
USACE / NAVFAC / AFCEA / NASA UFGS-09 24 23 (May 2009)
Change 1 - 11/12

Preparing Activity: USACE Superseding
UFGS-09 24 23 (April 2006)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2013

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05/09

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SECTION 09 24 23

STUCCO
05/09

NOTE: This section covers requirements for stucco,
including associated framing and lathing.

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 items(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 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 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 A185/A185M	(2007) Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
ASTM C1032	(2006; R 2012) Standard Specification for Woven Wire Plaster Base
ASTM C1063	(2012a) Standard Practice for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster
ASTM C150/C150M	(2012) Standard Specification for Portland Cement
ASTM C206	(2003; R 2009) Standard Specification for Finishing Hydrated Lime
ASTM C841	(2003; E 2008; R 2008) Installation of Interior Lathing and Furring
ASTM C847	(2012) Standard Specification for Metal Lath
ASTM C897	(2005; R 2009) Aggregate for Job-Mixed Portland Cement-Based Plasters
ASTM C926	(2012) Application of Portland Cement-Based Plaster
ASTM C933	(2011) Welded Wire Lath
ASTM D1784	(2011) Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

U.S. GREEN BUILDING COUNCIL (USGBC)

LEED NC	(2009) Leadership in Energy and Environmental Design(tm) New Construction Rating System
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1.2 SUSTAINABILITY REQUIREMENTS

NOTE: The bracketed items are representative of

LEED material documentation and requirements that may apply to this project. These items should be edited to reflect the project requirements.

Materials in this technical specification may contribute towards contract compliance with sustainability requirements.

1.2.1 LEED REQUIREMENTS

See Section 01 33 29 LEED DOCUMENTATION for project LEED NC [local/ regional materials] [and] [recycled content] requirements.

1.2.2 EPA Comprehensive Procurement Guidelines

See Section 01 62 35 RECYCLED/RECOVERED/BIOBASED MATERIALS for requirements associated with EPA designated products.

1.3 SUBMITTALS

NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project.

The Guide Specification technical editors have designated 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 submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation 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.

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

SD-02 Shop Drawings

Lath

SD-03 Product Data

Proportions and Mixing

SD-04 Samples

Colored Stucco Finish Coat
Sample Panel

SD-11 Closeout Submittals

LEED Documentation

1.4 QUALITY ASSURANCE

Submit, if required, a **SAMPLE PANEL** as follows: [One **300 mm 12 inch** square stucco panel showing finish texture and color and exposed reinforcement at the edges, one **300 mm 12 inch** square of reinforcement, and a **300 mm 12 inch** length of each accessory proposed, prior to proceeding with stucco work.] [A sample panel of stucco, constructed at the jobsite, and located as directed, to demonstrate installation procedures, texture and color, prior to proceeding with any stucco work; panel size shall be a minimum of **1200 mm wide x 2400 mm 4 feet wide x 8 feet** high; containing each type accessory proposed for use and constructed in the vertical position. Sample panel shall have exposed reinforcement at the edges. Each phase of installation such as framing, scratch coat, brown coat, finish coat and curing procedures shall be demonstrated in the construction of the panel. Submit one **300 mm 12 inch** square of reinforcement and one **300 mm 12 inch** length of each accessory proposed for use, prior to constructing the sample panel.]

1.5 DELIVERY, STORAGE, AND HANDLING

Deliver packaged materials to the site in the original packages and containers with labels intact and seals unbroken. Keep cementitious materials dry and stored off the ground, under cover and away from damp surfaces until ready to be used. Aggregate shall be covered to prevent the absorption or loss of moisture.

1.6 ENVIRONMENTAL REQUIREMENTS

Do not apply stucco when the ambient temperature is **4 degrees C 40 degrees F** or lower, or when a drop in temperature below **4 degrees C 40 degrees F** is expected within 48 hours after application.

PART 2 PRODUCTS

2.1 PORTLAND CEMENT

NOTE: Where colored or white stucco finish is required, the gray portland cement will be omitted. Select type of cement to provide the required characteristics. Type I cement should normally be specified when stucco requires no special

characteristics. Type II cement should be specified when stucco will be exposed to moderate sulphate (alkali) action. Type III cement should be specified when high early strength is needed.

Portland cement shall conform to **ASTM C150/C150M**, [gray portland cement Type [I] [II] [III].] [white portland cement, Type [I] [II] [III].]

2.2 COLORED STUCCO FINISH COAT

Colored stucco finish coat shall be a mill mixed product using white portland cement and requiring only the addition of and mixing with water for application. Color shall be [in accordance with Section **09 06 90**COLOR SCHEDULE] [_____]. Submit samples including both a fabricated portion of unit of work and color samples.

2.3 LIME

Lime shall conform to **ASTM C206**, Type S.

2.4 SAND

Sand aggregate for job-mixed base coat and job-mixed finish coat stucco shall conform to **ASTM C897**.

2.5 ACCESSORIES

NOTE: Custom aluminum radiuses, and custom miters and intersections with welded corners or taped backs are available. Aluminum shapes with clear anodized, color anodized, or baked enamel finishes may be used where required for aesthetic purposes. Aluminum shapes are more costly than standard steel or PVC shapes.

Accessories shall be [roll formed galvanized steel, or rigid polyvinyl chloride (PVC)] [_____], except that cornerite and striplath shall be formed from steel sheets with manufacturer's standard galvanized coating. Vinyl members shall be in accordance with **ASTM D1784**. Welded wire corner reinforcements shall be zinc coated, galvanized **1.4 mm 17 gauge** steel wire conforming to **ASTM A185/A185M**. Furring shall include hangers, bolts, inserts, clips, fastenings, and attachments of number, size, and design to develop the full strength of the members.

2.6 STEEL FRAMING

NOTE: Stud sizes and framing dimensions and details will be indicated on the drawings. Framing will be designed for a maximum deflection of L/240 studs only assembly or a maximum deflection of L/360 for completed assembly, based on wind load design requirements in UFC 3-301-01.

Steel framing shall be as shown and shall be manufacturers standard

products with shop applied protective coating.

2.7 METAL LATH

Metal lath shall conform to ASTM C847, types and weights in accordance with the various spacing shown in ASTM C841. Lath for vertical application on steel and wood framing supports shall be expanded metal or welded or woven wire and shall have paper backing with a minimum vapor permeance of 287.2 ng per Pa per second per square meter 5 perms. Woven wire lath shall be a maximum 38 x 38 mm 1-1/2 x 1-1/2 inch mesh wire of not less than 1.37 mm 0.0540 inch nominal diameter and shall conform to ASTM C1032. Welded wire lath shall conform to ASTM C933, with openings not to exceed 50 x 50 mm 2 x 2 inches. Expanded metal or wire lath shall be fabricated in a manner to provide not less than 6 mm 1/4 inch keying between wire and paper backing and keying shall be obtained by a uniform series of slots in a perforated face paper woven between the wires.

2.8 WATER

Provide clean, fresh, potable water, free from amounts of oils, acids, alkalis and organic matter that would be injurious to the stucco.

PART 3 EXECUTION

3.1 FRAMING

Framing shall be installed as indicated.

3.2 CONTROL JOINTS

NOTE: Control joints will be shown on the drawings, dividing the stucco into areas of not more than 13 square meters (144 square feet) with no dimension between control joints greater than 5.4 meters (18 feet). The length to width ratio of the area bounded by the control joints will not exceed 25 to 63 mm (1 to 2-1/2 inches).

Control joints shall be located as indicated on the drawings. Prefabricated control joint members shall be installed prior to the application of the stucco. Control joints shall be cleared of all stucco within the control area after stucco application and prior to final stucco set.

3.3 LATH

NOTE: Drawings will clearly indicate where metal lath is required. Metal lath will be used over metal supports and wood supports. Metal reinforcement with water-resistant paper is recommended in all steel frame construction and suspended ceilings. The use of metal reinforcement over concrete and masonry will be in accordance with local practice based upon satisfactory experience. Paper backed lath may be applied to interior concrete and masonry when adequate and uniform bond

cannot be obtained otherwise, and when the lath will
be protected from moisture.

Install lath in accordance with ASTM C841 or ASTM C1063 except as otherwise specified. Metal and wire lath shall be applied straight, without buckles and with joints staggered. End laps of metal lath shall be not less than 25 mm 1 inch. When paper-backed lath is used, the paper shall be split from the lath at all lap areas to provide a paper to paper and lath to lath lap. Horizontal joints shall be shiplapped. Lath shall be interrupted at all control joints. Submit drawings showing details of construction for reinforcement, furring, and grounds; including manufacturer's installation instructions for stucco materials, and locations where each mix and coating thickness will be used.

3.3.1 Steel and Wood Supports

Apply metal lath over vertical open or solid wood and steel backing frame construction only after sheathing and air barrier has been applied to the area to receive the stucco. Fasten lath every 200 mm 8 inches vertically and every 400 mm 16 inches horizontally; and where sheets of lath are lapped. Drive fasteners to hold both lapped edges securely in place.

3.3.2 On Concrete and Masonry

Fasten lath every 200 mm 8 inches vertically and every 400 mm 16 inches horizontally. Where wood supports adjoin masonry or concrete in the same direction, provide casing bead, control joints, or reinforcement as indicated.

3.3.3 Over Metal Lintels and Flashings

Lath over metal lintels shall be extended vertically over the angles to a height of not less than 150 mm 6 inches and horizontally across the underside of the lintels and shall be secured in an approved manner. Lath over metal flashings shall lap the flashings not less than 50 mm 2 inches and shall be extended vertically for a height of not less than 150 mm 6 inches.

3.3.4 Special Shapes, Profiles, and Contours

Special shapes, profiles, and contours shall be formed with wood, metal or aluminum furring and reinforcing.

3.4 FURRING

Furring shall be installed to true lines and surfaces and shall be rigidly supported and secured in place.

3.5 PREPARATION OF SURFACES

Preparation of surfaces for application of stucco to solid bases such as stone, masonry or concrete shall conform to the applicable requirements of ASTM C926.

3.6 PROPORTIONS AND MIXING

Proportions and mixing for job-mixed base coat and finish coat shall conform to the applicable requirements of ASTM C926. Mixing of mill-mixed

finish coat shall be in accordance with the manufacturer's directions. Submit detailed description of the proposed job-mix proportions for base and finish coats; including identification of thickness of coats.

3.7 STUCCO APPLICATION

Stucco shall be applied in three coats to a thickness of not less than 25 mm 1 inch as measured from the back plane of metal reinforcement, exclusive of ribs or dimples or from the face of solid backing or support, with or without metal reinforcement, to the finished stucco surface, including moderate texture variations. Stucco application shall conform to the applicable requirements of ASTM C926 and the following:

3.7.1 Workmanship

Items or features of the work in connection with or adjoining the stucco shall be in place, plumb, straight, and true prior to beginning the stucco work. Metal and wire lath, where required, shall be in place and positioned to provide a good key at back of lath. Where lath is applied over copper, the copper shall be given a heavy coat of bituminous paint. Masonry surfaces to receive stucco shall be evenly dampened immediately prior to application of stucco. Each stucco coat shall be applied continuously in one general direction, without allowing mortar to dry at edges. Where it is impossible to work the full dimension of a wall surface in a continuous operation, jointing shall be made at a break, opening, or other natural division of the surface. Edges to be joined shall be dampened slightly to produce a smooth confluence. Exterior corners of stucco shall be slightly rounded. Stucco on soffit surfaces shall be pitched forward to form a drip.

3.7.2 Scratch Coat

Scratch coat shall be applied not less than 10 mm 3/8 inch thick under sufficient pressure to form good keys and to completely embed the reinforcement. Before the scratch coat has set, it shall be lightly scratched in one direction and vertical surfaces shall be scratched in the horizontal direction only. The scratch coat shall be fog cured for a minimum of 72 hours.

3.7.3 Brown Coat

The scratch coat shall be dampened evenly to obtain uniform suction before the brown coat is applied. There shall be no visible water on the surface when the brown coat is applied. The brown coat shall be applied to the scratch coat with sufficient pressure to force the stucco into the scratches and shall be brought to a plumb, true, even plane with rod or straightedge. When set sufficiently, the brown coat shall be uniformly floated with a dry float to promote densification of the coat and to provide a surface receptive to bonding of the finish coat. Brown coat shall be fog cured for a minimum of 72 hours.

3.7.4 Finish Coat

Surfaces of the brown coat shall be dampened not more than 1 hour before the finish coat is to be applied to a uniform wetness with no free-standing water on the surface. The finish coat shall have a [smooth trowel] [float] [trowel-textured] [rough-textured] [spray-textured] [exposed aggregate] finish and shall conform to the approved sample. The finish coat shall be fog cured for a minimum of 48 hours. Care shall be taken to prevent

staining.

3.7.5 Surface Tolerance

When a 3 m 10 foot straightedge is placed at any location on the finished surface of the stucco, excluding rough-textured finish, the surface shall not vary more than 3 mm 1/8 inch from the straightedge.

3.8 CURING AND PROTECTION

Perform fog curing by applying a fine mist of water to the stucco. Care shall be exercised during fog curing to avoid erosion damage of the stucco surfaces. Do not use a solid stream of water. Frequency of fogging shall be not less than three times daily. Protect the stucco from the direct rays of the sun during severe drying conditions using canvas, cloth or other approved sheet material, when directed.

3.9 PATCHING AND POINTING

Loose, cracked, damaged or defective work shall be replaced or patched as directed. Patching shall match existing work in texture and color and shall be finished flush.

-- End of Section --