
USACE / NAVFAC / AFCEA / NASA UFGS-09 23 00 (August 2010)

Preparing Activity: NAVFAC Superseding
UFGS-09 23 00 (January 2008)
UFGS-09 23 00 (April 2006)
UFGS 09 22 37.00 10 (April 2006)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2011

SECTION TABLE OF CONTENTS

DIVISION 09 - FINISHES

SECTION 09 23 00

GYPSUM PLASTERING

08/10

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 QUALITY ASSURANCE
 - 1.3.1 Sample Panels
 - 1.3.2 Sustainable Design Certification
- 1.4 DELIVERY, STORAGE, AND HANDLING
- 1.5 ENVIRONMENTAL CONDITIONS
 - 1.5.1 Gypsum Plaster
- 1.6 Gypsum Plaster Full Size Sample

PART 2 PRODUCTS

- 2.1 MATERIALS
- 2.2 GYPSUM BASE COAT PLASTER
 - 2.2.1 Gypsum Neat Plaster Base Coat
 - 2.2.2 Gypsum Ready-Mixed Plaster Base Coat
 - 2.2.3 Gypsum Wood-Fibered Plaster Base Coat
 - 2.2.4 High Strength Gypsum Plaster Base Coat
- 2.3 GYPSUM FINISH COAT PLASTER
 - 2.3.1 Gypsum Gaging Plaster Finish Coat
 - 2.3.2 High Strength Gypsum Gaging Plaster Finish Coat
 - 2.3.3 Gypsum Molding Plaster for Ornamental Plaster
 - 2.3.4 Keene's Cement Finish Coat
 - 2.3.5 Acoustical Plaster Finish Coat
- 2.4 HYDRATED LIME
- 2.5 AGGREGATES
 - 2.5.1 Sand for Gypsum Base Coats
 - 2.5.2 Sand for Gypsum Sand Float Finish
 - 2.5.3 Lightweight Aggregates, Perlite or Vermiculite for Gypsum Base Coat
 - 2.5.4 Silica Sand or Perlite Fines
- 2.6 WATER

- 2.7 PROPORTIONING
 - 2.7.1 Gypsum Base Coat Plaster
 - 2.7.1.1 Sand and Gypsum Plaster Base Coat
 - 2.7.1.2 Lightweight Aggregate and Gypsum Plaster Base Coat
 - 2.7.1.3 Sand and Wood Fibered Gypsum Plaster Base Coat
 - 2.7.1.4 Sand and High-Strength Gypsum Plaster Base Coat
 - 2.7.2 Gypsum Plaster Finish Coat
 - 2.7.2.1 Lime-Putty
 - 2.7.2.2 Lime-Putty Gypsum-Gaged (White Coat)
 - 2.7.2.3 Aggregated Finish Coat
 - 2.7.2.4 Gypsum Sand Float Finish[for [____]]:
 - 2.7.2.5 Keene's Cement Lime-Putty Finish[for [____]]
 - 2.7.2.6 High Strength Gypsum-Gaged Plaster Finish[for [____]]
 - 2.7.2.7 Acoustical Plaster Finish[for [____]]
- 2.8 MIXING
 - 2.8.1 Job-Mixed Materials
 - 2.8.2 Ready-Mixed Packaged Materials
- 2.9 BONDING AGENT

PART 3 EXECUTION

- 3.1 SURFACE PREPARATION
- 3.2 WORKMANSHIP
 - 3.2.1 Slump Tests
 - 3.2.2 Application
 - 3.2.3 Control And Expansion Joints
 - 3.2.4 Curing
 - 3.2.4.1 Gypsum Plaster
- 3.3 GYPSUM PLASTER WORK
 - 3.3.1 Gypsum Plaster Thickness Requirements
 - 3.3.2 Gypsum Plaster Basecoat Work
 - 3.3.2.1 Gypsum Two-Coat System
 - 3.3.2.2 Gypsum Three-Coat System
 - 3.3.3 Gypsum Plaster Finish Coats
 - 3.3.3.1 Lime-Putty and Gypsum-Gaged Finish Coats
 - 3.3.3.2 Keene's Cement Lime-Putty Finish Coat
 - 3.3.3.3 Gypsum Sand Float Finish Coat
 - 3.3.3.4 Acoustical Plaster Finish Coat
- 3.4 ORNAMENTAL PLASTER WORK
- 3.5 PATCHING AND POINTING

-- End of Section Table of Contents --

USACE / NAVFAC / AFCEA / NASA UFGS-09 23 00 (August 2010)

Preparing Activity: NAVFAC Superseding
UFGS-09 23 00 (January 2008)
UFGS-09 23 00 (April 2006)
UFGS 09 22 37.00 10 (April 2006)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMLR dated July 2011

SECTION 09 23 00

GYPSUM PLASTERING 08/10

NOTE: This guide specification covers the requirements for interior and exterior plaster work.

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).

NOTE: Gypsum plaster refers to interior work. Stucco refers to cement plaster used on the building exterior. Indicate on the project drawings the extent and location of the work to be accomplished, and the type of plaster required .

NOTE: Specification requirements of a one-coat system are Portland cement plaster with a sand float finish applied to concrete masonry units and concrete surfaces.

NOTE: This specification is for unrestrained stucco and plaster systems. The cold-formed metal framing

(Section 05 40 00 - COLD-FORMED METAL FRAMING), lathing (Section 09 22 36 - LATH), and (Section 09 22 00 - SUPPORTS FOR PLASTER AND GYPSUM BOARD) must be designed and detailed to provide an unrestrained system. Also design and detail sleeve and caulking for fire sprinkler, electrical, and mechanical penetrations to avoid transferring structural or vibrational loads from these systems to the plaster panels.

NOTE: For terminology on gypsum plaster, refer to latest edition of Portland Cement Plaster (Stucco) Manual by Portland Cement Association and ASTM C 11 Standard Terminology Relating to Gypsum and Related Building Materials and Systems.

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 C 11	(2010a) Standard Terminology Relating to Gypsum and Related Building Materials and Systems
ASTM C 206	(2003; R 2009) Standard Specification for Finishing Hydrated Lime
ASTM C 28/C 28M	(2010) Gypsum Plasters

ASTM C 35	(2001; R 2009) Inorganic Aggregates for Use in Gypsum Plaster
ASTM C 472	(1999; R 2009) Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete
ASTM C 59/C 59M	(2000; R 2006) Gypsum Casting Plaster and Gypsum Molding Plaster
ASTM C 61/C 61M	(2000; R 2006) Gypsum Keene's Cement
ASTM C 631	(2009) Bonding Compounds for Interior Gypsum Plastering
ASTM C 842	(2005e1; R 2010) Application of Interior Gypsum Plaster
ASTM E 1042	(2002; R 2008e1) Acoustically Absorptive Materials Applied by Trowel or Spray

GREENGUARD ENVIRONMENTAL INSTITUTE (GEI)

GEI	Greenguard Standards for Low Emitting Products
-----	--

SCIENTIFIC CERTIFICATION SYSTEMS (SCS)

SCS	Scientific Certification Systems (SCS) Indoor Advantage
-----	---

1.2 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" 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

projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.] [for 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:

NOTE: Request for samples as noted below only where walls are textured.

SD-03 Product Data

Certification

SD-04 Samples

Gypsum Plaster[; G][; G, [____]]

Submit four 900 mm 36 inch square panels of varying texture for the Contracting Officer's approval.

Full Size Sample[; G][; G, [____]]

SD-08 Manufacturer's Instructions

ready-mix gypsum plaster

[Acoustical Plaster Finish]

Submit manufacturer's printed mixing instructions for ready-mix plaster[and acoustical plaster finish].

[1.3 QUALITY ASSURANCE

1.3.1 Sample Panels

Erect sample panel at the building site, or as otherwise directed. Finished gypsum plaster work must match the approved sample panel.]

[1.3.2 Sustainable Design Certification

Product shall be third party certified by GEI Greenguard Indoor Air Quality Certified, SCS Scientific Certification Systems Indoor Advantage or equal. Certification shall be performed annually and shall be current.]

1.4 DELIVERY, STORAGE, AND HANDLING

Deliver manufactured materials in the manufacturers' original unbroken packages or containers which are labeled plainly with the manufacturers' names and brands. Keep cementitious materials dry and stored off the ground, under cover, and away from sweating walls and other damp surfaces

until ready for use.

1.5 ENVIRONMENTAL CONDITIONS

1.5.1 Gypsum Plaster

Maintain an ambient temperature of not less than 13 degrees C 55 degrees F continuously during plastering, [and] drying[, and until occupancy heating conditions are established in the area]. Maintain this temperature for not less than one week prior to the application of plaster. Provide regulated ventilation to prevent "sweatouts" or "dry-outs." When the building is exposed to hot dry winds or day-to-night temperature differentials of 10 degrees C 20 degrees F or more, cover openings that are not glazed. Gypsum and related materials must conform to ASTM C 11. [Provide permanent ventilation for spaces enclosed by suspended ceilings as indicated.]

1.6 Gypsum Plaster Full Size Sample

After selection of an acceptable texture, construct a sample [panel] [wall] separate from the building, minimum size of [2400] [_____] mm [8] [_____] ft in height, by [2400] [_____] mm [8] [_____] ft in length, using 150 mm 6 inch metal studs, and gypsum board, metal lath and gypsum plaster. The sample wall must show all aspects of gypsum plaster work, including but not limited to, expansion joints, control joints, corner extrusions, [[electrical] [mechanical] [and] [fire sprinkler] penetration[s]] and casing beads. A sample of a control joint and extrusion butt joint must also be incorporated into the sample wall. Finish work must match the approved sample panel. [Divide the panel into four equal quadrants with the expansion and control joints to show each phase of work, lath, scratch coat, brown coat, and finish coats.] The Contractor shall protect the sample wall from damage during the length of the contract.

PART 2 PRODUCTS

2.1 MATERIALS

Conform to the specifications, standards, and requirements specified herein. Provide asbestos-free materials.

2.2 GYPSUM BASE COAT PLASTER

[2.2.1 Gypsum Neat Plaster Base Coat

ASTM C 28/C 28M.

] [2.2.2 Gypsum Ready-Mixed Plaster Base Coat

ASTM C 28/C 28M.

] [2.2.3 Gypsum Wood-Fibered Plaster Base Coat

ASTM C 28/C 28M.

] [2.2.4 High Strength Gypsum Plaster Base Coat

ASTM C 28/C 28M, gypsum neat plaster, except plaster must have a compressive strength of not less than 17.25 MPa 2,500 psi, when tested dry in accordance with ASTM C 472.

] 2.3 GYPSUM FINISH COAT PLASTER

] 2.3.1 Gypsum Gaging Plaster Finish Coat

ASTM C 28/C 28M.

] 2.3.2 High Strength Gypsum Gaging Plaster Finish Coat

NOTE: High strength gaging plaster, when blended
with finish lime-putty, produces a finish plaster
with controlled set, early hardness and strength,
and resistance to shrinkage cracks.

ASTM C 28/C 28M, gypsum gaging plaster, except plaster must have a
compressive strength of not less than 31 MPa 4,500 psi when tested dry in
accordance with ASTM C 472.

] 2.3.3 Gypsum Molding Plaster for Ornamental Plaster

ASTM C 59/C 59M.

] 2.3.4 Keene's Cement Finish Coat

ASTM C 61/C 61M.

] 2.3.5 Acoustical Plaster Finish Coat

NOTE: Selected type and grade of plaster to provide
the required acoustical characteristics. Acoustical
plaster is not recommended for use in places where
heavy abrasion and rough usage is expected.

ASTM E 1042 Type [I,] [II,] Class A, noncombustible.

] 2.4 HYDRATED LIME

ASTM C 206, Type S.

2.5 AGGREGATES

2.5.1 Sand for Gypsum Base Coats

ASTM C 35.

Sand Gradation: Percentage retained by weight (plus or minus 2
percent) on each sieve.

Sieve Size			Max.	Min.
No.	4	[4760 microns]	0	0
No.	8	[2380 microns]	5	0
No.	16	[1190 microns]	30	5
No.	30	[590 microns]	65	30
No.	50	[300 microns]	95	65
No.	100	[150 microns]	100	90

Sieve Size	Max.	Min.
------------	------	------

2.5.2 Sand for Gypsum Sand Float Finish

NOTE: Aggregates for finish-coat plaster should be less than No. 16 sieve size. Larger sizes may be added for finish appearance purposes. Select sieve number that will provide the desired texture. Float texture is governed by maximum sieve sizes of sand. Sieve sizes of 20 to 30 provide a fine float finish and 16 to 20 provide a coarse finish.

ASTM C 842.

Sand Gradation: Percentage retained by weight (plus or minus 2 percent) on each sieve.

Sieve Size	Max.	Min.
No. 20 [850 microns]	0	
No. 30 [590 microns]	0.5	
No. 100 [150 microns]	100	40
No. 200 [75 microns]	100	70

2.5.3 Lightweight Aggregates, Perlite or Vermiculite for Gypsum Base Coat

ASTM C 35.

2.5.4 Silica Sand or Perlite Fines

For use in lime-putty gypsum-gaged finish, aggregated white coat, must have the following gradation: 10 percent maximum retained on a No. 30 sieve (590 microns), 4 percent minimum and 70 percent maximum retained on a No. 100 sieve (150 microns), and 70 percent minimum and 100 percent maximum retained on No. 200 sieve (75 microns).

2.6 WATER

Use only potable water , free of mineral and organic substances that affect the hardening and durability of the plaster or stucco.

2.7 PROPORTIONING

Unless specified otherwise, materials are specified on a volume basis and must be measured in approved containers, to ensure that the specified proportions will be controlled and accurately maintained during the progress of the work. Measuring materials with shovels (shovel count) is not be permitted. Prepare ready-mix gypsum plaster for use by the addition of water only.

2.7.1 Gypsum Base Coat Plaster

NOTE: List all conditions where sand or lightweight aggregate should not be used.

Use of sand or lightweight aggregate is optional in gypsum plaster basecoats, except provide (1) sand for Keene's cement and high strength gypsum-gaged finish coats; (2) lightweight aggregate when necessary for a required fire resistance rating [; and (3) [____]].

2.7.1.1 Sand and Gypsum Plaster Base Coat

Mix scratch coat in the proportion of 45 kg 100 lb of gypsum neat plaster to not more than 56 liter 2 cu ft of damp loose sand; mix brown coat in the proportion of 45 kg 100 lb of gypsum neat plaster to not more than 85 liter 3 cu ft of damp loose sand; or scratch and brown coats may both be mixed in the proportion of 45 kg 100 lb of gypsum neat plaster to not more than 70 liter 2-1/2 cubic feet of damp loose sand. [Mix the basecoats for double-up work in the proportion of 45 kg 100 lb of gypsum neat plaster to [not more than 70 liter 2-1/2 cu ft of damp loose sand on gypsum lath] [and] [not more than 85 liter 3 cu ft of damp loose sand on masonry].]

2.7.1.2 Lightweight Aggregate and Gypsum Plaster Base Coat

Mix scratch coat in the proportion of 45 kg 100 lb of gypsum neat plaster to [not more than 70 liter 2-1/2 cu ft of lightweight aggregate on gypsum lath,] [and] [not more than 85 liter 3 cu ft of lightweight aggregate on masonry]. Mix brown coat in the proportion of 45 kg 100 lb of gypsum neat plaster to [not more than 70 liter 2-1/2 cu ft of lightweight aggregate on gypsum lath] [and] [not more than 85 liter 3 cu ft of light weight aggregate on masonry]. Where plaster thickness exceeds 25 mm one inch, the aggregate proportion may be increased to 85 liter 3 cu ft. [Mix the basecoats in two-coat double-up work in the proportion of 45 kg 100 lb of gypsum neat plaster to [not more than 70 liter 2-1/2 cu ft of lightweight aggregate on gypsum lath] [and] [not more than 85 liter 3 cu ft of lightweight aggregate on masonry]]. Gypsum ready-mixed plaster with perlite aggregate may be provided in lieu of field-mixed lightweight aggregate and gypsum plaster, provided the specified proportion of aggregate to plaster does not exceed the proportion specified for field-mixed plaster.

2.7.1.3 Sand and Wood Fibered Gypsum Plaster Base Coat

NOTE: Because of its higher cost, specify
wood-fibered gypsum plaster only when needed; e.g.,
for fireproofing.

Mix basecoats in the proportion of 45 kg 100 lb of wood-fibered gypsum plaster to not more than 28 liter one cu ft of damp loose sand.

2.7.1.4 Sand and High-Strength Gypsum Plaster Base Coat

NOTE: Specify high strength gypsum plaster base
coat only where needed to withstand heavy abuse;
e.g., hospital corridors, handball courts, etc.

Mix scratch coat in the proportion of 45 kg 100 lb of high strength gypsum base coat plaster to not more than 56 liter 2 cu ft of damp loose sand. Mix brown coat in the proportion of 45 kg 100 lb of high strength gypsum basecoat plaster to not more than 85 liter 3 cu ft of damp loose sand.

2.7.2 Gypsum Plaster Finish Coat

NOTE: Do not use gypsum plaster in areas where the ceiling and walls will be subjected to frequent moisture or wetting.

2.7.2.1 Lime-Putty

Prepare lime-putty in accordance with the printed directions of the manufacturer. Use putty following preparation or following a soaking period as recommended by the manufacturer.

2.7.2.2 Lime-Putty Gypsum-Gaged (White Coat)

Use over[sand and gypsum plaster][sand and wood-fibered gypsum plaster]. Mix finish coat in the proportions of one part of gypsum gauging plaster to a volume of hydrated lime or lime putty.

This mix is approximately equivalent to one 45 kg 100 lb bag of gypsum gauging plaster to:

- a. Not more than four 22.5 kg 50 lb bags of hydrated lime, or
- b. Not more than 127 liter 4-1/2 cu ft of lime putty, or
- c. Not more than 132 liter 35 gal of lime putty.

2.7.2.3 Aggregated Finish Coat

NOTE: Specify aggregated white coat where a smooth trowel finish is required over perlite or vermiculite base coats. Do not use smooth trowel finish over lightweight aggregate base coat or metal lath.

Finish coat must consist of the lime-putty, gypsum-gaged finish specified herein with the addition of fine pulverized silica sand or perlite fines in the following proportions:

- a. 14 liter per 45 kg 1/2 cu ft per 100 lb bag of gypsum gauging plaster used in finish, or
- b. 3.5 liter per 22.5 kg 1/8 cu ft per 50 lb bag of hydrated lime, or
- c. 3.8 liter per 7.5 liter one gal per cu ft of lime-putty.

2.7.2.4 Gypsum Sand Float Finish[for [____]]:

NOTE: Do not use this type finish in bathrooms, kitchens, and other similar places requiring a constant cleaning cycle.

Mix finish in the proportion of one part neat unfibered gypsum plaster to not more than two parts of sand, by weight.

2.7.2.5 Keene's Cement Lime-Putty Finish[for [____]]

NOTE: Do not use Keene's cement as finish coat over a portland cement plaster base coat, or on monolithic concrete, due to the probability of unsatisfactory bond between the materials. Not recommended over lightweight aggregate base coats.

Mix finish in the proportion of not more than 45 kg 100 lb of lime putty to 45 kg 100 lb of Keene's cement.

2.7.2.6 High Strength Gypsum-Gaged Plaster Finish[for [____]]

NOTE: Specify high-strength gypsum-gaged finish plaster where surface hardness and resistance to abrasion are required. Not recommended over lightweight aggregate base coats.

Mix finish in the proportion of 90 kg 200 lb of high strength gauging to 45 kg 100 lb of hydrated lime.

2.7.2.7 Acoustical Plaster Finish[for [____]]

Mix finish in accordance with manufacturer's printed instructions.

2.8 MIXING

2.8.1 Job-Mixed Materials

Mix materials in mechanical mixers except finish coats containing lime may be hand mixed. Mechanical mixers must be an approved type that accurately and uniformly controls the quantity of water. When mixing by hand, mix dry plaster aggregate to a uniform color in the mixing box, add water, and hoe the plaster immediately into the water and mix thoroughly to a proper consistency.

Water used for rinsing and cleaning containers and tools must not be used in mixing the materials.

Sand proportions must be damp and in loose condition. A volume of damp loose sand must contain a minimum of 36 kg 80 lb of dry sand in 0.0283 cu m one cu ft.

Mix the material while the mixer is in continuous operation in the following sequence:

- a. Add maximum close to 90 percent of estimated quantity of water.
- b. Add approximately one-half of the sand. If vermiculite or perlite is used, add all the aggregate.
- c. Add cement and approved admixtures. [Add lime prior to cement.]

d. Add remainder of sand.

e. Mix with remainder of water as required. Mix until the mixture is uniform in color and consistency.

Avoid excessive mixing and agitation. Discard gypsum plaster which has begun to set before it is used; do not permit retempering. Do not use frozen, caked, or lumped materials. Empty mixers and mixing boxes after each batch is mixed, and keep free of old plaster.

2.8.2 Ready-Mixed Packaged Materials

Mix ready-mixed packaged gypsum plaster in accordance with manufacturer's printed instructions.

2.9 BONDING AGENT

NOTE: Bonding agents may be surface applied or integrally mixed with the plaster. Use Integral bonding agents only after review of the manufacturer's documentation of testing and past performance. Check compatibility of the bonding agent with the plaster mixtures. Bonding admixtures increase the potential for shrinkage of the plaster.

ASTM C 631, interior application.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

Clean surfaces before application of gypsum plaster of projections, dust, loose particles, grease, bond breakers, and foreign matter. Do not apply plaster directly to surfaces (1) of masonry or concrete that have been coated with bituminous compound or other waterproofing agents, or (2) that have been painted or previously plastered. Before plaster work is started, wet masonry and concrete surfaces thoroughly with a fine fog spray of clean water to produce a uniformly moist condition. Check metal grounds, corner beads, screeds, and other accessories carefully for alignment before starting work. [Do not apply gypsum plaster to surfaces containing frost.]

3.2 WORKMANSHIP

3.2.1 Slump Tests

Apply Plaster by hand or machine. When a plastering machine is used, control the fluidity of gypsum plaster to have a slump of not more than 75 mm 3 inch when tested using a 50 by 100 by 150 mm 2 by 4 by 6 inch high slump cone. Subsequent to determining water content to meet the specified slump, do not add additional water to the mix. Conduct the slump test according to the following procedure:

a. Place cone on level, dry, non-absorptive base plate.

b. While holding cone firmly against base plate, fill cone with plaster taken directly from the hose or nozzle of the plastering machine,

tamping with metal rod during filling to release air bubbles.

- c. Screed off plaster level with top of cone. Remove cone by lifting it straight up with a slow and smooth motion.
- d. Place cone in a vertical position adjacent to freed plaster sample, using care not to shake or move base plate.
- e. Lay a straightedge across top of cone, being careful not to shake or move cone. Measure slump in **mm** **inch** from the bottom edge of the straightedge to the top of the slumped plaster sample.

3.2.2 Application

Apply gypsum plaster in three coats, except as follows:

Gypsum plaster applied to [masonry] [and] [gypsum lath] using the two-coat double-up method.

Apply base coats with sufficient pressure and ensure plaster is sufficiently plastic to provide a strong bond to bases. Work base coats into screeds at intervals from **1500 to 2400 mm** **5 to 8 ft**. Plaster must not be continuous across expansion and control joints occurring in walls, partitions, and ceilings. Finish work level, plumb, square, and true, within a tolerance of **3 mm in 2400 mm** **1/8 inch in 8 ft**, without waves, cracks, blisters, pits, crazing, discoloration, projections, or other imperfections. Form plaster work carefully around angles and contours, and well-up to screeds. Take special care to prevent sagging and consequent dropping of applications. There must be no visible junction marks in finish coat where one day's work adjoins another. [Plastered surfaces to receive [rubber or vinyl base coves] [wood base boards] must extend to wood ground indicated as backing for base.] Plaster not required behind built-in cabinets and equipment[, and [_____]].

3.2.3 Control And Expansion Joints

[Install control joints at locations indicated before applying gypsum plaster. Vertical joints must be continuous and butt horizontal joints against the vertical joints.]Check expansion, control joints and accessories to ensure unrestrained movement, metal lath not continuous behind the joints, and area between joints do not exceed **14 sq m** **150 sq ft**.

3.2.4 Curing

3.2.4.1 Gypsum Plaster

Before the plaster has set, provide environmental controls to prevent the plaster from drying too fast. After the plaster has set, provide for rapid drying to develop high strength.

3.3 GYPSUM PLASTER WORK

ASTM C 842.

NOTE: Gypsum basecoat plaster may be by one of two methods for a three-coat or two-coat (double back) systems. The three-coat plaster system will require a basecoat of a scratch coat, cross raked, partial

drying, and a brown coat. The two-coat plaster system requires a scratch coat and a brown coat that is applied (double back) within a few minutes to the unset (moist) scratch coat. The cross raking of the scratch coat is omitted in the double back system.

3.3.1 Gypsum Plaster Thickness Requirements

Plaster thicknesses are from face of metal lath plaster base (scratch coat) or solid base surfaces.

a. Vertical Surfaces

Base Types	Base Coat	Finish Coat	Total Thickness
Metal Lath	13 mm	3 mm	16 mm
Masonry	13 mm	3 mm	16 mm
Concrete	13 mm	3 mm	16 mm
Other Bases	10 mm	3 mm	13 mm

Base Types	Base Coat	Finish Coat	Total Thickness
Metal Lath	1/2 inch	1/8 inch	5/8 inch
Masonry	1/2 inch	1/8 inch	5/8 inch
Concrete	1/2 inch	1/8 inch	5/8 inch
Other Bases	3/8 inch	1/8 inch	1/2 inch

b. Horizontal Surfaces. Total plaster thickness for metal lath plaster, masonry and concrete bases is 16 mm 5/8 inch. Total thickness of plaster for horizontal concrete surfaces is 3 to 10 mm 1/8 to 3/8 inch.

c. Where vertical and horizontal concrete surfaces require more than 16 mm 5/8 inch and 10 mm 3/8 inch, to produce required lines or surfaces, [attach metal plaster base for plaster application] [as indicated].

3.3.2 Gypsum Plaster Basecoat Work

3.3.2.1 Gypsum Two-Coat System

Apply the first coat to cover the base with sufficient material and pressure to form a good bond on the wall or ceiling base. Before the first coat has set and without scratching or cracking the surface, apply a second coat (double back) of the same material proportion as the base coat to the screeds. Straighten to a true surface without application of water, and cross rake or scratch to receive the finish coat.

3.3.2.2 Gypsum Three-Coat System

Apply scratch coat 5 to 6 mm 3/16 to 1/4 inch thick to cover the base with sufficient material and pressure to form a good bond on the wall or ceiling base. Rake or scratch the surface and allow to set firm and hard. Apply the brown coat to bring the base coat out to the screeds, compact and straighten to a true surface without the application of water, and cross rake or scratch to receive the finish coat.

3.3.3 Gypsum Plaster Finish Coats

NOTE: Do not specify rough textured finishes
bathrooms, kitchens, and other similar type places,
which require a constant cleaning cycle.

NOTE: There are six gypsum finish coat plasters,
each with a specific function:

Smooth Finishes: Gypsum-lime putty trowel finish
Keene's cement-lime putty trowel finish Prepared
gypsum trowel finish

Float Finishes: Keene's cement-lime sand float
finish Gypsum-sand float finish

Acoustical Plaster Finishes

Moderately moisten or fog spray base coat of plaster that has become dry before finish coat is applied. Accelerate plaster, if necessary, to provide a setting time of not more than 4 hours from the time the plaster is mixed.

3.3.3.1 Lime-Putty and Gypsum-Gaged Finish Coats

Apply lime-putty gypsum-gaged finish white coat or aggregated white coat [and high strength gypsum gaged finish] over the base coat, scratch in thoroughly, lay on well, double back, and fill out to a true, even surface. Allow the finish to dry a few minutes, then trowel well with water. Apply maximum pressure in order to compact the finish coat and provide a smooth finish free from blemishes and irregularities. Apply trowel finish coats of gypsum-gaged lime-putty over properly prepared base coats as thin as possible and 2 to 3 mm 1/16 to 1/8 inch thick for conventional plaster system, except as necessary in spots to level out hollows in base coat.

3.3.3.2 Keene's Cement Lime-Putty Finish Coat

NOTE: Do not use Keene's cement as finish coat over
a portland cement plaster basecoat, or on monolithic
concrete, due to the probability of unsatisfactory
bond between gypsum and portland cement materials.

Apply finish over gypsum-sand base coat only, scratch in thoroughly, lay on well, double back, and fill out to a true, even surface. Allow the finish to dry a few minutes, then trowel it well with water. Apply maximum pressure in order to compact the finish coat and provide a smooth finish free of blemishes and irregularities. Continue troweling until the finish sets.

3.3.3.3 Gypsum Sand Float Finish Coat

NOTE: Specify type of float required to produce the

texture desired.

Apply finish over the base coat, scratch in thoroughly, lay on with a trowel to an even surface, and then float with [_____] floats to a true, even surface, free of slick spots or other blemishes. Apply sand float finishes to a maximum thickness of 3 mm 1/8 inch except as necessary to level out hollow spots.

3.3.3.4 Acoustical Plaster Finish Coat

Apply finish in accordance with manufacturer's printed instructions and in the thickness necessary to provide the sound absorption coefficient specified, but not be less than 13 mm 1/2 inch thick.

3.4 ORNAMENTAL PLASTER WORK

Complete ornamental work before the finish coat of plaster is applied to adjoining areas. Plaster for ornamental work must consist of a mixture that will produce satisfactory results for the respective conditions, be reinforced properly with fiber or zinc-coated steel wire netting as necessary to provide permanent construction, and be rigidly secured in place. Run plain moldings in place to templates and guides, with true radial lines for curved work; where it is not practicable to run such moldings, cast or run them on a bench and then secure in place firmly. Cornices and moldings must be straight or curved, true to line, and corners neat.

3.5 PATCHING AND POINTING

Cut out and patch loose, cracked, damaged, or defective gypsum plaster. Patch must match existing work in texture, color and finish flush with previously applied gypsum plaster surfaces. Point work abutting or adjoining finish work in a neat manner. Remove droppings or splatterings from surfaces. Leave clean and in a condition to receive paint or other finish. Remove protective covering from floors and other surfaces, and rubbish and debris from [the interior and exterior of] the building.

-- End of Section --