-bond coat shall not replace one of the specified number of coats.

7.3.8 Backplaster where required, shall be applied only after the coat on the opposite side has set sufficiently to resist breaking or cracking the plaster keys.

7.3.9 Each coat shall be permitted to set before the next coat is applied. (See **X1.5.2**.)

7.3.10 Plaster coats that have become dry shall be evenly dampened with water prior to applying subsequent coats to obtain uniform suction. There shall be no visible water on the surface when plaster is applied.

7.4 *Plaster Application on Metal and Non-metallic Plaster Bases:*

7.4.1 The first (scratch) coat shall be applied with sufficient material and pressure to form full keys through, and to embed the metal base, and with sufficient thickness of material over the metal to allow for scoring the surface.

7.4.1.1 As soon as the first (scratch) coat becomes firm, the entire surface shall be scored in one direction only. The vertical surfaces shall be scored horizontally.

7.4.1.2 The first (scratch) coat shall become sufficiently rigid to support the application of the second (brown) coat without damage to the monolithic continuity of the first (scratch) coat or its key.

7.4.2 The second (brown) coat shall be applied with sufficient material and pressure to ensure tight contact with the first (scratch) coat and to bring the combined thickness of the base coat to the nominal thickness shown in **Table 4**.

7.4.2.1 The surface of the second (brown) coat shall be brought to a true, even plane with a rod or straightedge, filling surface defects in plane with plaster. Dry rodding the surface of the brown coat shall be permitted.

7.4.2.2 The surface shall be floated uniformly to promote densification of the coat and to provide a surface receptive to bonding of the finish coat.

7.4.3 The third (finish) coat shall be applied with sufficient material and pressure to ensure tight contact with, and complete coverage of the base coat and to the nominal thickness shown in **Table 4** and **7.5.1.1**.

7.5 *Plaster Application on Solid Plaster Bases:*

7.5.1 High-suction bases shall be evenly dampened with clean water prior to the application of plaster. Do not dampen low-suction solid bases, such as dense concrete or smooth brick.

7.5.1.1 Where masonry or concrete surfaces vary in plane, plaster thickness required to produce level surfaces shall not be required to be uniform.

7.5.2 *Three-coat Application on Solid Bases:*

7.5.2.1 The first (scratch) coat shall be applied with sufficient material and pressure to ensure tight contact and complete coverage of the solid base, to the nominal thickness shown in **Table 4**. As soon as the first (scratch) coat becomes firm, the

entire surface shall be scored in one direction only. The vertical surfaces shall be scored horizontally.

7.5.2.2 The second (brown) coat shall be applied using the same procedures specified in **7.4.2** and **7.4.2.1**, bringing the surface to a true, even plane with a rod or straightedge, filling any defects in plane with plaster and darbying. The surface shall be floated uniformly to provide a surface receptive to the application of the third (finish) coat.

7.5.2.3 The third (finish) coat shall be applied as specified in **7.4.3**.

7.5.3 *Two-coat Application on Solid Plaster Bases:*

7.5.3.1 The first coat shall be applied to the nominal thickness shown in **Table 4** using sufficient material and pressure to ensure tight contact and complete coverage of the solid base. The applied material shall be brought to a true, even plane with a rod or straightedge. Dry rodding the finish surface of the applied material shall be permitted.

7.5.3.2 The second (finish) coat shall be applied as specified in **7.4.3**.

7.6 *Finish-coat Application:*

7.6.1 Job-mixed or factory-prepared finish coats shall be applied, by machine or by hand, as specified in **7.4.3**.

7.6.2 The use of excessive water during the application and finishing of finish-coat plaster shall be avoided.

7.7 *Fog-coat Application*—Job-mixed or factory-prepared fog coats shall be applied in accordance with the directions of the manufacturer.

7.8 *Curing and Time Between Coats:*

7.8.1 Provide sufficient moisture in the plaster mix or by moist or fog curing to permit continuous hydration of the cementitious materials. The most effective procedure for curing and time between coats will depend on climatic and job conditions. (See **X1.5.2**.)

7.8.2 Sufficient time between coats shall be allowed to permit each coat to cure or develop enough rigidity to resist cracking or other physical damage when the next coat is applied. (See **X1.5.2**.)

7.9 *Environmental Conditions:*

7.9.1 Portland cement-based plaster shall not be applied to frozen base or to a base containing frost. Plaster mixes shall not contain frozen ingredients. Plaster coats shall be protected from freezing for a period of not less than 24 h after set has occurred.

7.9.2 Portland cement plaster shall be protected from uneven and excessive evaporation during dry weather and from strong blasts of dry air.

7.9.3 *Plaster Application*—When artificial heat is required, heaters shall be located to prevent a concentration of heat on uncured plaster. Heaters shall be vented to the outside to prevent toxic fumes and other products of combustion from adhering to or penetrating plaster bases and plaster. Adequate ventilation shall be maintained in all areas, particularly in interior areas with little or no natural air movement.

7.9.3.1 Interior environment shall be maintained at a temperature above 40 °F not less than 48 h prior to and during application of portland cement-based plaster. Interior temperature shall be maintained above 40 °F until normal occupancy.

7.9.3.2 For exteriors, plaster shall be applied when the ambient temperature is higher than 40 °F (4.4 °C), unless the work area is enclosed and heat is provided as described in 7.9.3.

8. Keywords

8.1 bond; brown coat; cementitious; exterior plaster; fog coat; portland cement; scratch coat; stucco

ANNEXES

(Mandatory Information)

A1. GENERAL INFORMATION

A1.1 Where a specific degree of fire resistance is required for plastered assemblies and constructions, details of construction shall be in accordance with official reports of fire tests conducted by recognized testing laboratories, in accordance with Test Methods E119.

A1.2 Where a specific degree of sound control is required for plastered assemblies and constructions, details of construction shall be in accordance with official reports of tests conducted by recognized testing laboratories, in accordance with applicable sound tests of Test Methods E90 or E492.

A1.3 Scaffolding shall be constructed and maintained in strict conformity with applicable laws and ordinances.

A1.4 Work schedules shall provide for completion of work affecting supports, framework, or lath of a suspended ceiling (such as loading) before plastering work is accomplished.

A1.5 Surfaces and lathing accessories to receive plaster shall be examined before plastering is applied thereto. The proper authorities shall be notified and unsatisfactory conditions shall be corrected prior to the application of plaster. The plastering contractor shall use this portion of the construction specifications for acceptance or rejection of such surfaces.

A1.5.1 Lath, solid plaster bases, the water-resistive barrier, attachment, and accessories to receive plaster shall be exam-

ined to determine if the applicable requirements of Specification C1063 have been met unless otherwise required by the contract specifications.

A1.5.2 Accessories shall be installed prior to the application of plaster; therefore, their type, depth, location, and orientation shall be included in the contract documents. Control joint and expansion joint locations and their integration with the substrate and water resistive barrier shall be graphically depicted in the contract documents. Where masonry or concrete surfaces vary in plane, plaster thickness required to produce level surfaces shall not be required to be uniform.

A1.5.3 The construction specifier shall describe, in the proper section of the contract specifications, the physical characteristics of solid surface bases to receive plaster, including measures to promote bond. The plane tolerance shall be not more than ¼ in. (6 mm) in 10 ft (3 m). The mortar joints shall be flush and not struck. Dissimilar ferrous-containing materials such as ties, reinforcing steel, and so forth, shall be cut back a minimum ⅛ in. (3 mm) below the surface and treated with a corrosion-resistant coating. Dissimilar non-ferrous protuberances shall be permitted to be trimmed back even with the surface of the solid base. Masonry shall be solid at corners and where masonry changes thickness in a continuous construction. Form release compounds shall be compatible with plaster or be completely removed from surfaces to receive plaster.

A2. DESIGN CONSIDERATIONS

A2.1 Exterior plaster (stucco) is applied to outside surfaces of all types of structures to provide a durable, fire-resistant covering. Interior plaster is applied to inside surfaces that will be subjected to various exposures, such as abrasion, vibration, or to continuous or frequent moisture and wetting, or to freezing or thawing.

A2.1.1 Sufficient slope on faces of plastered surfaces shall be provided to prevent water, snow, or ice from accumulating or standing. Air-entrained portland cement plaster provides

improved resistance to freeze/thaw deterioration. Resistance to rain penetration is improved where plaster has been adequately densified during application and properly cured. Plaster shall not, however, be considered to be “waterproof.”

A2.1.2 The contract documents shall describe the requirements for flashing. Flashing shall be specified and detailed around the perimeters of openings and at terminations and other interruptions in the vertical plane (see X1.6.1.3). Flashing shall be corrosion-resistant material. Aluminum flashing shall