PLAINTIFF'S EXHIBIT

GP-987

Standard Specifications

Gypsum Plastering and Interior Lathing and Furring



Gypsum Association

A1A FILE NUMBER 21-A-2

SGP 0003048

ASA
Reg. U. S. Pat. Off.
A42.1-1955
A42.4-1955
UDC 693.6

AMERICAN STANDARD SPECIFICATIONS *for* GYPSUM PLASTERING *and* INTERIOR LATHING AND FURRING

Approved as
AMERICAN STANDARD
by the American Standards Association
January 11, 1955

Copies are obtainable from
American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.
American Standards Association, 70 East 45th St., New York 17, N. Y.

Copyright, 1955, by
THE AMERICAN INSTITUTE *of* ARCHITECTS
and the
AMERICAN SOCIETY *for* TESTING MATERIALS

SGP 0003049

PERSONNEL OF SECTIONAL COMMITTEE ON SPECIFICATIONS FOR PLASTERING[1]

ASA Project: A42

SPONSORS { THE AMERICAN INSTITUTE OF ARCHITECTS
AMERICAN SOCIETY FOR TESTING MATERIALS

CHAIRMAN: THEODORE IRVING COE
American Institute of Architects,
1741 New York Ave., N.W., Washington 6, D. C.

SECRETARY: ERWIN M. LURIE
Materials Engineer
1106 North Kirkwood Road, Arlington 1, Va.

AMERICAN CONCRETE INSTITUTE	Davis, Clayton L.
(Alternate)	McCoy, W. J.
AMERICAN INSTITUTE OF ARCHITECTS	Coe, Theodore Irving Norton, P. W.
AMERICAN SOCIETY FOR TESTING MATERIALS	McCoy, W. J. Marsh, F. L. Robertson, J. A. Hardesty, James A.
BUILDING TRADES EMPLOYERS' ASSOCIATION OF NEW YORK	Patterson, J. A.
CONTRACTING PLASTERERS' INTERNATIONAL ASSOCIATION	Felker, E. P.
GENERAL SERVICES ADMINISTRATION, Public Bldgs. Service	Chamberlain, C. W.
(Alternate)	Strohman, J. W.
FINISHING LIME ASSOCIATION OF OHIO	Johnson, L. E.
GYPSUM ASSOCIATION	Storey, O. H., Jr.
(Alternate)	Yeager, L. H.
HOUSING AND HOME FINANCE AGENCY	Lurie, Erwin M.
INSULATION BOARD INSTITUTE	Marshall, Wm. J.
METAL LATH MANUFACTURERS' ASSOCIATION	Wadle, D. R.
NATIONAL ASSOCIATION OF BUILDING MANAGERS AND OWNERS	(Vacancy)
NATIONAL ASSOCIATION REAL ESTATE BOARDS	Nelson, H. U.
NATIONAL LIME ASSOCIATION	Boynton, R. S.
NATIONAL LUMBER MANUFACTURERS' ASSOCIATION	Kimbell, R. G.
OPERATIVE PLASTERERS' AND CEMENT MASONS' INTERNATIONAL ASSOCIATION	Turnbull, Thomas D.
PERLITE INSTITUTE	O'Heir, R. J.
PORTLAND CEMENT ASSOCIATION	Westby, S. H.
VERMICULITE INSTITUTE	Murphy, E. R.
WOOD, WIRE AND METAL LATHERS' INTERNATIONAL UNION	McSorley, W. J.
MEMBERS AT-LARGE	Krafft, J. M. Lynas, A. O. McBurney, J. W. McNulty, J. D.

[1]Participating in preparation of A42.1-1955 and A42.4-1955.

SGP 0003050

ASA
APPROVED AS
AMERICAN STANDARD
BY THE AMERICAN STANDARDS ASSOCIATION
ASA No.: A42.1-1955
UDC 693.6

AMERICAN STANDARD SPECIFICATIONS FOR GYPSUM PLASTERING

NOTE.—These specifications are intended to describe minimum requirements. The use of equivalents, or better, is permissible. *Where a specific degree of fire resistance is required, applicable building code regulations should be followed. Where lath and plaster ceilings are located under roof construction it is recommended that the space thus enclosed be ventilated. Such ventilation, with or without vapor barrier and insulation, should be designed in accordance with accepted engineering practice.*

1.00 GENERAL PROVISIONS

1.10 The work includes all labor, materials, services, equipment, and scaffolding required to complete the lathing and plastering of the project in accordance with the drawings and specifications.

1.20 Scaffolding shall be constructed and maintained in strict conformity with applicable laws and ordinances, and so as not to interfere with and obstruct the work of others.

1.30 The work shall be properly coordinated with the work of other trades.

2.00 MATERIALS

Materials shall conform to the following specifications:

PLASTERING MATERIALS		ASTM DESIGNATIONS[1]
2.10 Gypsum Plasters	Neat Ready-mixed Wood-fibered Calcined gypsum for finishing coat	C 28-55
2.20 Molding Plaster		C 59-50
2.30 Keene's Cement (Allowable alternate—Federal Specification SS-C-161)		C 61-50

2.35 **Bond Plaster** for base coat plastering on monolithic concrete shall be a mill-prepared plaster for use on monolithic concrete. Aggregate shall not be added.

2.40 **Lime** —

Special Finishing Hydrated Lime[2] . . . . C 206-49

The requirements for popping and pitting of hydrated lime as prescribed in ASTM Specifications C 206 shall be replaced by the autoclave method for "soundness" (popping and pitting) as described in Appendix I, Section A1.[3] In this test if the specimen shows the presence of pops or pits the sample shall be reported "unsound" and the shipment shall be rejected.

2.45 **Lime** —

Quicklime for Structural Purposes . . . . . C 5-26

The requirements for popping and pitting of quicklime as prescribed in ASTM Specifications C 5 shall be replaced by the autoclave method for "soundness" (popping and pitting) as described in Appendix I, Section A2.[3] In this test, if the specimen shows the presence of pops or pits the sample shall be reported "unsound" and the shipment shall be rejected.

Since this autoclave method for the determination of "soundness" is equally applicable to quicklime, provided a properly prepared lime putty is used, the quicklime shall be slaked in accordance with the directions given in Appendix I[3] under Section A2, and the same requirements for popping and pitting as defined above shall be added to and made applicable to ASTM Specifications C 5.

The requirements for plasticity prescribed in ASTM Specifications C 206 shall apply to quicklime putty in finishes, and all lime used shall be suitable for finish coat plastering. The total free (unhydrated) calcium oxide (CaO) and magnesium oxide (MgO) in the hydrated product shall not exceed 8 per cent by weight calculated on the as-received basis in accordance with the 1945 tentative revision of the Standard Methods of Chemical Analysis of Limestone, Quicklime, and Hydrated Lime (ASTM Designation: C 25).[1]

[1]These specifications and methods of the American Society for Testing Materials are published in the 1952 Book of ASTM Standards, Part 3.

[2]ASTM Specifications C 206 cover both dolomite and high-calcium finishing hydrated limes.

[3]See p. 8.

SGP 0003051

2.50 AGGREGATES

For use in gypsum plaster.....C 35-54 T[4]

2.52 Sand: The grading requirements of sand as prescribed in ASTM Specifications C 35[4] shall apply for base-coat plaster. When used in gypsum-sand float finish the sand shall pass a No. 12, 16, or 20 sieve, depending on the texture of the surface desired.

Fine sand having rounded particles uniform in size (frequently called "quicksand") shall not be used.[5]

2.54 Vermiculite used for base-coat plastering shall conform to the requirements of ASTM Specifications C35.[4]

2.545 Vermiculite Aggregate used in finish-coat plastering shall weigh not less than 8½ nor more than 12½ lb per cu ft and shall be graded within the following limits:

	Per Cent by Volume	
Retained on Sieve	*Max*	*Min*
No. 8	0	0
16	2	0
30	60	15
50	95	60
100	100	90

The density and gradation of Vermiculite finish-coat aggregate shall be determined in accordance with Section 7 of ASTM Specification C 35.[4]

2.56 Perlite used for base-coat plastering shall conform to the requirements of ASTM Specifications C35.[4]

2.60 WATER shall be clean, fresh, suitable for domestic consumption, and free from such amounts of mineral and organic substances as would affect the set of the plaster.[6]

2.70 MATERIALS, DELIVERY OF, AND PROTECTION

2.72 All manufactured materials shall be delivered in the original packages, containers, or bundles bearing the name of the manufacturer and the brand.

2.74 Plaster and all cementitious materials shall be kept dry until ready to be used; they shall be kept off the ground, under cover and away from sweating walls and other damp surfaces.

2.76 Metal goods shall be protected against rusting.

3.00 BASE COAT PROPORTIONS

3.10 **Gypsum Neat Plaster:**

NOTE.—The term "neat" as applied to gypsum plaster means that the material as shipped by the manufacturer does not contain aggregate. Aggregate, if required, must be added on the job. Neat plaster may be fibered or unfibered.

The proportions of sand, vermiculite, or perlite to 100 lb of gypsum neat plaster shall not exceed the following:

	Damp, Loose Sand, lb	Vermiculite or Perlite, cu ft
TWO COAT WORK		
(Double-up method)		
Over Gypsum Lath	250	2½
Over Masonry (except over monolithic concrete)	300	3
THREE COAT WORK		
First (scratch) coat over lath	200[a]	2[a]
First (scratch) coat over masonry	300	3
All second (brown) coats	300[a]	3[a]

a: In lieu of the proportions specified above the proportions may be 100 lb of gypsum neat plaster to not more than 250 lb of damp, loose sand or 2½ cu ft of vermiculite or perlite provided this proportioning is used for both scratch and brown coats. For other equivalent mixes see Sections 3.52-3.58.

3.20 **Gypsum Ready-Mixed Plaster:**

NOTE.—The term "ready-mixed" as applied to gypsum plaster, means that the aggregate has been incorporated in the mixture as shipped by the manufacturer. Ready-mixed plaster requires the addition of water only, in the field, for use.

3.21 Gypsum ready-mixed plaster shall be ready-mixed in the proportions of 100 lb of gypsum neat plaster to not more than 250 lb of sand, or when vermiculite or perlite is used as an aggregate, the proportions shall be 100 lb of gypsum neat plaster to not more than 2½ cu ft of vermiculite or perlite.

3.22 When prepared for use over masonry bases (except monolithic concrete), gypsum ready-mixed plaster may contain not more than 300 lb of sand, or 3 cu ft of vermiculite or perlite to 100 lb of gypsum neat plaster.

3.25 Where gypsum ready-mixed plasters are used, the materials shall be prepared for use, except as otherwise provided herein, by the addition of water only.

3.27 Gypsum ready-mixed plaster may be used over all plaster bases (except over monolithic concrete) and for two-coat or three-coat work where gypsum ready-mixed plaster is specified.

3.30 **Gypsum Wood-Fiber Plaster.**—For two- and three-coat work on all types of lath, gypsum wood fiber plaster shall be used without the addition of aggregate.

3.31 For two-coat and three-coat work on masonry surfaces (except monolithic concrete) the proportioning shall not exceed 100 lb of damp, loose sand to 100 lb of gypsum wood-fiber plaster.

3.50 **Equivalent Mixes.**—The preceding proportions are considered equivalent to the following,

[4]See p. 8.

[5]Such material settles to the bottom of mixing box, giving the mixture a watery appearance and causing it to work short and produce a weak plaster.

[6]Water containing salt or alum, or water in which tools have been washed, accelerates the "set." Water from stagnant pools and wells frequently contains organic or vegetable matter which may retard the "set."

SGP 0003052

given in some of the units of measure commonly used in the field:

3.52 1:2 (scratch coat) may be:

1 (100-lb) bag of gypsum plaster to not more than 14 No. 2 shovels of damp loose sand

or

2 (100-lb) bags of gypsum plaster to not more than 1 (4-cu ft) bag of vermiculite or perlite.

3.55 1:3 (brown coat and two-coat work on masonry) may be:

1 (100-lb) bag of gypsum plaster to not more than 20 No. 2 shovels of damp loose sand

or

4 (100-lb) bags of gypsum plaster to not more than 3 (4-cu ft) bags of vermiculite or perlite.

3.58 1:2½ (two-coat or three-coat work) may be:

1 (100-lb) bag of gypsum plaster to not more than 17 No. 2 shovels of damp loose sand

or

8 (100-lb) bags of gypsum plaster to not more than 5 (4-cu ft) bags of vermiculite or perlite.

4.00 HAND MIXING

4.05 Material that has partially set shall not be retempered or used. Frozen, caked, or lumpy material shall not be used. The mixing boxes shall be watertight and thoroughly cleaned of all set or hardened material. If mixing is done in the building waterproof protection shall be provided under the mixing boxes and water barrels. Tools shall be cleaned after mixing each batch.

4.10 **Gypsum Neat Plaster.**—Aggregate shall be added at the job. Plaster and aggregate shall be mixed dry to a uniform color at one end of the box, hoed into water at the other end, and thoroughly mixed to the proper consistency.

4.20 **Gypsum Ready-Mixed Plaster.**—Aggregate shall not be added. Plaster shall be placed at one end of the box, hoed into water at the other end, and thoroughly mixed to the proper consistency.

4.30 **Gypsum Wood-Fiber Plaster.** — When used without aggregate, the plaster shall be placed at one end of the box, hoed into water at the other end, and thoroughly mixed to the proper consistency. When sand is added, the plaster and sand shall be mixed dry to a uniform color at one end of the box, hoed into water at the other end, and thoroughly mixed to the proper consistency.

5.00 MECHANICAL MIXING

5.05 Material that has partially set shall not be retempered or used. Frozen, caked, or lumpy material shall not be used. The mixer shall be cleaned of all set or hardened material before materials for a new batch are loaded. Each batch shall be mixed separately.

5.10 **Gypsum Neat Plaster.**—Aggregate shall be added at the job. The following cycle of operations shall be followed while the mixer is in continuous operation:

Put in the approximate amount of water,
If sand is used add approximately half the amount of aggregate. If vermiculite or perlite is used add all the aggregate.
Add all the plaster,
Add the remainder of the sand aggregate,
Mix to the proper consistency, adding water if necessary. and
Dump the entire batch and use.

5.20 **Gypsum Ready-Mixed Plaster.**—Aggregate shall not be added. The following cycle of operations shall be followed while the mixer is in continuous operation:

Put in the approximate amount of water,
Add the plaster,
Mix to the proper consistency, adding water, or plaster, if necessary, and
Dump the entire batch and use.

When the mixer is used intermittently, a small amount of water shall be added after dumping each batch and the mixer run for a few minutes. After dumping the water, the mixer will be clean and ready for a new batch.

5.30 **Gypsum Wood-Fiber Plaster.** — When used without aggregate, the plaster shall be mixed as prescribed in Section 5.20 for gypsum ready-mixed plaster. When sand is added, the plaster and sand shall be mixed as prescribed in Section 5.10 for gypsum neat plaster.

6.00 LIME PUTTY

6.10 **Hydrated Lime** shall be prepared in accordance with the printed directions of the manufacturer. The putty may be used immediately after preparation or following a soaking period as recommended by the manufacturer.

6.20 **Pulverized Quicklime** shall be slaked by sifting it into the amount of water called for in the printed directions of the manufacturer and then allowing it to become cold before using.

6.30 **Lump Quicklime** shall be thoroughly slaked, run through a No. 8 (2380-micron) sieve made of No. 16-gage steel wire, and allowed to stand at least two weeks before using.

7.00 FINISH COAT PROPORTIONS

7.10 **Gypsum-Lime Putty Trowel Finish** shall be mixed in the proportions of 1 part of gauging plaster (calcined gypsum) to not more than 3 parts of lime putty by volume. The specified mix is equivalent to:

1 (100-lb) bag of gypsum gauging plaster
to not more than 4 (50-lb) bags of hydrated lime

or

to not more than 4.5 cu ft of lime putty

or

to not more than 35 gal of lime putty.

7.20 **Prepared Gypsum Trowel Finish** shall be mixed with water to the proper consistency in accordance with the directions of the manufacturer.

SGP 0003053

7.30 **Keene's Cement-Lime Putty Finish** may be medium hard or hard finish.

7.32 **Medium Hard Finish** shall be mixed in the proportions of 100 lb of Keene's cement to not more than 50 lb of dry hydrated lime. When mixed mechanically the water shall be put in the mixer first; then the lime, the sand, if used, and finally the Keene's cement. The specified mix is equivalent to:

1 (100-lb) bag of Keene's cement
to not more than 1 (50-lb) bag of hydrated lime
or
to not more than 100 lb of lime putty
or
to not more than 1⅛ cu ft of lime putty
or
to not more than 8¾ gal of lime putty

7.35 **Hard Finish** shall be mixed in the proportions of 100 lb of Keene's cement to not more than 25 lb. of dry hydrated lime. When mixed mechanically the water shall be put in the mixer first; then the lime, the sand, if used and finally the Keene's cement. The specified mix is equivalent to:

1 (100-lb) bag of Keene's cement
to not more than ½ (50-lb) bag of hydrated lime
or
to not more than 50 lb of lime putty.
or
to not more than ⅝ cu ft of lime putty
or
to not more than 4½ gal of lime putty.

NOTE.—For any of the above proportions 10 lb. of fine white sand may be added to the mix for each 100 lb of Keene's Cement in the mix.

7.40 **Prepared Gypsum Sand Float Finish** shall be mixed with water to the proper consistency in accordance with the directions of the manufacturer.

7.50 **Gypsum Sand Float Finish** shall be mixed in the proportions of 1 part of gypsum neat unfibered plaster to not more than 2 parts of sand, by weight.

7.60 **Keene's Cement-Lime Putty Sand Float Finish** shall be mixed in the proportions of 2 parts of lime putty, 1½ parts of Keene's cement, and 4½ parts of sand, by volume.

7.70 **Colored Finishes for Float and Texture Work** shall be mixed with water to the proper consistency in accordance with the directions of the manufacturer.

7.80 **Vermiculite Finish Coat** *(for use over vermiculite base coat only)* shall be mixed in the proportions of 100 lb of gypsum gauging plaster or 100 lb of unfibered gypsum plaster to one (1) cu ft of vermiculite finish aggregate. Gypsum plaster shall be placed in water and mixed. Vermiculite finish aggregate shall then be added and the materials thoroughly mixed (3 to 5 min). More water should be added, as necessary to obtain workable consistency. (For best results the mixed plaster should have a setting time of 1 to 3 hr.)

8.00 THICKNESS OF PLASTER

8.10 **Plaster** shall be of the following thicknesses measured from the face of plaster base to finished plaster surfaces. Wood or metal grounds or plaster screeds shall be installed to assure such thicknesses:

		Thickness of Plaster *Including Finish Coat, in.*
Lath	Metal Lath[a], Wire Lath, and Wire Fabric	⅝ min
	All other types	½ min
Masonry and Concrete Walls		⅝ min
Monolithic Concrete Ceilings[b]		⅛ min ⅜ max

a: Plaster thickness when measured from the back plane of metal lath, exclusive of ribs, shall be ¾ in. minimum.

b: If monolithic concrete ceiling surfaces require more than ⅜ in. of plaster to produce required lines or surfaces, metal lath or wire lath bonding for the plaster shall be attached to the concrete before application of plaster. Where the concrete ceiling surfaces are such as to require the application of an excessive thickness of plaster to produce required lines or surfaces, lath shall be applied over metal furring secured to the concrete.

8.20 **Wood Grounds** shall be furnished and installed by others.

8.30 **Metal Grounds** shall be furnished and installed by the (plastering) (lathing) contractor.

8.40 **Plaster Screeds** shall be installed by the plastering contractor.

9:00 PREPARATIONS FOR PLASTERING

9.10 **Temperature and Ventilation:** When the prevailing outdoor temperature at the building site is less than 55 F a uniform temperature of not less than 55 F shall be continuously maintained in the building for a period[7] of not less than one week prior to the application of plaster, while the plastering is being done, and after the plaster is dry. The heat shall be well distributed in all areas, and deflection or protective screens shall be used to prevent concentrated or uneven heat on plaster areas near the heat source. Where required, heat shall be furnished by . . . . . [8]

9.12 Ventilation shall be provided to properly dry[9] the plaster during and subsequent to its application. In glazed buildings this shall be accomplished by keeping windows open approximately 2 in. top and bottom (or side-pivoted windows approximately 4 in.) to provide air circulation;[10] and

[7]To minimize the possibility of plaster cracking due to structural movements caused by thermal changes, the building should be permitted to become adjusted to the uniform temporary heating conditions for at least one week prior to the start of plastering.

[8]The name of the party who shall furnish heat shall be inserted here.

[9]A portion of the water used in mixing gypsum plaster is necessary for the chemical reaction which sets and hardens the plaster. The excess amount required for mixing and application must be dried out after set has taken place.

[10]In addition to drying the plaster, free circulation of air is necessary to avoid "sweat-outs," particularly in enclosed areas lacking natural ventilation.

SGP 0003054

by use of temporary circulators or the air-conditioning system (in enclosed areas or buildings lacking openings for natural ventilation.)

9.15 If glazed sash are not in place and the building is subjected to hot, dry winds[11] or temperature differentials from day to night of 20 F or more, openings shall be screened with cheesecloth or similar materials.[12]

9.20 **Masonry Surfaces** (Note 1) on which suction must be reduced shall be properly wet down immediately before the plaster is applied (Note 2).

NOTE 1.—Because bituminous compounds do not provide ideal bases for plaster, the application of plaster to masonry or concrete which has been coated with such compounds should be discouraged.

NOTE 2.—This is particularly important if wood-fiber plaster is used.

9.30 **Wood Lath** shall be thoroughly wet down from 12 to 24 hr, and in very dry weather again from 1 to 3 hr before the plaster is applied.

9.35 **Gypsum and Fiber Insulation Lath** shall not be wet down.

9.40 **Monolithic Concrete Surfaces** shall be cleaned of all dust, loose particles, and other foreign matter. Laitance and efflorescence shall be removed by washing first with a 10 per cent solution of commercial hydrochloric acid (muriatic acid) and water and then with clean water to remove all traces of acid. Grease and oil shall be completely removed (Note 1, Section 9.20).

9.42 Concrete surfaces shall have sufficient roughness to provide proper bond (Note 3). If necessary, the surface shall be evenly wetted, but not saturated, to provide proper suction. If surfaces are not rough, they shall be hacked or bush-hammered or a dash-coat of portland-cement grout, composed of 1 part of cement to 1½ parts of fine sand mixed to a mushy consistency, shall be applied. The portland-cement grout shall be forcibly dashed on the concrete surface, using a stiff fiber brush, with a whipping motion. This coat shall be kept damp for at least two days immediately following its application and then allowed to dry. Before application of plaster, the surface shall be evenly dampened if necessary to provide proper suction.

NOTE 3.—The use of dressed (smooth) lumber, metal, and plywood forms, oiling or greasing of such forms, and the vibrating of concrete, produce concrete surfaces which are so smooth that mechanical bond necessary for plaster is absent.

[11]Free circulation of hot, dry winds over the face of freshly applied plaster should be prevented. It causes "dry-outs" by removing the water from the plaster before the setting action is completed.

[12]This minimizes the possibility of plaster cracking due to thermal stress or "shock" of the nature that occurs when new plaster is subjected to high temperatures during daytime and reduced temperatures at night at that time when plaster has set but is not dry.

9.50 **Surfaces** shall be carefully examined before the plaster is applied thereto, and the proper authorities notified of any and all unsatisfactory conditions. Application of the plaster then shall not proceed until such unsatisfactory conditions have been satisfactorily remedied or adjusted.

9.60 **Metal Grounds** and other accessories, such as corner beads, screeds, picture molds, etc., shall be carefully examined to see that they are straight, curved, plumb, level, square, or true to the required angles, as the case may require, before the plaster is applied.

10.00 APPLICATION OF BASE COATS

10.10 **Two-Coat Work.**—Base (first) coat shall be applied with sufficient material and pressure to form good bond on gypsum lath or masonry as the case may be, and to cover well. Then, before this scratch coat has set, and without raking its surface, material of the same proportions shall be doubled back to bring the plaster out to grounds struck to a true surface with rod and darby, and left rough, ready to receive the finish (second) coat. Slow-setting plaster shall be accelerated to provide a set (mixed material) of less than 4 hr.

10.20 **Three-Coat Work.**—Scratch (first) coat shall be applied with sufficient material and pressure to form good full keys on wood and metal lath, wire lath, and wire fabric, and good bond on gypsum or fiber insulation lath or masonry, as the case may be, and to cover well, and then be scratched to a rough surface. Slow-setting plaster shall be accelerated to provide a set (mixed material) of less than 4 hr.

10.22 Brown (second) coat shall be applied, after the scratch (first) coat has set firm and hard, brought out to grounds, straightened to a true surface with rod and darby, and left rough, ready to receive the finish (third) coat (Note 4).

NOTE 4.—To insure full plaster thickness, plaster screeds should be applied to the scratch coat prior to the application of the brown coat.

10.30 **Plastering on Monolithic Concrete.**—Surfaces of walls and columns shall have a scratch coat of bond plaster, followed by a brown coat of gypsum plaster (in the proportions of 1 part of gypsum neat plaster to not more than 3 parts of sand by weight, or 100 lb of gypsum neat plaster to not more than 3 cu ft of vermiculite or perlite) troweled into the scratch coat before it has set. The brown coat shall be brought out to grounds, using a double-back application if required, straightened to a true surface with rod and darby, and left rough, ready to receive the finish coat.

10.32 Surfaces of ceilings shall have a coat of bond plaster, scratched in thoroughly, doubled back, and filled out to a true, even surface and left rough, ready to receive the finish coat.

10.40 **Solid Plaster Partitions With Steel Studs** shall not be less than 2 in. in thickness and

SGP 0003055

shall have scratch, back-up, brown, and finish coats.

10.42 Scratch coat shall be applied on the lath side with sufficient material and pressure to form good keys and to cover well, and then be scratched to a rough surface. Temporary bracing of studs shall be furnished on the channel side of the partition and maintained until the scratch coat on the lath side has set.

10.44 Back-up coat shall be applied on the channel side, after the scratch coat on the lath side has set firm and hard, in not less than two operations, the first to adequately cover the keys of the scratch coat and the other coat or coats to bring the plaster out to the grounds. It shall then be straightened to true surface with rod and darby and left rough, ready to receive the finish coat.

10.46 Brown coat on the lath side shall be applied over the scratch coat, after the back-up coat on the channel side has set, and shall be rodded, darbied, and left rough, as specified for the back-up coat.

10.48 Plaster shall extend to the floor. All spaces between grounds shall be filled. *Hollow metal bucks shall be filled solid.* Wherever possible, plastering shall be commenced at the bottom of the partitions.

10.50 **Studless Solid Partitions (Metal Lath and Plaster)** shall be not less than 2 in. in thickness, and plaster shall be applied in the same number of coats as for solid partitions with studs. Section 10.40.

10.52 Where rib metal lath is used, the scratch coat shall be applied on the flat side and the temporary bracing on the rib side, and where diamond mesh (flat expanded) metal lath is used, the temporary bracing may be attached to either side, and the scratch coat shall be applied on the opposite side.

10.54 Sequence of application of brown coat and back-up coats shall be in accordance with one of the following alternate methods:

10.56 Brown coat shall be applied over face of the scratch coat, then back-up coat shall be applied on reverse side of the partition, or

10.58 Back-up coat shall be applied on the rib side of the metal lath, or on the back side of the scratch coat, and shall be followed by the brown coat applied over the face of the scratch coat.

10.60 **Studless Solid Partitions (Gypsum Lath and Plaster, Single-Thickness ⅜-in. or ½-in. Lath)** shall be not less than 2 in. in thickness and shall have scratch, brown, and finish coats on both sides.

10.62 Scratch coat approximately ⅜ in. in thickness shall be applied first to the side opposite the temporary bracing with sufficient pressure to form a good bond, followed by a ⅜-in.-thick scratch coat applied to the side on which the bracing occurs. Scratch coats shall be scratched to form a rough surface.

10.64 Brown coat shall be applied to the side opposite the bracing, after the scratch coat has set firm and hard and is partially dry. When this brown coat has set firm and hard and is partially dry, temporary bracing shall be removed and brown coat applied to bracing side. Brown coat shall be straightened to a true surface with rod and darby and left rough, ready to receive the finish coat, allowing 1/16 to ⅛ in. on each side for finish coat to bring over-all partition thickness to not less than 2 in.

10.70 **Studless Solid Partitions (Gypsum Lath and Plaster, Multiple-Thickness Lath)** shall be not less than 2 in. in thickness, and the combined thickness of the scratch, brown, and finish coats on each side shall be not less than ½ in. The thickness of the separate coats and the sequence of plastering on each side, depending on whether bracing is used, shall be in accordance with the proprietary specifications for the system employed.

10.72 The scratch coat shall be applied with sufficient pressure to form a good bond and shall be scratched to form a rough surface.

10.74 The brown coat shall be applied after the scratch coat has set firm and hard and is partially dry. Brown coat shall be straightened to a true surface with rod and darby and left rough, ready to receive the finish coat, allowing 1/16 to ⅛ in. on each side for finish coat to bring over-all partition thickness to not less than 2 in.

11.00 APPLICATION OF FINISHES

11.05 The finish coat shall be applied to a partially dry base coat or to a thoroughly dry base coat which has been evenly wetted by brushing or spraying. The use of excessive water shall be avoided in the application of all types of finish coat plastering.

11.10 **Trowel Finishes:**

11.15 **Gypsum-Lime Putty Trowel Finish** shall be applied over the base coat scratched in thoroughly, laid on well, doubled back and filled out to a true, even surface. The general thickness shall be 1/16 to ⅛ in. The finish shall be allowed to draw a few minutes and then it shall be well-troweled with water to a smooth finish, free from cat faces and other blemishes or irregularities.

11.20 **Vermiculite Trowel Finish** shall be applied over the base coat, scratched in thoroughly, laid on well, doubled back and filled out to a true, even surface. The general thickness shall be 1/16 to ⅛ in. The finish shall be allowed to draw a few minutes and then it shall be well-troweled with water to a smooth finish, free from cat faces and other blemishes or irregularities.

11.30 **Prepared Gypsum Trowel Finish** shall be applied in accordance with the directions of the manufacturer. The general thickness shall be 1/16 to

SGP 0003056

⅛ in. It shall be well-troweled with water to a smooth finish, free from cat faces and other blemishes or irregularities.

11.40 **Keene's Cement-Lime Putty Finish** shall be applied over the base coat, scratched in thoroughly, laid on well, and doubled back and filled out to a true, even surface. The general thickness shall be from 1/16 to ⅛ in. unless the finish coat is to be marked off or jointed, in which case the thickness may be increased as required by the depth of the marking or joint. The finish coat shall be allowed to draw a few minutes and then it shall be well-troweled with water to a smooth finish, free from cat faces and other blemishes or irregularities. Troweling shall be continued until the finish sets.

11.50 **Float Finishes.**—The following float finishes shall be applied over the base coat, scratched in thoroughly, laid on with a trowel to an even surface, and then floated (with wood, carpet, cork, rubber or other type floats, depending on the texture desired) to a true, even surface free from slick spots or other blemishes:

Prepared Gypsum—Sand-Float Finish,
Gypsum—Sand-Float Finish,
Keene's Cement-Lime Putty—Sand-Float Finish.

11.60 **Colored Finishes or Float Texture Work** shall be applied in accordance with the directions of the manufacturer.

11.70 **Acoustical and Other Special Plasters** shall be applied in accordance with the directions of the manufacturer.

SGP 0003057

APPENDIX I

METHOD FOR DETERMINING "SOUNDNESS" (POPPING OR PITTING) OF A LIME PUTTY MADE FROM EITHER A HYDRATED LIME OR QUICKLIME

HYDRATED LIME

A1. (a) To a 100-g sample of hydrated lime, sufficient water shall be added to make a fairly stiff putty. This putty shall be aged in a covered vessel at room temperature for not less than 16 nor more than 24 hr.

(b) Two volumes of the aged putty prepared from the hydrated lime in accordance with Paragraph *(a)* shall be thoroughly mixed with 1 volume of unretarded calcined gypsum and sufficient water to form a paste. The calcined gypsum shall be previously tested to assure soundness (absence of popping or pitting) by steaming a duplicate specimen of the set neat gypsum for 2 hr in an autoclave at a pressure of 120 psi as described in Paragraph *(c)*. A layer of this aged paste of from $\frac{1}{16}$ to $\frac{1}{8}$ in. in uniform thickness shall be spread on a 4 by 4-in. glass plate and the specimen set aside for 2 hr, thus allowing the calcined gypsum to set.

(c) The specimen shall be placed on a rack in an autoclave to which water has been added equal to 1 or 2 per cent of the volume of the autoclave. The rack shall be provided with a cover that will prevent water from dripping on the specimen. The steam pressure shall be raised to 120 psi and maintained for 2 hr, after which it shall be released through a valve at such a rate that atmospheric pressure is reached in about 5 min. The autoclave shall then be opened and the specimen examined for pops or pits.

QUICKLIME

A2. (a) Because of the variable slaking characteristics of different quicklimes, it is necessary to determine by preliminary experiment the amount of water required to hydrate the quicklime at or near the boiling point of water and produce a fairly stiff putty. It is essential that sufficient water be used to prevent "burning" of the lime and the possible production of a dry hydrate, as these unfavorable slaking conditions may, in themselves, cause an otherwise potentially sound quicklime to test unsound.

(b) A 200-g sample of quicklime shall be slaked with the entire amount of water and in the manner previously determined to produce the desired stiffness of putty. The sample shall be stirred to insure even distribution of the water, thus avoiding local heating. The putty shall be aged in a covered vessel at room temperature for not less than 16 nor more than 24 hr.

(c) Two volumes of this aged putty prepared from the quicklime in accordance with Paragraph *(b)* shall be thoroughly mixed with 1 volume of unretarded calcined gypsum and sufficient water to form a paste, and tested in accordance with Section A1 *(b)* and *(c)*. The specimen shall then be examined for pops or pits.

APPENDIX II

Tentative Specifications for

INORGANIC AGGREGATES FOR USE IN INTERIOR PLASTER[1]

ASTM Designation: C 35-54T

ISSUED, 1952; REVISED, 1953, 1954.[2]

These Tentative Specifications have been approved by the sponsoring committee and accepted by the Society in accordance with established procedures, for use pending adoption as standard. Suggestions for revisions should be addressed to the Society at 1916 Race St., Philadelphia 3, Pa.

Scope

1. These specifications cover those aggregates most commonly used in interior plaster, which include perlite, sand (natural and manufactured), and vermiculite. Other aggregates may be employed, provided tests have demonstrated them to yield plaster of satisfactory quality.

[1] Under the standardization procedure of the Society, these specifications are under the joint jurisdiction of the ASTM Committee C-7 on Lime and Committee C-11 on Gypsum.

[2] Revision accepted by the Administrative Committee on Standards, December 22, 1954.

Prior to their present adoption as standard, these specifications were published as tentative from 1921 to 1925, being revised in 1924 and 1925. They were adopted in 1925, revised in 1930, but withdrawn and republished as tentative from 1936 to 1939. They were adopted as standard in 1939, and published as standard from 1939 to 1952. They were revised and reverted to tentative in 1952.

These specifications are, in effect, a revision and consolidation of and replace the former Standard Specifications for Sand for Use in Gypsum Plaster (C 35 - 39) and the Tentative Specifications for Sand for Use in Lime Plaster (C 66 - 31 T), which specifications were accordingly discontinued in 1936.

SGP 0003058

Definitions

2. *(a) Perlite Aggregate* is a siliceous, volcanic glass properly expanded by heat.

(b) Sand Aggregate:

Natural Sand is the fine granular material resulting from the natural disintegration of rock or from the crushing of friable sandstone.

Manufactured Sand is the fine material resulting from the crushing and classification by screening, or otherwise, of rock gravel or blast-furnace slag.

(c) Vermiculite Aggregate is a micaceous mineral properly expanded by heat.

Grading

3. *(a) Sieve Analysis.*—The aggregate, except as provided in Paragraph *(b)*, shall be graded within the following limits:

Sieve Size	Percentage Retained, on Each Sieve					
	Perlite, by volume		Vermiculite, by volume		Sand, by weight	
	Max	Min	Max	Min	Max	Min
No. 4 (4760-micron)	0	...	0	...	0	...
No. 8 (2380-micron)	5	0	10	0	5	0
No. 16 (1190-micron)	45	10	75	40	30	5
No. 30 (590-micron)	85	45	95	65	65	30
No. 50 (297-micron)	95	75	98	75	95	65
No. 100 (149-micron)	100	88	100	90	100	90

(b) For natural or manufactured sand, not more than 50 per cent shall be retained between any two consecutive sieves shown in Paragraph *(a)*, nor more than 25 per cent between the No. 50 and No. 100 sieves.

(c) For natural or manufactured sand the amount of material finer than a No. 200 sieve and shall not exceed 5 per cent.

Weight of Lightweight Aggregates

4. *(a)* The weight of perlite aggregate shall be not less than 7½ nor more than 15 lb per cu ft.

(b) The weight of vermiculite aggregate shall be not less than 7½ nor more than 10 lb per cu ft.

Impurities

5. *(a)* Water-soluble impurities in sand shall not exceed 0.15 per cent by weight.

(b) Sand, when subjected to the colorimetric test for organic impurities, shall develop a color no darker than the standard, unless it is established by adequate tests that the impurities causing the color are not harmful in plaster.

Sampling

6. *(a)* Samples of natural or manufactured sand shall be obtained in accordance with the Standard Methods of Sampling Stone, Slag, Gravel, Sand, and Stone Block for Use as Highway Materials (ASTM Designation: D 75).[3]

[3] 1952 Book of ASTM Standards, Part 3.

(b) For bagged aggregates, at least one bag shall be taken at random for sampling from each 100 bags, but not less than 6 bags from each shipment of 100 bags or more, and for smaller shipments not less than 6 per cent of the bags shall be sampled. Representative portions from each bag selected shall be secured by means of a suitable sampling thief tube. The sampling tube shall be inserted the full distance between diagonally opposite corners of the bag with the bag lying in a horizontal position. The portions so obtained shall be combined to produce a composite sample having a volume of at least 1 cu ft. At least one composite sample shall be prepared and tested separately for each 2000 bags of aggregate used.

(c) Samples secured in accordance with Paragraph *(a)* or *(b)* shall be reduced by quartering or riffling to obtain samples of proper size for individual tests.

Methods of Testing

7. *(a) Size Analysis.*—Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates (ASTM Designation: C 136).[3] For lightweight aggregates only the following modifications shall apply: The sample shall consist of approximately 500-ml bulk volume. Where a mechanical sieving device is used, the sieving time shall be 5 min. The volume of each sieve fraction shall be measured in a 250-ml graduated cylinder. The aggregate shall be poured loosely into the graduate without tamping or shaking, the surface leveled with a spatula and the volume read within ±2 ml. The volumes of the individual sieve fractions shall be expressed as percentages of the sum of the volumes of all fractions. The percentage retained on each designated sieve shall be calculated by summing the individual percentages of all fractions larger than that sieve.

(b) Weight of Lightweight Aggregate.—Standard Method of Test for Unit Weight of Aggregate (ASTM Designation: C 29),[3] using the shoveling procedure.

(c) Organic Impurities.—Standard Method of Test for Organic Impurities in Sands for Concrete (ASTM Designation: C 40).[3]

(d) Water-Soluble Impurities. — Weigh accurately a 10-g sample of sand. Transfer to a 250-ml beaker. Add 100 ml of distilled water. Heat to boiling and allow to simmer on a hot plate for 5 min. Filter through a fine paper into a tared evaporating dish. Wash with hot distilled water until the volume of filtrate is about 125 ml. Evaporate to dryness. The temperature of the dish shall not exceed 250 F during final drying. Cool in a desiccator, weigh, and calculate the weight of residue to percentage of water-soluble impurities

SGP 0003059

ASA
APPROVED AS
AMERICAN STANDARD
BY THE AMERICAN STANDARDS ASSOCIATION
ASA No.: A42.4-1955
UDC 693.6

AMERICAN STANDARD SPECIFICATIONS FOR INTERIOR LATHING AND FURRING

NOTE.—These specifications are intended to describe minimum requirements. The use of equivalents, or better, is permissible. *Where a specific degree of fire resistance is required, applicable building code regulations should be followed. Where lath and plaster ceilings are located under roof construction it is recommended that the space thus enclosed be ventilated. Such ventilation, with or without vapor barrier and insulation, should be designed in accordance with accepted engineering practice.*

1.00 DESCRIPTION OF TERMS

1.10 The term "contact," as applied to ceiling construction, means that the lath is attached in direct contact with the construction above, without the use of runner channels or furring.

1.20 The term "furred," as applied to ceiling construction, means that the furring members are attached directly to the structural members of the building.

1.30 The term "suspended," as applied to ceiling construction, means that the furring members are suspended below the structural members of the building.

1.40 The term "main runners," as applied to metal construction, means the runners which are attached to or suspended from construction above for the support of cross furring.

1.50 The term "cross furring," as applied to metal construction, means the furring members which are attached at right angles to the underside of main runners or other structural supports.

2.00 MATERIALS

2.02 Gages of metal materials hereinafter referred to shall comply with the following:

WIRE GAGE (U. S. STEEL WIRE GAGE*)	DIAMETER, IN.
No. 20	0.0348
No. 19	0.0410
No. 18	0.0475
No. 16	0.0625
No. 14	0.0800
No. 12	0.1055
No. 10	0.1350
No. 9	0.1483
No. 8	0.1620

SHEET METAL GAGE (U. S. STANDARD)	THICKNESS, IN.
No. 16	0.0598
No. 24	0.0239
No. 26	0.0179

*These are identical to published Washburn and Moen gages.

2.100 **Gypsum Lath** shall conform to the Standard Specifications for Gypsum Lath (ASTM Designation: C 37 - 54).[1]

2.120 Gypsum lath shall be one of the following types:

2.122 Plain gypsum lath.

2.124 Perforated gypsum lath having one hole at least ¾ in. in diameter through the lath for each 16 sq in.

2.126 Insulating gypsum lath: plain gypsum lath with the addition of a sheet of aluminum foil attached to the back side of the lath to act as a vapor barrier and also as reflective thermal insulation.

2.15 Gypsum lath shall conform to the following dimensional requirements:

Thickness ..... ⅜ or ½ in.
Width ..... 16 in.[a] or 24 in.
Length ..... 48 in.[b]

[a] 16⅓-in. wide lath is available in certain west coast markets.

[b] Longer lath is available for special systems such as solid gypsum lath and plaster partitions and furred walls.

2.20 **Wood Lath** shall be No. 1 grade, reasonably clear, evenly manufactured, and free of detrimental defects.

2.22 A few worm holes, small pitch pockets, well-set or firm knots, not more than ¾ in. in diameter and not bunched, and wane not more than one third the thickness and one third the width for one third the length on one side of the lath, or its equivalent otherwise located, when not in combination with any other defect, shall be permitted.

2.25 Wood lath shall conform to the following dimensional requirements:

	MINIMUM, IN.	MAXIMUM, IN.
Thickness	5/16	3/8
Width	1 5/16	1 5/8
Length	47½	48
	31½	32

[1] 1954 Supplement to Book of ASTM Standards, Part 3.

SGP 0003060

2.30 Fiber Insulation Lath shall conform to Class B of the Federal Specification for Insulating Fiberboard (LLL-F-321 b).

2.320 Fiber insulation lath may be either single or multiple ply board. The individual plies shall be joined in such manner as to prevent separation under normal use.

2.326 Fiber insulation lath may be obtained with a layer of asphalt on the back side of the lath to act as a vapor barrier.

2.35 Fiber insulation lath shall conform to the following dimensional requirements:

	Dimensions, In.	Permissible Variations, In.
Thickness	½, ¾ and multiples of ½	±1/16
Width	16, 18, or 24	−¼
Length	48	−¼

2.40 Metal Lath, Expanded, Ribbed, and Sheet shall be of copper-bearing steel, coated with rust-inhibitive paint after cutting, or cut from zinc-coated steel sheets.

2.50 Wire Lath shall be not lighter than No. 19 gage wire, 2½ meshes per in. coated with zinc or rust-inhibitive paint.

2.55 V-Stiffened Wire Lath shall be not lighter than No. 20 gage wire, 2½ meshes per in., with No. 24 U.S. gage V-rib stiffeners spaced not to exceed 8 in. apart, coated with zinc or rust-inhibitive paint.

2.60 Paper-Backed Wire Fabric shall be not lighter than No. 16 gage, zinc-coated wire, with not to exceed 2 by 2-in. mesh, with stiffening ribs spaced not to exceed 5 in. center to center, and absorptive paper backing securely attached to metal by not less than No. 17 gage stitch wires 2 in. on centers in such a manner as to provide full embedment of at least ⅛ in. of plaster for at least one half of the total length of the strands and one half of the total weight of the metal. The design shall be such as to provide a mechanical bond and continuous metallic reinforcement, in both directions, for plaster.

2.70 Metal Accessories such as corner beads, base screeds, concealed picture molds etc., shall be not lighter than No. 26 U.S. gage steel, zinc-coated, with perforated or expanded flanges or clips shaped so as to permit complete embedment in the plaster.

2.80 Channels shall be hot-rolled or cold-rolled steel, free of rust, of the following minimum weights per thousand lineal feet:

Size, In.	Hot-Rolled, Lb	Cold-Rolled, Lb
¾	300	300
1	410	...
1½	1120	475
2	1260	...

NOTE.—Coating with rust-inhibitive paint is recommended.

2.90 Tie Wire shall be of galvanized, soft annealed steel, or of a material and size having superior corrosion-resistance and equivalent strength to the galvanized steel wire specified.

3.00 LATHING

3.10 All lath shall be applied with the long dimension at right angles to the supports, except that lath furnished in rolls may be applied with the long dimension parallel to the supports.

3.30 Corner bead shall be used over all types of lath to protect all external vertical corners and to establish grounds, and shall be attached securely in such manner as to assure proper alignment during application of plaster.

NOTE.—Wood sub-purlins or furring strips to be furnished and installed by others, and to which lath is to be attached for ceiling construction shall be secured to supporting purlins, joists or trusses by adequate nailing, lag screws, or by wire loops.

4.00 APPLICATION OF GYPSUM LATH

4.10 Except where otherwise required for certain fire-rated constructions, gypsum lath shall be securely nailed to wood supports spaced not to exceed 16 in. on center (24 in. on center for ½-in. lath) with 13 gage, 1⅛ in. long (1¼ in. long for ½-in. lath), 19/64 in. flat-head, blued nails approximately 5 in. on center. The nails shall be driven with the underside of the head flush with face of the lath and shall not be closer than ⅜ in. from edges or ends. There shall be not less than four nails per lath per support with 16-in. wide lath. Where 24-in. wide lath is applied, there shall be at least 5 nails per lath per support. Where ½-in. thick gypsum lath is applied to framing 24 in. on center, 5 nails, as described above shall be used per lath per support, placing them approximately 4 in. on center.

4.20 Where ⅜-in. gypsum lath is used for certain fire-resistive rated constructions, five 13-gage, 1⅛-in. long, ⅜-in. flat-head, blued nails per lath per support for 16-in. wide lath shall be used.

4.30 Gypsum lath shall be applied with its face side out and with the long dimension at right angles to the framing members. End joints shall be made to fall on different supports in alternate courses, or the lath shall be applied so that end joints are made continuously on one support. In the latter case, the continuous joints shall be covered with 3-in. wide strips of metal lath and the long or edge joints shall be offset or staggered. In all cases, the lath shall be butted together.

4.35 Cornerite shall be provided at all interior angles and shall be nailed lightly or stapled to the lath, not to the framing members.

4.40 Gypsum lath shall be attached to horizontal or vertical metal supports by means of special clips.

4.50 Special erection systems, on either wood or metal supports, which afford equal carrying strength

SGP 0003061

may be used, in which event lath shall be erected in accordance with the specifications therefor.

5.00 STUDLESS SOLID PARTITIONS (GYPSUM LATH AND PLASTER, SINGLE-THICKNESS ⅜- OR ½-IN. LATH)

5.10 Gypsum lath shall be plain, ⅜ or ½ in. in thickness, 16 or 24 in. in width, and in ceiling-height lengths.

5.20 Floor and ceiling runners of wood or metal shall be firmly secured to floor and ceiling construction. Sides of grooves in runners shall overlap both faces of lath not less than ½ in.

5.30 Gypsum lath shall be of such length as to allow ¼-in. top clearance in the ceiling runner, and shall be erected vertically, engaging the ends in the slots of floor and ceiling runners.

5.40 In erecting lath, the vertical edges shall be aligned in accordance with the lath manufacturer's directions. (This will vary somewhat, depending upon whether clips are or are not used, and will vary with the type of clip.)

5.50 Temporary bracing is required. The erection of the bracing, and the method of attaching the lath to the braces, shall be done strictly in accordance with the proprietary specifications of the system employed.

6.00 STUDLESS SOLID PARTITIONS (GYPSUM LATH AND PLASTER, MULTIPLE-THICKNESS LATH)

6.10 Gypsum lath shall be plain or perforated, ⅜ or ½ in. in thickness or a combination of the two types and thicknesses, 16 or 24 in. in width, and ceiling height or 48 in. in length, depending upon the system employed.

6.20 Floor or ceiling runners of wood or metal shall be firmly secured to floor and ceiling construction. Sides of grooves in runners shall overlap both faces of lath not less than ½ in.

6.30 When erecting ceiling-height lath, the length shall be such as to allow ¼-in. top clearance in the ceiling runner.

6.40 The lath, including the clips and additional reinforcing, if any, shall be erected strictly in accordance with the proprietary specifications for the system employed. Where perforated lath is used, the perforations in the two layers shall not be coincident.

6.50 If temporary bracing is required, it, together with the method of attaching the lath to the braces, shall be done strictly in accordance with the proprietary specifications for the system employed.

7.00 APPLICATION OF WOOD LATH

7.10 Wood lath shall be spaced ⅜ in. apart at the edges, ¼ in. apart at the ends, and shall be nailed securely at right angles to wood supports (spaced not to exceed 16 in. on center) with 3d fine, No. 16 gage, blued nails, full driven.

7.20 Joints shall be broken every seventh lath.

7.30 Lath shall not run through from one room to another.

7.40 Cornerite shall be provided at all interior angles and shall be nailed lightly or stapled to the lath, not to the framing members.

8.00 APPLICATION OF FIBER INSULATION LATH

8.10 Fiber insulation lath shall be nailed securely to wood supports (spaced not to exceed 16 in. on center) at intervals of not more than 4½ in., with blued or bright nails of the following sizes:

For ½-in. lath . . . . . 1⅛-in. blued fiberboard nails or 4d box nails.

For 1-in. lath . . . . . 1¾-in. blued fiberboard nails or 6d box nails.

8.20 Nails shall be placed not less than ⅜ in. from the ends and not less than ½ in. from shiplapped. tongue-and-grooved, or interlocking edges.

8.30 End joints (except interlocking type) shall be approximately $\frac{3}{16}$ to ¼ in. Shiplapped, tongued-and-grooved, or interlocking edges shall be fitted to moderate contact.

8.40 Cornerite shall be provided at all interior angles and shall be nailed lightly or stapled to the lath, not to the framing members.

9.00 APPLICATION OF METAL LATH, WIRE LATH, AND WIRE FABRIC

9.10 The weight of metal lath, wire lath, and wire fabric shall conform to the requirements prescribed in Table I.

TABLE I.—TYPES AND WEIGHTS OF METAL LATH, WIRE LATH, AND WIRE FABRIC AND SPACING, CENTER TO CENTER OF SUPPORTS.[a]

Type of Lath	Minimum Weight of Lath, lb per sq yd	Maximum Allowable Spacing of Supports, in.				
		Vertical Supports			Horizontal Supports	
			Metal			
		Wood	Solid Partitions	Others	Wood or Concrete	Metal
Diamond mesh (flat expanded) metal lath	2.5	16	16	12	0	0
	3.4	16	16	16	16	13½
Flat rib expanded metal lath	2.75	16	16	16	16	12
	3.4	19	24	19	19	19
⅜-in. rib expanded metal lath[b]	3.4	24	..	24	24	24
	4.0	24	..	24	24	24
Sheet metal lath	4.5	24	..	24	24	24
Wire lath	2.48	16	16	16	13½	13½
V-stiffened wire lath	3.3	24	24	24	19	19
Wire fabric	[c]	16	0	16	16	16

[a]Lath may be used on any spacings, center to center, up to the maximum shown for each type and weight.

[b]Rod-stiffened or V-stiffened diamond mesh (flat expanded) metal lath of equal rigidity and weight is permissible on the same spacings as ⅜-in. rib metal lath.

[c]Paper-backed wire fabric, No. 16 gage wire, 2 by 2-in. mesh, with stiffener.

SGP 0003062

9.20 Metal lath (except 3/8-in. rib), wire lath, and wire fabric shall be attached to horizontal wood supports with not less than 1½-in., No. 11 gage, 7/16-in. head, barbed, bright or blued, roofing nails driven home; and shall be attached to vertical wood supports with not less than 4d common nails or 1-in. roofing nails driven to a penetration of at least ¾ in., or 1-in., No. 14 gage wire staples driven home. The 3/8-in. rib lath, stiffened wire lath, and sheet lath shall be attached to horizontal and vertical wood supports with nails or staples 3/8 in. longer than required for the aforementioned bases, unless attachments are through the ribs, in which event nails or staples shall be of such length as to provide at least 1 3/8-in. penetration in horizontal wood supports and ¾-in. penetration in vertical wood supports. Common nails, where used on vertical wood supports, shall be bent over to engage at least three strands of lath. Other methods of attachment which afford equal carrying strength may be used.

9.30 Rib metal lath in contact ceilings on concrete joists shall be attached to the joists either by loops of not lighter than No. 14 gage galvanized, annealed steel wire with the ends of each loop twisted together, or by not lighter than No. 10 gage galvanized wire hangers with the exposed end struck over the lath without twisting.

9.35 Rib metal lath in contact ceilings on open web steel joists shall be attached to the joists by single loops of not lighter than No. 16 gage galvanized, annealed steel wire, or by double loops of not lighter than No. 18 gage galvanized, annealed steel wire, with the ends of each loop twisted together.

9.40 Metal lath, wire lath, and wire fabric shall be securely attached to horizontal and vertical metal supports with No. 18 gage, galvanized, soft-annealed wire ties.

9.45 All attachments for securing metal lath, wire lath, and wire fabric shall be spaced not more than 6 in. apart.

9.50 Side laps of metal lath, wire lath, and wire fabric shall be secured to supports and be tied between supports at not to exceed 9-in. intervals.

9.55 When end laps occur between supports, ends of sheets shall be laced or adequately tied with No. 18 gage galvanized annealed wire.

9.60 Diamond mesh (flat expanded) metal lath and wire lath shall be lapped ½ in. at the sides and 1 in. at the ends. Ribbed lath shall be lapped at the sides by nesting, and 1 in. at the ends. Sheet lath shall be lapped at the sides and ends by nesting. Stiffened wire lath and fabric shall be lapped by nesting ribs or selvage 1 in. at the sides, and 1 in. at the ends.

9.65 Special erection systems that afford equal carrying strength may be used, in which event lath shall be erected in accordance with the specifications therefor.

9.70 Application of diamond mesh (flat expanded) metal lath or wire lath shall be started one support away from a corner and be bent into of around the corner and carried on to the support on the abutting surface. Lath shall first be applied to ceilings, and the sheets carried down 6 in. onto the walls and partitions. If lath is not used on ceilings, the lathing may be started at the top of the wall and may be bent and carried 6 in. onto the ceiling joists. Wherever possible the ends of the sheets of lath shall be staggered. Ribbed and sheet lath, stiffened wire lath, and fabric shall be butted at internal corners.

9.80 Cornerite shall be provided at all interior angles where ribbed or sheet lath, stiffened wire lath, or fabric is used. It shall be fastened only sufficiently to retain position during plastering.

9.85 Where end laps occur between supports ends of sheets shall be laced or adequately tied with No. 18 gage galvanized annealed wire.

10.00 STUDLESS SOLID PARTITIONS (METAL LATH AND PLASTER)

10.10 Where metal lath is used for studless solid partitions, the long dimension of the sheet shall be vertical. Lath shall be secured to ceiling runners or to ceiling lath by wire ties spaced not more than 6 in. apart, and shall be suitably anchored to floor runners or base. At vertical corners, metal lath shall be bent and returned 6 in. on abutting surfaces. Flat expanded metal lath shall be lapped ½ in. at sides, and rib metal lath by nesting, and all side laps shall be wire-tied at not to exceed 9-in. intervals.

NOTE.—Special systems of studless solid partitions of metal lath and plaster shall be erected in accordance with the recommendations of the manufacturer.

11.00 FURRED, AND SUSPENDED CEILINGS (METAL LATH CONSTRUCTION)

11.10 **Hangers and Inserts.**—Hangers shall be of ample length. Hangers (without inserts) shall be secured to steel reinforcement in concrete with cinder aggregate and shall be either secured to steel reinforcement or looped and embedded 2 in. in concrete with other types of aggregates.

11.12 Inserts shall develop the full strength of the hangers which are attached to them. Inserts used in cinder concrete or tile arch construction shall be toggled with 7-in. cross pieces bearing on top of reinforcing steel in cinder concrete or on top of tile arch construction. In concrete with aggregates other than cinders, inserts shall be secured to steel reinforcement or looped and embedded 2 in. in the concrete.

11.15 Hangers for suspended ceilings under wood construction shall conform with the requirements of Table II both as to size and maximum area to be supported, except as modified in this section. Hangers shall be attached to supports by one of the following methods:

SGP 0003063

(1) be inserted in holes drilled a minimum of 3 in. above bottom of joists and with the upper end of the hanger twisted three times around itself, or

(2) attached to 30d nails driven on a downward slant into sides of joists with not less than 3 in. penetration and at least 5 in. from bottom edges, not over 36 in. on centers, and with the upper end of the hanger in each case twisted three times around itself, or

(3) secured with four 1½ in. No. 9 gage wire staples driven horizontally or on a downward slant into sides of joists three near the upper end of the loop and the fourth to fasten the loose end, or

(4) when purlins exceed 4 ft on centers, 1½ in. No. 0 screw eyes or equal may be fastened into heavy wood flooring at not over 3 ft on centers so that they will support an area not over 9 sq ft, the upper end of the hanger to be inserted in the screw eye and in each case twisted three times around itself, or

(5) flat hangers, if used, shall be spiked to sides of joists with two 12d nails driven through holes drilled in the hanger and clinched at least 3 in. above bottom of joists.

11.20 Wire shall be zinc-coated (galvanized). Rods and flats shall be of mild steel. Gages and sizes specified are the minimum permissible.

11.25 Wire for attaching runners and furring directly to concrete beams and joists, to steel beams and joists, and to wood beams and joists shall be of the gage sizes as specified in Table II.

11.30 Hangers for supporting main runners of suspended ceilings shall be as specified in Table II.

11.40 Where 1 by $\frac{3}{16}$-in. inserts are used, $\frac{7}{16}$-in. diameter holes shall be punched on the center line at the lower ends, which shall project a sufficient distance below the bottom of the concrete or tile arch construction to permit the attachment of the hangers.

11.45 Flat steel hangers shall be bolted to 1 by $\frac{3}{16}$-in. inserts with ⅜-in. diameter round-head stove bolts.

11.50 Wire or rod hangers shall be saddle-tied or wrapped around main runners so as to prevent turning or twisting of the runners and to develop the full strength of the hangers.

11.60 Lower ends of flat hangers shall be bolted to main runners, or bent tightly around runners and bolted to the main part of the hanger; bolts to be ⅜-in. diameter round-head stove bolts.

11.62 Holes in both inserts and hangers shall not be nearer to the ends than ⅜ in.

11.64 The nuts of bolts shall be drawn up tight.

11.70 **Main Runners** for the various spacings of hangers shall be as specified in Table II.

11.75 Main runners shall not be let into nor come in contact with abutting masonry or reinforced concrete walls or partitions. A main runner shall be located within 6 in. of the paralleling walls to support the ends of the cross furring. The ends of main runners at walls shall be supported by hangers located not more than 12 in. from such ends.

11.77 When main runners are spliced, the ends shall be overlapped not less than 12 in. (with flanges of channels interlocked) and securely tied near each end of the splice with double loops of No. 16 gage wire.

11.80 **Cross Furring** for various spacings of main runners shall be as specified in Table II.

11.83 Cross furring shall be securely saddle-tied to main runners with double No. 16 gage galvanized wire, with special clips, or equivalent attachments.

11.85 When furring members are spliced, the ends shall be overlapped not less than 8 in. (with flanges of channels interlocked) and securely tied near each end of the splice with double loops of No. 16 gage wire.

11.87 Cross furring shall not be let into nor come in contact with abutting masonry or reinforced concrete walls or partitions.

SGP 0003064

TABLE II—SUSPENDED AND FURRED CEILINGS
Minimum Sizes for Wire and Rigid Hangers
Minimum Sizes and Maximum Spans and Spacings for Main Runners
Minimum Sizes and Maximum Spans and Spacings for Cross Furring

HANGERS

			Maximum Ceiling Area Supported, Sq Ft	*Minimum Size of Hangers*
Hangers for Suspended Ceilings			12.5	9 gage wire
			16	8 gage wire
			18	3/16 in. diameter, mild steel rod[a]
			20	7/32 in. diameter, mild steel rod[a]
			22.5	1/4 in. diameter, mild steel rod[a]
			25.0	1 in. x 3/16 in. mild steel flat[b]
Hangers for Attaching Runners and Furring Directly to Beams and Joists	For Supporting Runners	Single Hangers Between Beams[c]	8	12 gage wire
			12	10 gage wire
			16	8 gage wire
		Double Wire Loops at Beams or Joists[c]	8	14 gage wire
			12	12 gage wire
			16	11 gage wire
	For Supporting Furring Without Runners[c] (Wire Loops at Supports)	Types of Support:		
		Concrete	8	14 gage wire
		Steel	8	16 gage wire (two loops)[d]
		Wood	8	16 gage wire (two loops)[d]

SPANS AND SPACINGS OF MAIN RUNNERS[e, f]

Minimum Size and Type	*Maximum Span Between Hangers or Supports*	*Maximum Center to Center Spacing of Runners*
3/4 in.—0.3 lb per ft, cold or hot rolled channel	2 ft 0 in.	3 ft 0 in.
1 1/2 in.—0.475 lb per ft, cold rolled channel	3 ft 0 in.	4 ft 0 in.
1 1/2 in.—0.475 lb per ft, cold rolled channel	3 ft 6 in.	3 ft 6 in.
1 1/2 in.—0.475 lb per ft, cold rolled channel	4 ft 0 in.	3 ft 0 in.
1 1/2 in.—1.12 lb per ft, hot rolled channel	4 ft 0 in.	5 ft 0 in.
2 in.—1.26 lb per ft, hot rolled channel	5 ft 0 in.	5 ft 0 in.
1 1/2 x 1 1/2 x 3/16 angle	5 ft 0 in.	5 ft 0 in.

SPANS AND SPACINGS OF CROSS FURRING[e, f]

Minimum Size and Type	*Maximum Span Between Runners or Supports*	*Maximum Center to Center Spacing of Cross Furring Members, In.*
1/4 in. diameter pencil rods	2 ft 0 in.	12
3/8 in. diameter pencil rods	2 ft 0 in.	19
3/8 in. diameter pencil rods	2 ft 6 in.	12
3/4 in.—0.3 lb per ft, cold or hot rolled channel	3 ft 0 in.	24
	3 ft 6 in.	19
	4 ft 0 in.	16
1 in.—0.410 lb per ft, hot rolled channel	4 ft 0 in.	24
	4 ft 6 in.	19
	5 ft 0 in.	12

a It is highly recommended that all rod hangers be protected with a zinc or cadmium coating.
b It is highly recommended that all flat hangers be protected with a zinc or cadmium coating or with a rust-inhibitive paint.
c. Inserts, special clips, or other devices of equal strength may be substituted for those specified.
d Two loops of No. 18 gage wire may be substituted for each loop of No. 16 gage wire for attaching steel furring to steel or wood joists.
e These spans are based on webs of channels being erected vertically.
f Other sections of hot or cold rolled members of equivalent beam strength may be substituted for those specified.

12.00 STEEL STUDS FOR SOLID PLASTER PARTITIONS

12.10 Steel Studs for solid plaster partitions shall be of such size and number and so located as to provide solid backing at all corners. They shall be set to the required dimensions, properly aligned, made plumb and true, securely anchored to the floor and ceiling construction, and temporarily braced.

12.20 Studs adjacent to openings shall be securely anchored to the frames or door bucks, or studs adjacent to door bucks may be omitted if other means of anchoring lath at sides of openings are provided and door bucks are temporarily braced before plastering.

12.30 Heads of openings shall be adequately reinforced.

13.00 METAL FURRING FOR WALLS

13.10 Attachments (Note 1) shall consist of nails driven securely into concrete or into masonry

SGP 0003065

joints, or short pieces of ¾-in. channels used as anchors driven into masonry joints. They shall be spaced not to exceed 2 ft on center, horizontally, and in accordance with the spacing of horizontal channels, vertically, and shall project a proper distance from the face of the wall to permit ties to be made. (Note 2).

NOTE 1.—Special devices which are the equivalent of, or better than, the nail or channel attachments may be used in lieu thereof.

NOTE 2.—Where dampproofing has been damaged in installation of attachments, it shall be pointed with the same material before proceeding with the installation of the furring.

13.20 **Horizontal Members** (Note 3) shall be not less than ¾-in. hot- or cold-rolled channels. They shall be spaced not to exceed 4 ft 6 in. on center, with the lower and upper channels not more than 6 in. from the floor and ceiling, respectively, and not less than ¼ in. from the face of the wall. They shall be securely tied to attachments with 3 loops of No. 18 gage, galvanized, soft-annealed wire, or equivalent devices.

NOTE 3.—Special devices, securely attached to concrete or masonry, in lieu of horizontal members, may be used for support of vertical members.

13.30 **Vertical Members** shall be not less than ¾-in. hot-rolled or cold-rolled channels. They shall be spaced in accordance with requirements for spacing of supports in Table I (Section 9.10). They shall be securely saddle-tied to horizontal members with 3 loops of No. 18 gage galvanized soft-annealed wire, or equivalent devices, at each crossing, and securely anchored to the floor and ceiling construction. Where furring is a considerable distance from the face of the wall, channel braces to the wall shall be provided approximately 2 ft on center.

13.40 **Band-Iron Furring** shall be ¾-in. or 1-in. crimped and painted band iron not lighter than No. 22 U.S. gage metal. Such furring shall be stapled to the wall with brick staples not more than 24 in. on centers. Spacing of band-iron furring shall not exceed 16 in. on centers. The wire or metal lath shall be stapled over such band-iron furring with staples providing a penetration of not less than ¾ in. into the masonry.

14.00 WORKMANSHIP

All metal construction and lathing shall be erected so that finished plaster surfaces may be true to line, and be level plumb, square, curved, or as otherwise required, without excessive thickness of plaster.

SGP 0003066