THE RED BOOK

PLAINTIFF'S EXHIBIT

USG-1736



1937 EDITION

BB024 0832

UNITED STATES GYPSUM COMPANY

HISTORICAL FILE
Trade-Mark Protection
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DO NOT DESTROY

A Catalog of

BUILDING MATERIALS

MANUFACTURED AND SOLD BY

UNITED STATES GYPSUM COMPANY

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UNITED STATES GYPSUM COMPANY

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EXPERIENCE—The United States Gypsum Company is a pioneer in the gypsum industry in America. For more than thirty-five (35) years, the company—through its laboratories, experimental departments and field investigations—has closely studied the requirements of the building industry. Its formulae and mechanical equipment have been painstakingly designed to adapt each of its gypsum and other products to meet comprehensively these requirements.

USG Trade-Mark

SALES AND SERVICE FACILITIES—The twenty-three sales offices in the important building centers guarantee adequate service to architects.

exceptional national distribution facilities and a product specially manufactured to fulfill variable local climatic conditions.

The list below shows the location of the fifty-eight USG centers and visualizes these important service facilities.

COMPLETE DIVERSIFIED LINE OF PRODUCTS—Wherever gypsum is adapted to building uses there is a USG product specially designed to fulfill the particular requirement.

The broad scope of the company's gypsum and other products is indicated by the Products Index.

MANUFACTURING AND DISTRIBUTING FACILITIES—The superiority of USG products is based upon high grade raw material, perfected processes of manufacture and one control of the gypsum products from mining to shipping.

The forty-eight mines, mills, and warehouses, strategically located throughout the United States, assure

THE TRADE-MARK—Products bearing the trade-mark of the United States Gypsum Company are safeguarded against imperfections. They are rigidly inspected by experts at every stage of production, from the selection of the raw materials to the shipment of the finished products.

Any variation from the highest USG Standard means rejection.

This rigid maintenance of quality over a long period of years has established the name and trade-mark of the United States Gypsum Company as synonymous with the highest standard of excellence in building materials.

GENERAL OFFICES

300 WEST ADAMS STREET, CHICAGO, ILL.

SALES OFFICES

Atlanta, Ga.	1440 Citizens and Southern Bank Building
Birmingham, Ala.	1201 Comer Building
Boston, Mass.	731 States Office Building, 20 Providence St.
Buffalo, N. Y.	514 Brisbane Building
Cincinnati, Ohio	3015 Carew Tower
Cleveland, Ohio	627-629 Hanna Building
Dallas, Tex.	1302 Santa Fe Building
Denver, Colo.	Continental Oil Building
Detroit, Mich.	At Mill) River Rouge, Mich.
Indianapolis, Ind.	915 Architects' and Builders' Bldg.
Kansas City, Mo.	1438 Ward Parkway
Los Angeles, Calif.	507 Architects Bldg., 5th St. at Figueroa
Milwaukee, Wis.	(At Mill) 439 W. Oregon St.
Minneapolis, Minn.	1310 Foshay Tower
New York City, N. Y.	30 Rockefeller Plaza
Omaha, Neb.	921 Woodmen of the World Building
Philadelphia, Pa.	1616 Walnut St.
Pittsburgh, Pa.	712 Grant Building
Portland, Ore.	706 Spalding Building
St. Louis, Mo.	808 Lauderman Building
San Francisco, Calif.	2501 Harrison St.
Washington, D. C.	Investment Bldg., 15th and K St., N. W.

Samson Plaster Board Company, Sales Agents for United States Gypsum Company, Crosby Building, Buffalo, N. Y.

MILLS, MINES, QUARRIES AND DEALER SERVICE WAREHOUSES

Alabaster, Mich.
Boston, Mass.
Bronx, New York City
Buffalo, N. Y.
Chicago, Ill.
Cleveland, Ohio
Cordova, Ill.
Detroit, Mich.
East Chicago, Ind.
Eldorado, Okla.
Evans, Wash.
Falls Village, Conn.
Farnams, Mass.
Fort Dodge, Iowa
Genoa, Ohio
Grand Rapids, Mich.
Greenville, Miss.
Gypsum, Ohio
Harrison, N. J.
Heath, Mont.
Jersey City, N. J.
Kansas City, Mo.
Lancaster, Ohio
Laramie, Wyo.
Lisbon Falls, Me.
Los Angeles, Calif.
Loveland, Colo.
Miami, Fla.
Midland, Calif.
Milwaukee, Wis.
New Braunfels, Tex.
New Brighton, S. I., N. Y.
North Kansas City, Mo.
North Tonawanda, N. Y.
Oakfield, N. Y.
Oakmont, Pa.
Philadelphia, Pa.
Piedmont, S. D.
Plasterco, Va.
Quincy, Ill.
St. Joseph, Mo.
St. Paul, Minn.
San Francisco, Calif.
Skaneateles Falls, N. Y.
Southard, Okla.
South Bend, Ind.
Sweetwater, Tex.
Warren, Ohio

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RED BOOK · SECTION A

Plasters · Plastering Bases · Plastering Systems
Exterior Stucco

• • •

Gypsum

A BASIC USG PRODUCT



East Chicago Mill—East Chicago, Indiana
One of Twenty (20) USG Gypsum Mills

GYPSUM • TECHNICAL DATA

GYPSUM—Chemically, Gypsum is hydrous calcium sulphate $CaSO_4.2H_2O$. It is a widely distributed mineral found in rock formation. The rock gypsum is crushed, ground and then calcined, which drives off a part of the molecular water, forming the hemi-hydrate or plaster of paris. This product, when mixed with water, recrystallizes or sets.

FIREPROOF—The superior qualities of gypsum as a fireproof building material have been definitely established by numerous tests made by the Underwriters' Laboratories, Inc., The Bureau of Standards, Columbia University, and by the bureau of buildings in many of the larger cities. (Authentic test data if desired will be furnished on request.)

The temperature of the unexposed side of the gypsum slab cannot exceed 212° F. while there is any water of crystallization in the gypsum. This is due to the fact that the water of crystallization in the gypsum must be vaporized during the application of fire to it, and as the gypsum slowly calcines, the cellular structure fills with steam. It is this barrier of calcined material which stubbornly resists the progress of the fire.

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Plasters

GYPSUM PLASTERS • GENERAL DATA

GENERAL FEATURES

DESCRIPTION—Gypsum Plasters are made by driving off water of crystallization from gypsum rock through calcination, or heat treatment. The addition of water to this basic material (calcined gypsum rock) forms a plastic mass which unites with the same amount of water as was driven off during calcination. When this plaster is mixed with water it re-crystallizes or sets.

QUICK-SET—FAST DRYING—Gypsum Plaster sets up uniformly hard and homogeneous within two to six hours after application. Inside of thirty-six hours, under proper drying conditions, the plaster dries and there is no further dampness or sweating.

ADVANTAGES

ADAPTABILITY—Gypsum Plaster adheres satisfactorily to gypsum, wood or metal lath; gypsum or clay tile; brick or other approved plastering surface.

FIRE RETARDING—Made of gypsum, it is fireproof.

EXCEPTIONAL ADHESIVENESS—Its exceptional adhesiveness greatly increases structural durability.

DOES NOT EXPAND OR CONTRACT—It does not expand and tear itself loose from the surface to which it is applied, even when subjected to fire. It will not crack of itself, shrink or stain.

DURABLE—Gypsum Plaster will withstand the wear and tear of occupancy during the life of the building. It affords a substantial foundation for the finish coat and applied decoration.

SAVES TIME—It sets in two to six hours and dries within 36 hours—interior trim and finish may thus, reasonably soon, follow the plastering without danger from moisture.

PLASTICITY, RICHNESS and "SLIP"—USG Plasters have been developed as much for the convenience of the plasterer as for the above qualities. The result is an unusual richness and "slip" which is appreciated by the competent mechanic. They mix easily at the mortar box; they go on quickly and spread far, resulting in maximum coverage with minimum labor.

UNIFORMITY

The quality of USG Plasters is rigidly controlled by repeated chemical tests, physical tests, and by effective inspection in every stage of manufacture, from the crude gypsum rock to the finished product. Samples from every shipment are retained for future reference.

All USG Plaster meets the standard specification for Gypsum Plaster of the American Society for Testing Materials.

The "Red Top Process" assures the maximum in economy, easy workability and bulk.

IDENTIFICATION • RED TOP* BAG

In addition to the USG trademark on each bag of plaster, the United States Gypsum Company's Plasters are contained in the standard Red Top bag, which provides a positive means of identification that discourages substitution.

The red top is assurance that the material in the bag has been made and tested according to most rigid specifications.

PLASTER PACKAGE

GENERAL—Every package of USG Gypsum Plaster bears the familiar trade-mark (see page 1), and bags have the Red Top. Each bag bears the brand and the mixing directions.

REINFORCED PAPER BAG—The paper bag, made of layers of strong kraft paper, is the standard bag of the United States Gypsum Company.

This bag gives adequate protection, keeping the plaster dry in the warehouse, and a sudden shower while the material is in transit or unprotected at the job will do little if any damage. It is light in weight, easily handled and stored. The dealer and contractor have no investment tied up in bags which are to be returned for credit; nor do they lose the value of sacks stolen from the job or damaged.

In view of these advantages in addition to their convenience, we recommend the paper bag as the most satisfactory plaster package both from an economic as well as a practical view-point.

*Registered Trade-Mark

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COVERING CAPACITY

The covering capacity of USG Plasters is as great for each type of material as it is possible to obtain.

Covering capacity necessarily depends upon conditions under which the plaster is applied—upon the mechanic, thickness of grounds, kind and trueness of the surface to be plastered, spacing or voids of lath, quality of sand, etc.

The covering capacity given hereinafter with each type of material and for the various surfaces to receive the plaster is based on average conditions, and may thus be accepted as a safe basis for calculating the quantity of each class of material that is required when the material is applied according to the Master Specifications given on pages 26 to 34 inclusive.

BRANDS

The standardization nationally of USG plasters under the "Red Top" brand is a protection to the architect and a convenience to the trade.

The architect is assured that the quality of the plaster, from whatever mill shipped, will be identical.

When specifying "Red Top" for use in a distant city, the architect is assured (1) that the plaster will be the same as that with which he is familiar; (2) that a shipping mill is in close proximity; (3) that the plaster will be recognized as standard by the local mechanics.

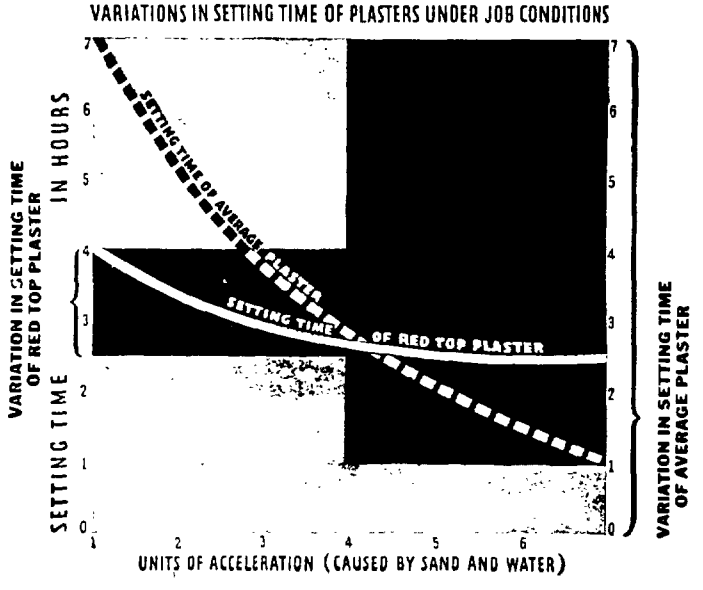
A NEW STANDARD of JOB PERFORMANCE for RED TOP CEMENT PLASTER

Cement Plaster is the most important plaster material used by the architect. This is true both from the standpoint of quantity used and dependability of results in the finished job. It is the foundation of most plastering work.

Therefore, it is important to every architect that he be acquainted with the significance of what Red Top Cement Plaster now does to overcome job difficulties. It almost entirely eliminates difficulties of setting time, the cause of the greatest percentage of plaster complaints. It is far less sensitive to job abuses that affect setting time. This is important to the architect not as an opportunity to relax supervision but as an assurance of greater dependability and greater uniformity in the finished job when applied by the average mechanic.

With varying amounts of sand (as specified for different bases) with varying fineness of sand and even against water that would normally accelerate the set of the plaster, Red Top Cement Plaster maintains a very uniform setting time. This is shown graphically in the chart at the bottom of this page. This quality of uniform setting time under varying job conditions coupled with the better working qualities and keeping qualities of Red Top Cement Plaster assures satisfactory plaster jobs.

Additional literature will be sent to any architect who is interested in further details about this unique quality of Red Top Plaster.



RED TOP CEMENT PLASTER

1 Is of improved plasticity, remains plastic and workable for a longer time after mixing, and sets uniformly and quickly over the entire walls and ceilings.
2 Sets in regular time even with dirty water that ordinarily would affect the set of plaster.
3 Sets in regular time despite sand impurities that would accelerate or retard the set of ordinary plaster.
4 Sets in regular time whether machine-mixed or hand-mixed.
5 Sets in regular time over the following bases: metal, wood, gypsum or insulating lath, clay or gypsum tile.
6 Sets in regular time, and sets in the same time when sanded for use either as brown or scratch coat.
7 Sets irrespective of climatic conditions, and does not dry out before setting.
8 Sets with more uniform surface hardness than ordinary plasters, thus providing for better application of white coat.
9 Sets from the base out to the surface, instead of from the surface in to the base, and takes its set evenly.
10 In Storage Red Top Wall Plaster retains its plasticity and working properties for at least one year.

Manufactured under U. S. Patents 1,683,539 and 1,989,641

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CEMENT PLASTERS (Fibered and Unfibered)

USE—Use for scratch and brown coats.

BRANDS—Note—*See "Brands," page 3.*

Red Top* Cement Plaster.
Red Top Eldorado* Cement Plaster (Gypsite).

Note—*Gypsite plasters, popularly known as "dark plasters," are well adapted to the climatic and building conditions of the Southwest.*

DESCRIPTION—Red Top Cement Plasters are "neat" materials—sand to be added at the job.

CHARACTERISTICS—These materials are unusually rich, spread well under the trowel and, when mixed properly with a good grade of sand, are uniformly satisfactory both in working qualities and ultimate results in the finished wall.

The "Red Top Process" assures the maximum in sand carrying capacity, easy workability and bulk.

Red Top Cement Plaster is manufactured under a patented process and will set in a uniform time over any base. Setting time is not affected by ordinary job conditions.

DIRECTIONS—

Mixing—(a) For scratch coat on gypsum, wood and metal lath, mix 2 parts by weight of dry sand with 1 part of plaster.

(b) For scratch coat on brick, gypsum and clay tile and for second (brown) coat over these bases as well as the bases in a) mix 3 parts by weight of dry sand with 1 part of plaster.

Application—(a) On Wood Lath—Soak lath. Apply in 2 coats. Apply scratch coat with sufficient pressure to obtain a good key. Darby brown coat lightly—use water sparingly.

(b) On Gypsum Lath—Do not wet lath. Apply in 2 coats. Scratch coat shall be well scratched in to fill interstices between lath units. Darby brown coat lightly—use water sparingly.

(c) On Metal Lath—Apply in 2 coats. Apply scratch coat lightly, covering lath and filling meshes. Scratch first coat and allow to set before applying brown coat. Darby brown coat lightly—use water sparingly.

(d) On Brick and Gypsum or Clay Tile—Soak brick or clay tile walls. Sprinkle gypsum tile lightly. Apply in 2 coats. Darby lightly—use water sparingly.

PACKAGE—Shipped in 100-lb. paper bags.

COVERING CAPACITY—Note—*See "Covering Capacity," page 3.*

Basis—Under average conditions Gypsum Cement Plaster mixed and applied in accordance with standard specifications will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	180–210 (Sanded 2 to 1)	105–135 (Sanded 2 to 1)	225–240 (Sanded 2 to 1)	165–200 (Sanded 3 to 1)	235–255 (Sanded 3 to 1)

WOOD FIBER PLASTERS

USE—Use for scratch and brown coats.

BRANDS—Note—*See "Brands," page 3.*

Red Top Wood Fiber Plaster.
Red Top Eldorado Wood Fiber Plaster (Gypsite).

Note—*Gypsite plasters, popularly known as "dark plasters," are well adapted to the climatic and building conditions of the Southwest.*

DESCRIPTION—Wood Fiber Plasters are shipped ready to use, requiring only the addition of water. The base is Gypsum Plaster, to which is added finely shredded wood fiber, uniformly distributed.

CHARACTERISTICS—Wood fiber plaster avoids the handling of sand, the dangers of poor sand and oversanding. The smooth and fatty nature gives easy spreading and excellent working qualities.

Composed of gypsum and shredded wood fiber. When applied it is about two-thirds the weight of sanded cement plaster.

The plaster is practically pure gypsum, wood fiber serving as reinforcement and is extremely tough, strong, dense and durable.

It is superior to sanded plaster in fire-resisting, insulating and sound-deadening qualities. Its greater flexibility better adapts it to withstand vibrations and strains.

It is especially adaptable to alterations and is desirable for winter use. Wood Fiber Plaster may be sawed like wood.

DIRECTIONS—

Mixing—(a) Neat—For wood and gypsum lath and scratch coat on metal lath, hoe plaster into water and allow to soak from 10 to 20 minutes. Then mix to proper consistency.

(b) Sanded—For brown coat on metal lath and for all plaster on brick and gypsum or clay tile, mix as in (a) with equal parts by weight of plaster and dry sand.

Application—(a) On Wood Lath—Soak lath. Apply in 2 coats. Apply scratch coat with sufficient pressure to obtain a good key and scratch the surface. Before brown coat begins to set, broom surface.

(b) On Gypsum Lath—Do not wet lath. Apply in 2 coats. Scratch coat shall be well scratched in to fill interstices between lath units. Scratch first coat and

*Registered Trade-Mark

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allow to set before applying brown coat. Before brown coat begins to set, broom surface.

(c) On Metal Lath—Apply in 2 coats. Scratch coat shall be applied a little stiff, covering lath and filling meshes. Before brown coat begins to set, broom surface.

(d) On Brick and Gypsum or Clay Tile—Soak brick or clay tile walls. Sprinkle gypsum tile lightly. Apply in 2 coats. Before the brown coat begins to set, broom surface.

PACKAGE—Shipped in 100-lb. paper bags.

COVERING CAPACITY—Note—*See "Covering Capacity," page 3.*

Basis—Under average conditions this plaster mixed and applied as specified will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath
Sq. yds. per ton	90–100 (Unsanded—water only added)	55–65 (Unsanded—water only added)	115–120 (Unsanded—water only added)

PREPARED PLASTERS (SANDED)

USE—Use for scratch and brown coats.

BRANDS—Note—*See "Brands," page 3.*
Red Top* Sanded Plaster.
Red Top Sanded Plaster for Brick or Tile.
Red Top Sanded Wood Fiber Plaster.

DESCRIPTION—Prepared Plasters are shipped ready to use, requiring only the addition of water. The base is Gypsum Plaster to which is added nothing but sharp, clean plastering sand, thoroughly graded and screened.

Correct proportions and mixing are accomplished by automatic machines at the factory.

CHARACTERISTICS—Prepared plasters are desirable in localities where good sand is difficult to obtain.

Since they are ready to apply with the addition of water only, they are particularly well adapted for use in winter when unfrozen sand of good quality is difficult or expensive to obtain.

Since these plasters may be readily mixed inside the building, they are useful for repair and remodeling work in all seasons.

DIRECTIONS—

Mixing—Add nothing but water. Hoe plaster into water, mixing thoroughly. Mix thin first, then add dry material to bring to proper consistency.

Application—Apply as specified for Cement Plasters.

PACKAGE—Shipped in 100-lb. paper bags.

COVERING CAPACITY—Note—*See "Covering Capacity," page 3.*

Basis—Under average conditions Gypsum Prepared Plaster mixed and applied in accordance with standard specifications will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	60 to 70	35 to 45	75 to 80	45 to 55	65 to 70
	(Plaster mixed with water only—no sand added)				

BONDCRETE* • FOR INTERIOR CONCRETE SURFACES

USE—Use for scratch and brown coats over concrete.

DESCRIPTION—Ordinary gypsum or lime plaster does not adhere properly to concrete—consequently Bondcrete, a specially made plaster for concrete surfaces, is recommended.

CHARACTERISTICS—Bondcrete permits moisture, expelled from concrete for approximately a year, to be carried through and evaporated on the surface, thus avoiding a condition approaching a sweat-out. Any plaster finish can be used over Bondcrete. Oil paint decoration should be deferred for a year.

Bondcrete adheres strongly to dry concrete due to its cementatious qualities and its practically unchanging volume during setting and hardening. It needs only water to make it ready for use.

Do not apply Bondcrete over a smooth, oily or efflorescent surface. Provide a semi-rough, clean surface. It should not be covered with a sanded brown coat on ceilings.

Finish coat must never exceed ¼ inch in thickness nor one-half the Bondcrete thickness. Provide furring and lathing where more than ¾ inch of plaster is required or ornamental plaster is suspended.

DIRECTIONS—

Mixing—Add nothing but water. Hoe plaster into water. Allow to soak at least 10 minutes. Mix thoroughly and break down to a smooth, even creamy consistency.

Application—Apply in two (2) coats in just sufficient thickness to obtain an even surface. Before the plaster begins to set, broom the surface to receive the finish coat.

PACKAGE—Shipped in 100-lb. paper bags.

COVERING CAPACITY—From 90 to 120 sq. yds. to the ton depending upon regularity of concrete surface and thickness applied.

Note—*See "Covering Capacity," page 3.*

*Registered Trade-Mark

BB024 0841

PREPARED GYPSUM FINISHES

USE—Use for finish coat only.

BRANDS—Note—*See "Brands," Page 3.*

Trowel Finishes
Red Top* Trowel Finish.
Red Top Universal* White Trowel Finish.
Red Top Adamant* White Trowel Finish.
Red Top Adamant Slate Colored Trowel Finish.
Red Top Adamant IXXX Trowel Finish.
Red Top Badger* Gray Trowel Finish.

Sand Float Finishes
Red Top* Silica White Sand Float Finish.
Red Top Adamant Gray Sand Float Finish.
Red Top Adamant White Sand Float Finish.
Red Top Sand Float Finish (Light Gray).

DESCRIPTION—Prepared Gypsum Finishes require only the addition of water to make them ready for use. Made of gypsum, they form a perfect and natural bond with any gypsum plaster base coat. The sand float finishes contain selected sharp clean silica sand, properly graded, screened and thoroughly dried.

CHARACTERISTICS—These finishes are ready to use when water is added, assuring a uniform mix of correct proportion. The sand float finishes are especially recommended in winter when unfrozen sand of the requisite quality is difficult to obtain. Decorations may safely be applied as soon as the finish dries out.

DIRECTIONS—

Mixing—Hoe plaster into water (using approximately 1 part of water to 2 parts of plaster measured by volume). Allow to soak for at least 10 minutes. Mix thoroughly to break down to a smooth, even, creamy consistency. Add water to bring to creamy consistency. Transport in buckets.

Application—(a) Trowel Finish—Base coat should be fairly dry before finish is applied. Sprinkle lightly with water if suction is too great. Apply in 3 coats. Apply a thin coat well ground into surface. Allow to draw a few moments. The second time over, lay the material on level. The third time, use thin material and fill all imperfections; allow a few moments to draw; trowel to a smooth finish, applying water with a damp brush. Complete troweling before finish has set.

(b) Sand Float Finish—Apply after base coat has set firm and hard, but while still green (within 12 hours after application). Lay on with a trowel, then use a float working the material to a true, even surface, free from float marks. Use as little water as possible—use damp brush only. Complete floating before finish has set.

PACKAGE—Shipped in 100-lb. paper bags.

COVERING CAPACITY—Under average conditions Gypsum Trowel Finish, if mixed and applied in accordance with standard specifications, will cover about 350 to 400 yds. per ton; Gypsum Sand Float Finish about 250 to 275 yds. per ton.

ORIENTAL* INTERIOR • COLORED FINISH PLASTER

USE—Use for textured or floated plaster finish coat.

DESCRIPTION—Oriental Interior is a colored finish plaster. The material is made in thirteen standard shades and white. Tints are produced with mineral colors, great care being taken to assure absolute uniformity of shade. It is ready for use with the addition of water only.

CHARACTERISTICS—With ordinary tools, attractive, tinted, float, textured tile and stone finishes may be obtained.

The positive regulation of color insures walls with the minimum amount of "joinings" and avoids the danger of inaccurate mixing.

DIRECTIONS—

Mixing—Hoe material into water, using approximately 1 part of water to 2 parts of plaster, by volume. Let soak overnight. Mix thoroughly to a smooth, creamy consistency. Transport in buckets.

Application—Base coat must be set firm and hard. On masonry or tile, base must be thoroughly dry—on lathing base should be 75% dry. Wet down lightly if suction in base is too great. Use as little water as possible—use damp brush only. Provide proper drying conditions to assure uniform color.

(a) Float Finish—Apply in 2 coats. First apply a thin coat well ground into base. The second time over, lay the material on perfectly level and float to a true, even surface, free from float marks.

(b) Texture Finish—Apply in 2 coats. First apply a thin coat well ground into base and allow to draw a few moments. The second time over, lay the material on perfectly level, working it into the desired texture. Tile or masonry effects are obtained by marking while material is green (within 4 to 5 hours).

ORIENTAL GLAZE—Oriental Glaze is a colored glaze for use over textured surfaces. It produces two-tone effects, drying with a soft sheen and a finish that can be washed with a light soap solution. It may be applied directly to Oriental Interior as soon as it is dry. Shipped in 5-gal., 1-gal., quart, and similar cans down to $\frac{1}{16}$th gallon.

PACKAGE—Shipped in 100-lb. paper bags. Order Oriental Interior by color name designated on color cards or samples.

COVERING CAPACITY—Approximately 250 to 300 sq. yds. per ton, varying according to textures.

*Registered Trade-Mark

BB024 0842

GAUGING PLASTERS

USE—Use for finish coat only in conjunction with lime putty described below.

BRANDS—Note—*See "Brands," page 3.*

Slow Set

Red Top* Slow Set Gauging Plaster (Gray).
Red Top Star* Gauging Plaster (White).
Red Top Superfine Finishing Plaster (White).

Quick Set

Red Top* Quick Set Gauging Plaster (Gray).
Red Top Champion* Gauging Plaster (White).
Red Top Kings Diamond* Gauging Plaster (White).
Red Top NYC* Mills Gauging Plaster.

DESCRIPTION—These plasters are made of raw materials carefully selected from gypsum deposits unusually well suited for the manufacture of calcined plasters for this particular purpose.

Aside from saving time, gauging plasters are far more satisfactory than screened cement plaster.

CHARACTERISTICS—They are made in both "slow set" and "quick set," and are uniformly ground to just the right fineness to insure easy working and mixing qualities.

DIRECTIONS—Full directions for mixing and application are given under Finishing Lime.

PACKAGE—Shipped in 100-lb. paper bags. Also shipped in 250-lb. (230 lbs. net) barrels and 320-lb. (300 lbs. net) barrels.

COVERING CAPACITY—Under average conditions one ton of Gauging Plaster, mixed with two tons of dry hydrated lime by weight, will cover about 1000 to 1400 sq. yds.

FINISHING LIME

USE—Use finishing lime for finish coat only in conjunction with gauging plaster described above.

BRANDS—Note—*See "Brands," page 3.*

Hydrated Finishing Lime

Red Top Ivory* Finish Lime.
Red Top Grand Prize* Finish Lime.
Red Top Finish Lime.
Cheshire* Hydrate (High Calcium).
Plastimax* Finishing Hydrate (High Calcium).

Finishing Quicklime

Cheshire* Finish Quicklime—in Lump, Pulverized and Superfine (High Calcium).

DESCRIPTION—These limes are specially prepared for finishing purposes. They possess a rich plasticity that makes them spread easy and far; hence they save time and labor.

CHARACTERISTICS—Hydrated lime saves the time and trouble of slaking and screening lime on the job. The famous Ohio dolomite from which Red Top hydrated lime is made, together with USG standards of manufacture, make this lime unexcelled for finishing purposes.

It is uniformly burned and thoroughly hydrated, is of a snowy white color, and is absolutely free from "pops" and "pits."

It meets the standard specifications for hydrated lime of the American Society for Testing Materials and is accepted for United States Government construction without specific tests on the certification of the United States Gypsum Company that the lime conforms with government requirements.

Plastimax lime is a specially processed quick-soaking hydrate.

Cheshire Quicklime is wood burned and of exceptional quality. Because of the exceeding purity and the physical characteristics of the stone, this lime is unusually quick slaking. It has a high putty yield.

DIRECTIONS—

Mixing—(a1) Hydrated Lime—Fill watertight box one-half to two-thirds full of clean water. Add dry lime gradually (sift through a ¼-in. mesh screen, preferably) until water is aried up. Allow to soak overnight with 1 in. to 2 in. of water over lime.

(a2) Quicklime—Add water and lime gradually while mixing, constantly agitating mixture to prevent burning of unslaked portion. Mix to a thin consistency and screen. Run into ageing box.

(b) Mix 3 parts of lime putty by measure with 1 part of dry Gauging Plaster. Mix thoroughly.

Application—Apply in 2 coats over dry walls. Scratch in a thin coat well ground into base, then apply second coat filling imperfections. Trowel to a smooth finish, applying water with a damp brush. Complete troweling before finish has set.

PACKAGE—Hydrated Finishing Lime is shipped in 50-lb. paper bags. (Plastimax Finishing Hydrate in 40-lb. bags.)

Quicklime is shipped in 180-lb. and 280-lb. net weight wood barrels and steel drums, also in bulk. The Cheshire Finish Quicklime is shipped also in 80-lb. Multi-Wall paper moisture-proof bags.

COVERING CAPACITY—Under average conditions one ton of Red Top Hydrated Lime, when used in proportion of two parts of dry lime to one part of dry gauging plaster by weight, should finish from 500 to 700 sq. yds.

A ton of Quicklime, when mixed in the above proportions, should finish about 1000 yards.

*Trade-Mark

BB024 0843

RED TOP* KEENE'S CEMENT

USE—Use for high grade plasterwork, particularly to receive fine decorative treatment and where the utmost in hardness, density and sanitation is desired.

DESCRIPTION—Red Top Keene's Cement is the hardest and densest gypsum material that is applied with a trowel. It is manufactured from specially selected gypsum mined at Southard, Oklahoma. It excels in smooth, uniform working qualities and in tensile strength, due to the selected material and the USG improved methods of manufacture and rigid mill inspection.

Beside the standard Keene's Cement, Red Top Keene's Cement is made in three special types: Red Top Casting Keene's; Red Top Scagliola Keene's and Red Top Quick Troweling Keene's.

CHARACTERISTICS—Keene's Cement is ground to extreme fineness, is pure white in color and takes a very high, glass-like polish. Its extremely hard surface is impenetrable to rodents and vermin. It is easily cleaned. It contains no alkali to stain delicate wall tints or saponify the oil in paints, hence it is an ideal base for fine decorating.

Red Top Casting Keene's, especially adapted to high class ornammental work, has minimum expansion. It is white, non-staining, non-corrosive, non-acid. It has a final set of two hours.

Red Top Scagliola Keene's is made expressly for the purpose. Initial set is 3 to 6 hours; final set, 15 to 20 hours.

Quick Troweling Keene's is always used with lime putty for finish plaster. Its rapid set permits application and finish troweling in one operation. Setting time is within two hours, when final troweling should be given.

DIRECTIONS—

Mixing—For Medium Hard Finish, use 100 lbs. Keene's and 80 lbs. lime putty (40 lbs. dry lime); for Hard Finish, use 100 lbs. Keene's and 25 lbs. lime putty (one 12-qt. pail); for Extra Hard Finish, use Keene's neat.

Application—Apply in 2 coats over dry walls. Scratch in a thin coat well ground into base, then apply second coat filling imperfections. Trowel to a smooth finish, applying water with a damp brush. Complete troweling before finish has set.

PACKAGE—Shipped in 100-lb. paper bags.

COVERING CAPACITY—Under average conditions one ton of Keene's Cement, when used neat and in accordance with specifications, will cover about 400 to 500 sq. yds.

RED TOP (ARIDIZE*) MOULDING PLASTER

USE—Use for ornamental moulded plaster work.

BRANDS—Note—*See also "Brands," page 3.*

Red Top* Moulding Plaster.

Red Top No. 1 Moulding Plaster (White).

DESCRIPTION—The requirements for moulding plaster are distinctly different from any other class of plaster.

Gypsum deposits suitable for making material of this particular type are exceedingly rare.

These plasters are produced by a manufacturing process, patented by the United States Gypsum Company, which artificially ages the plaster, giving it those desirable characteristics of easy mixing and great hardness not obtainable in ordinary plasters until 8 to 12 months' ageing.

Heretofore, plasters have been aged by storing in warehouses but the results could not be uniform because of variations in temperature and humidity conditions. The production of Aridize Plasters, however, depends in no way on the atmospheric conditions, for an artificial atmosphere is produced at a temperature and humidity that will assure uniform ageing; consequently the plaster is always uniform.

Pre-ageing lowers the water carrying capacity of the plaster; hence Aridize Plasters set into denser, stronger and more durable mouldings and ornamental parts.

Even when green, moulds made of these plasters possess great strength, and breakage by handling and manipulation in the moulding and casting stage is diminished.

CHARACTERISTICS—Aridize Moulding Plasters are made from selected gypsum ideal for the purpose and unequaled for whiteness and purity. This, together with the special patented process of manufacture, produces a particularly smooth working plaster of absolutely uniform setting quality.

These plasters are ground much finer than other similar products, assuring a more thorough solution and a finer surface to the finished work, with an absence of pinholes. The fine satin-like surface increases the life of the moulds.

In addition to these qualities, the plasters are cooler working and slower setting, which accounts for low expansion and absence of warped moulds. The slow generation of heat in setting insures protection to gelatine or glue moulds. Slow setting gives time for blending and working out trapped air bubbles and working the plaster into angles and corners of moulds.

DIRECTIONS—Add water only, mix thoroughly and bring to a working consistency. Add 5% lime putty to the moulding plaster where extra plasticity is required for run work.

PACKAGE—Shipped in 100-lb. paper bags; 250-lb. (230 lbs. net weight) barrels and in 320-lb. (300 lbs. net weight) barrels.

*Registered Trade-Mark

Plastering Bases

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ROCKLATH • THE FIREPROOF LATH

Rigid Gypsum Board Lath Units

ROCKLATH and INSULATING ROCKLATH

ROCKLATH*—Rocklath is a solid sheet of gypsum, ⅜ in. thick, 16x32 in. and 16x48 in., encased in a tough fibrous covering, forming a uniform, strong, fireproof plaster base. The fibrous covering affords uniform suction, insuring a permanent, strong bond with gypsum plaster. Rocklath is easily nailed to wood studding, furring or joists.

Rocklath has the USG* patented rounded reinforced folded edge which gives maximum strength, protects the boards, and does not injure the hands.

INSULATING ROCKLATH*—Insulating Rocklath is standard ⅜-in. thick Rocklath, upon the back of which is mounted a thin, smooth, bright sheet of aluminum foil. It is applied in the same manner as standard Rocklath with the foil side next to the framing members. The metal must face an open space.

Applied in this manner, its heat insulating value is equal to or better than ½ in. thick fiber insulating lath. For complete data, see USG "Thermal Insulation" section.

SIZES, WEIGHTS, ETC.—Rocklath and Insulating Rocklath are both made ⅜ in. thick and in two sizes—16 x 32 in. and 16 x 48 in. The boards are packed in bundles for easy handling and stacking—6 sheets to the bundle. Each bundle of 32-in. boards contains 21⅓ sq. ft. and weighs about 30 lbs.; each bundle of 48-in. boards contains 32 sq. ft. and weighs about 45 lbs.

Either size provides the usual vertical joint break without cutting for framing members 16 inches o. c.

SPECIFICATIONS—See Master Specifications, pages 29 and 31 for application of Rocklath and plastering.





BB024 0845

PERFORATED ROCKLATH* • FIREPROOF LATH

Combines High Fire Resistance with Low Cost

DESCRIPTION—In addition to Rocklath which the United States Gypsum Company has manufactured for more than twenty years, the Company now offers throughout the United States a modification of this product called Perforated Rocklath.

In appearance this lath is like other bundled Rocklath except for the perforations which give it its distinctive qualities. These consist of perforations three-quarters (¾) of an inch in diameter spaced four (4) inches apart on centers. In a 16 in. wide by 48 in. long lath unit this provides 48 perforations or 48 mechanical keys.

The outstanding advantage of Perforated Rocklath is its added resistance to the progress of fire. It has all the advantages of Rocklath including maximum bond with plaster, economy, and non-combustibility. Its plus value is persistence of the bond between the lath and plaster for a longer time after having been attacked by fire.

ONE HOUR FIRE RATING—Tests run by the U. S. Bureau of Standards on a partition lathed in the approved manner with Perforated Rocklath and plastered with a full half inch of Gypsum Plaster demonstrated that this construction had sufficient fire resistance to stand up in a typical building fire test for one hour.

THOROUGHLY TESTED—Perforated Rocklath was first manufactured to meet special plastering requirements more than three years ago. It was introduced to the Pacific Coast Plastering Trade where many millions of feet of it are now in use and where it has had an opportunity over more than three years to prove its advantages.

MECHANICS PREFER IT—There are actual construction advantages from the mechanic's standpoint in Perforated Rocklath. The perforations spaced four inches apart help the lather to measure the board with his eye, making it easier for him to measure off and score and to produce odd pieces of correct length to fit standard stud spacing. There is an even greater advantage for the plasterer. The perforations tend to slice the plaster off the trowel as it sweeps over them. In this way they produce an effect somewhat similar to that of an open mesh lath.

SIZES, WEIGHTS, ETC.—Perforated Rocklath is made ⅜ in. thick and in two sizes—16 x 32 in. and 16 x 48 in. The boards are packed in bundles for easy handling and stacking—6 sheets to the bundle. Each bundle of 32-in. boards contain 21⅓ sq. ft. and weighs about 30 lbs.; each bundle of 48-in. boards contains 32 sq. ft. and weighs about 45 lbs.

Either size provides the usual vertical joint break without cutting for framing members 16 inches o. c.

SPECIFICATIONS—See Master Specifications, pages 29 and 31 for application of Rocklath and plastering.





*Trade-Mark

BB024 0846

ADVANTAGES OF ROCKLATH

FIREPROOF—Does not burn or readily transmit heat. It interposes a continuous fireproof sheet of substantial thickness over the wood frame, thus tending to confine the fire to the room in which it originates. Does not disintegrate or corrode.

NO EXPANSION OR CONTRACTION—Does not expand, warp or buckle when wet plaster is applied, consequently will not shrink when plaster dries out.

EXCEPTIONALLY STRONG PLASTER BOND—The strong fiber covering with its uniform suction prevents the plaster from "slipping" when applied. Gypsum plaster is easily applied and bonds more firmly to Rocklath than to other types of lath. Because there is no sap in Rocklath, there is no consequent discoloration.

In U. S. Bureau of Standards' Tests a pull of six pounds per square inch was required to separate the plaster from the gypsum lath, providing a factor of safety of 144.

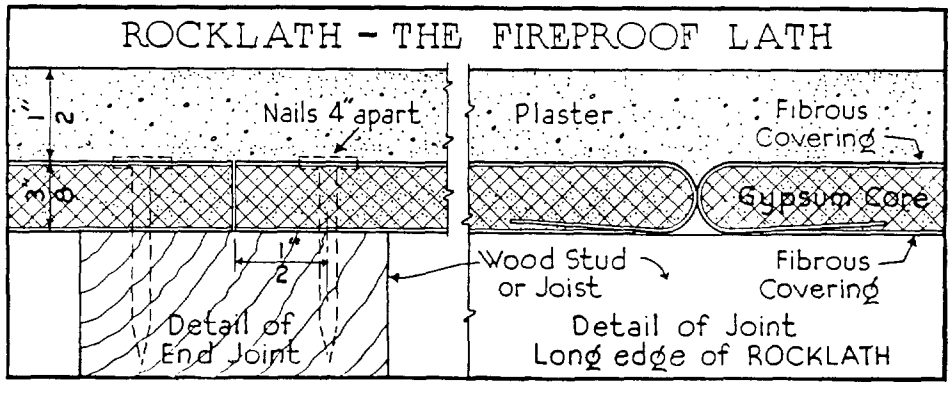
ECONOMY IN ERECTION—Compared with ordinary lath, Rocklath bundles are stacked and carried and the light weight units handled and erected quicker and with greater ease—there are no splinters. One piece of Rocklath equals 9 wood laths and requires 15 to 20 nails, depending on the size of the lath unit, instead of 27 or 36. One man will erect an average of from 125 to 150 sq. yds. a day compared with 100 to 115 sq. yds. with wood lath. It scores and cuts cleanly and easily without waste.

UNIFORM THICKNESS — Since no plaster is lost through droppings pushed through the lath and the ragged keying plaster behind the lath, the thickness is uniform throughout and approximately 20% less plaster is required.

ELIMINATES MOISTURE—Rocklath needs no wetting before plaster is applied. The continuous dry gypsum sheet, ⅜ in. thick, eliminates its proportionate part of the usual wet plaster moisture and at the same time seals off the applied plaster moisture from contact with the absorptive wood framing, preventing much of the usual swelling and subsequent shrinkage.

Since there is less moisture present, the plaster and building are dry and ready for the application of interior wood trim and decorating in the minimum time.

COMPARATIVE COST—The completed wall (Rocklath and plaster) costs less than metal lath and plaster, and about the same as wood lath and plaster.



WEATHERWOOD* INSULATING LATH

For complete data, see the USG Co.'s section on "Thermal Insulation."

Red Top Insulating Lath has an average low conductivity of .32 B.t.u.'s per hour, per sq. ft., per degree F., per inch thickness. It is made in 18x48-in. units, ½ and 1 in. thick. The longitudinal edges are matched to insure insulation continuity and strengthen the unsupported joint (an exclusive USG Co. feature). Edges also are beveled to assure strong plastering at the joints. The weight is but 750 lbs. per 1000 sq. ft. of half-inch material.

Authentic tests show that to rupture the bond between gypsum plaster and Red Top Insulating Lath requires over 1350 lbs. per sq. ft., the rupture occurring in the board itself.

*Registered Trade-Mark

PYROBAR* PARTITION TILE

For complete data, see the USG Co.'s "Gypsum Constructions" section.

Pyrobar Partition and Furring Tile are 30 in. long, 12 in. high and of various thickness from 1½ to 6 in. Pyrobar Tile meets fully the standard specifications for Gypsum Partition Tile or block of the American Society for Testing Materials. All Pyrobar Gypsum Tile bear the trade-mark. Column fireproofing is accomplished either with 2-in. solid or 3-in. hollow Pyrobar Partition Tile.

Pyrobar Beam and Girder Fireproofing is made from the same materials as Pyrobar Partition Tile. Specially formed Pyrobar Shoe Tile, Angle Tile and Soffit Tile, which fit over the lower flanges of the steel are used to fireproof steel flanges of beams and girders.

BB024 0847

METAL LATH and ACCESSORIES

INTRODUCTION

That the United States Gypsum Company might furnish all materials required for lathing and plastering, it acquired the metal lath division of the Youngstown Pressed Steel Company and the North Western Expanded Metal Company, both for many years well and favorably known in the industry. As a result, those whom the company serves have the advantages of mixed car shipments and of centralized responsibility.

The high quality products of the two metal lath companies will be found in the Red Top Line of Metal Lath Products. In addition, the Red Top Line includes many special accessories. All brands and types of metal are distinctly tagged for identification.

NOTE—*For application, see Master Specifications, pages 29 and 30.*

RED TOP* DIAMOND MESH LATH (JUNIOR MESH)

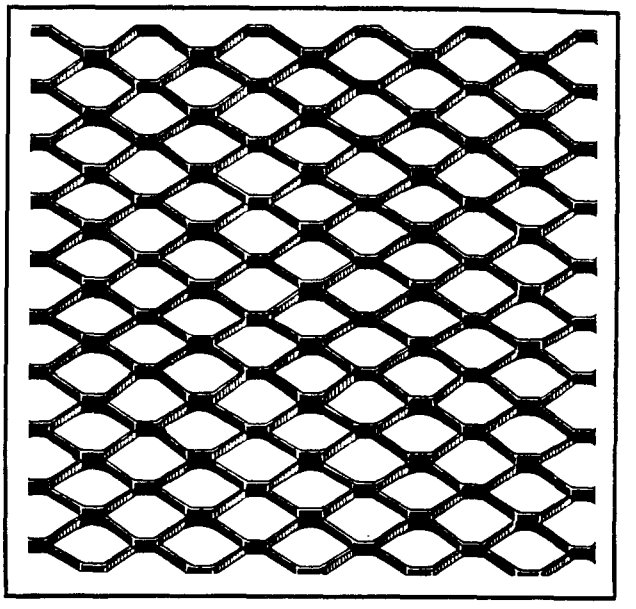
Description—A small ($\frac{5}{16}$" x $\frac{9}{16}$") diamond mesh expanded metal lath (patented). The stiff sheets are easy to erect. The small mesh enables the lather to engage a greater number of strands in nailing or tying, yet the "diamonds" are amply large to freely admit the tie wire. Mortar spreads easily on the smooth stiff surface, without waste; the small mesh affords a superbly keyed bond.

Weights—2.2, 2.5, 3.0, 3.4 lbs. per sq. yd.

Materials—(1) Open hearth steel, painted black in all weights. (2) Galvanized steel in 2.5 and 3.4 lb. weights. (3) Copper bearing steel (so tagged), painted black in all weights. (4) Armco Ingot Iron (so tagged), painted black in 2.5, 3.0 and 3.4 lb. weights. (5) Copper Bearing Galvanized, and Armco Ingot Iron Galvanized in 2.5 and 3.4 lb. weights also available on special order.

Self-furring and Corrugated—All above weights and materials furnished in the Self-furring and Corrugated types.

Sheet Size—27 x 96 in., packed 10 sheets (20 sq. yds.) per bundle. Also size 24 x 96 in., packed 9 sheets (16 sq. yds.) per bundle on order.



RED TOP DIAMOND MESH LATH

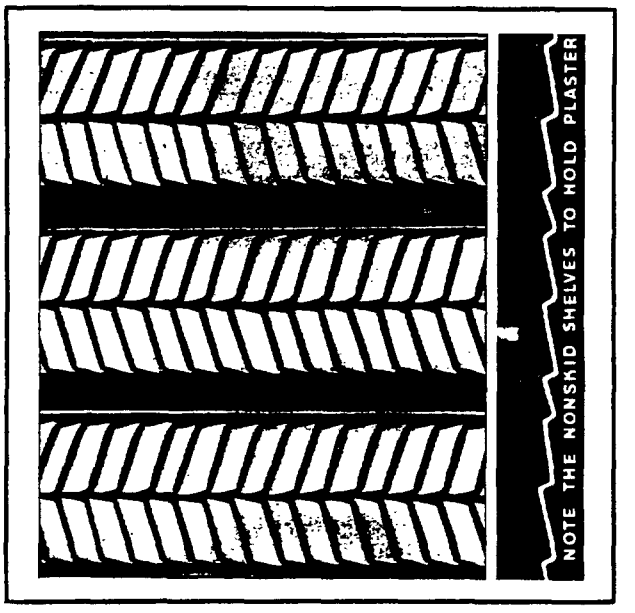
RED TOP 1/8 in. Z-RIB LATH (Flat Rib)

Description—A distinctive type of flat rib lath for nailing on wood construction or tying on metal furring. The narrow "Z" ribs (⅛ in. deep, 1½ in. o.c.) add exceptional rigidity and provide shelves which hold the wet plaster in place, both front and back, without waste.

Weights—2.75, 3.0, 3.4 lbs. per sq. yd.

Materials—(1) Open hearth steel, painted black, in all weights. (2) Copper bearing steel (so tagged), painted black, in all weights. (3) Galvanized steel in 3.4 lb. weight. (4) Armco Ingot Iron (so tagged) painted black, in 3.4 lb. weight on special order.

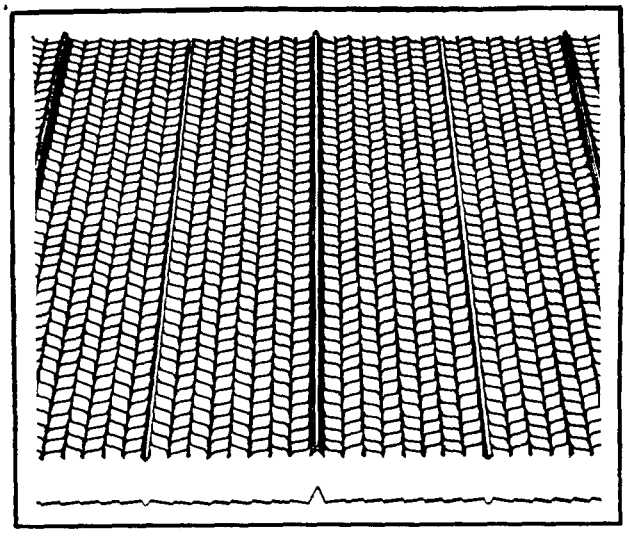
Sheet Size—24 x 96 in., packed 9 sheets (16 sq. yds.) per bundle.



RED TOP ⅛ IN. Z-RIB LATH

*Trade-Mark

BB024 0848



RED TOP ⅜ IN. RIB LATH

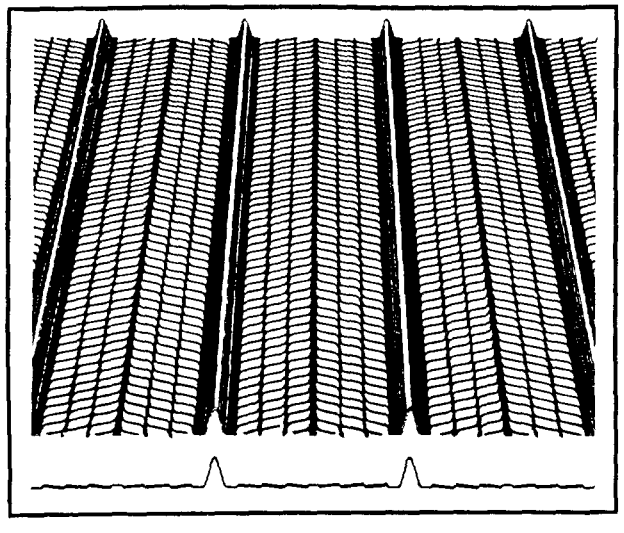
RED TOP 3/8 in. RIB LATH

Description—A very rigid reinforcement for use in floor and ceiling construction with steel joists, also ceilings under steel tile construction and where wide spacing of supports are desired. It provides for nested lap at the outside ribs with no lumps. Its use assures a permanent, economical and absolutely satisfactory result in every way.

Weights—2.5, 3.0, 3.4, 4.0 lbs. per sq. yd.

Materials—(1) Open hearth steel, painted black, in all weights. (2) Copper bearing steel (so tagged), painted black, in all weights. (3) Armco Ingot Iron (so tagged), painted black, in 3.4 and 4.0 weights. (4) Galvanized steel in 3.4 and 4.0 lb. weights.

Sheet Size—24 x 96 in., packed 9 sheets (16 sq. yds.) per bundle.



RED TOP ¾ IN. RIB LATH

RED TOP 3/4 in. RIB LATH

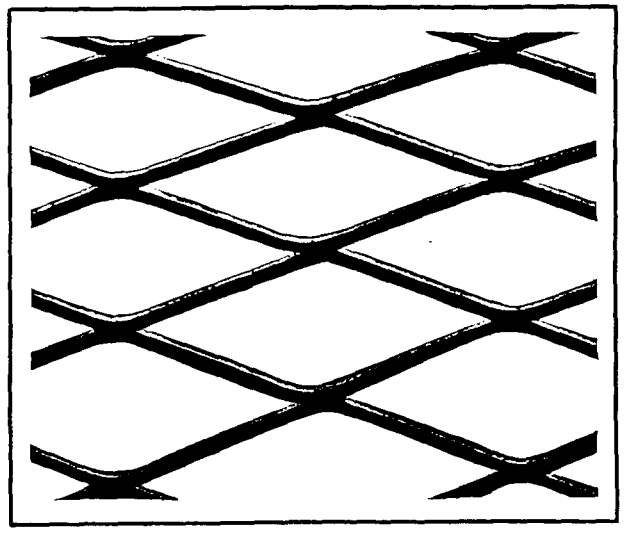
Description—The exceptional stiffness (ribs ¾ in., 4.8 in., o.c.) of this heavy weight, self-furring, expanded metal lath adapts it particularly for centering and reinforcement for concrete roofs and floors, and for plaster partitions and ceilings on extremely wide spacing of supports. Advantageously used on many forms of special work, such as column and beam protection, balconies, concrete tanks and fences, etc.

Weights—.50 (28 ga.), .60 (26 ga.), .75 (24 ga.) lbs. per square foot.

NOTE—*¾-in. Rib Lath is sold by the square foot. All other lath types sold by the square yard.*

Materials—(1) Open hearth steel, painted black. (2) Copper bearing steel (so tagged), painted black (on special order only).

Sheet Size—24 in. wide, 8, 10 and 12 ft. long (other lengths on special order).



RED TOP EXPANDED STUCCOMESH

RED TOP EXPANDED STUCCOMESH

Description—An expanded metal reinforcement for exterior stucco, cold-drawn from the highest grade of copper bearing steel into diamond mesh 1⅜ x 3⅛ in. wide. Its diagonal strands provide a correct distribution of steel to overcome the initial shrinkage, temperature changes and wind stresses, and a positive protection against unusual shocks. Apply with Red Top Economy Stucco Furring Nails.

Weights—1.8, 3.6 lbs. per sq. yd.

Materials—Copper bearing steel (so tagged), painted black. (Plain steel and galvanized steel on order.)

Sheet Size—48 in. wide x 99 in. long. Packed 10 sheets (36⅔ square yards) to the bundle.

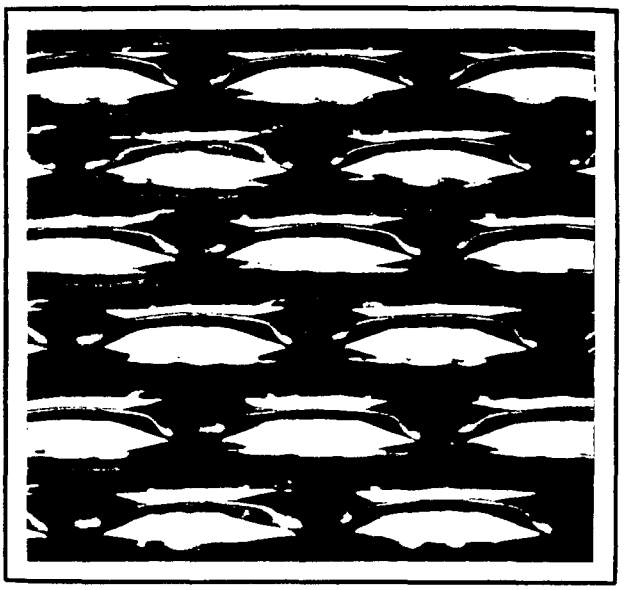
BB024 0849

RED TOP BOSTWICK SHEETLATH

Description—A stiff, heavy weight sheet lath particularly adapted to reinforcement of plaster, cement reinforcement for tile, marble, etc.

Materials and Weights—Open hearth steel, painted black, 4.5 lbs. per sq. yd. Galvanized steel, 5.2 lbs. per sq. yd.

Sheet Size—24 x 96 in., packed 9 sheets (16 sq. yds.) per bundle.



RED TOP BOSTWICK SHEET LATH

STUCCO FURRING NAILS

Description—A special nail for applying and furring Red Top Stuccomesh. Provides a furring device with sliding spacer and rib, which securely holds reinforcing mesh in the center of the stucco slab.

Size—1½ in., ⅜-in. spacer.

Packed—Packed 850 nails per box, 10 boxes (8500 nails) per case. One box is estimated as sufficient for 50 sq. yds.

RED TOP CORNERITE

Description—Diamond Mesh Angle, with special selvage edge.

Weight—125 lbs. per 1000 ft.

Size—3 x 3 x 96 in., packed 504 ft. per bundle. (Other sizes on order.)

RED TOP STRIPLATH

Description—Diamond Mesh Lath Strips with special selvage edge.

Weight—60 lbs. per 1000 ft.

Size—3 x 96 in., packed 504 ft. per bundle. (Other sizes on order.)

BASE SCREEDS and PICTURE MOULD

Description—Standard base screeds to form dividing line and screed between plaster walls and cement or composition base. A concealed picture mould and screed.

Material—Galvanized steel of 26 gauge.

TYPES and WEIGHTS

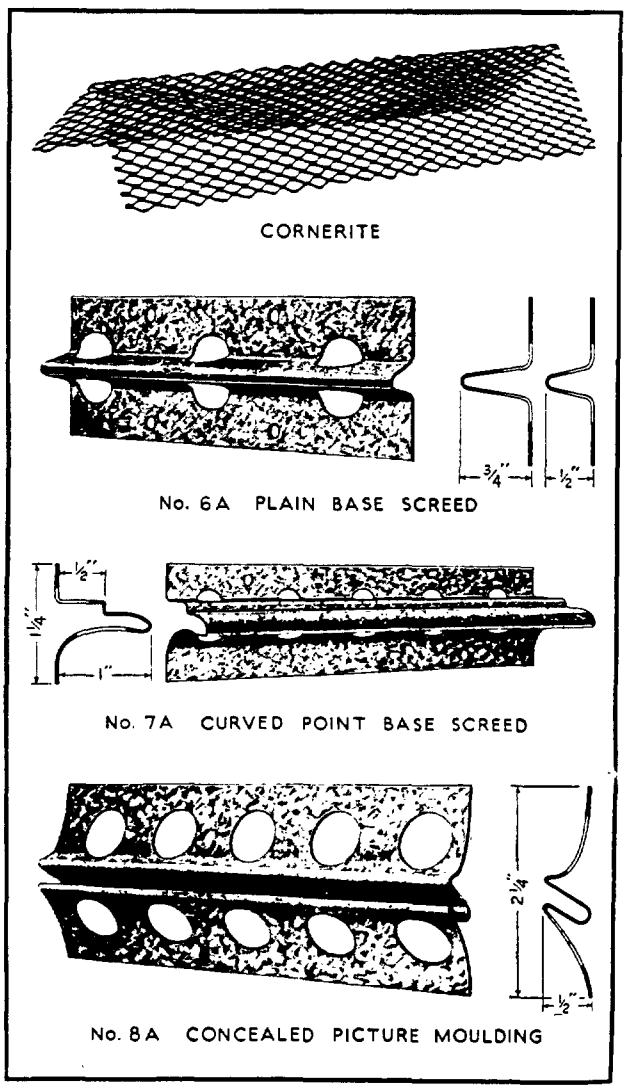
No. 3A—Expansion Flush Screed, ½-in. ground; weight 230 lbs. per 1000 lin. ft.

No. 6A—Plain Screed, ½-in. ground; weight 180 lbs. per 1000 lin. ft. (¾-in. ground on order.)

No. 7A—Curved Point Screed, ½-in. ground; weight 189 lbs. per 1000 lin. ft.

No 8A—Picture Mould; weight 230 lbs. per 1000 lin. ft.

Packed—Packed 10 pieces per bundle.



CORNERITE

No. 6A PLAIN BASE SCREED

No. 7A CURVED POINT BASE SCREED

No. 8A CONCEALED PICTURE MOULDING

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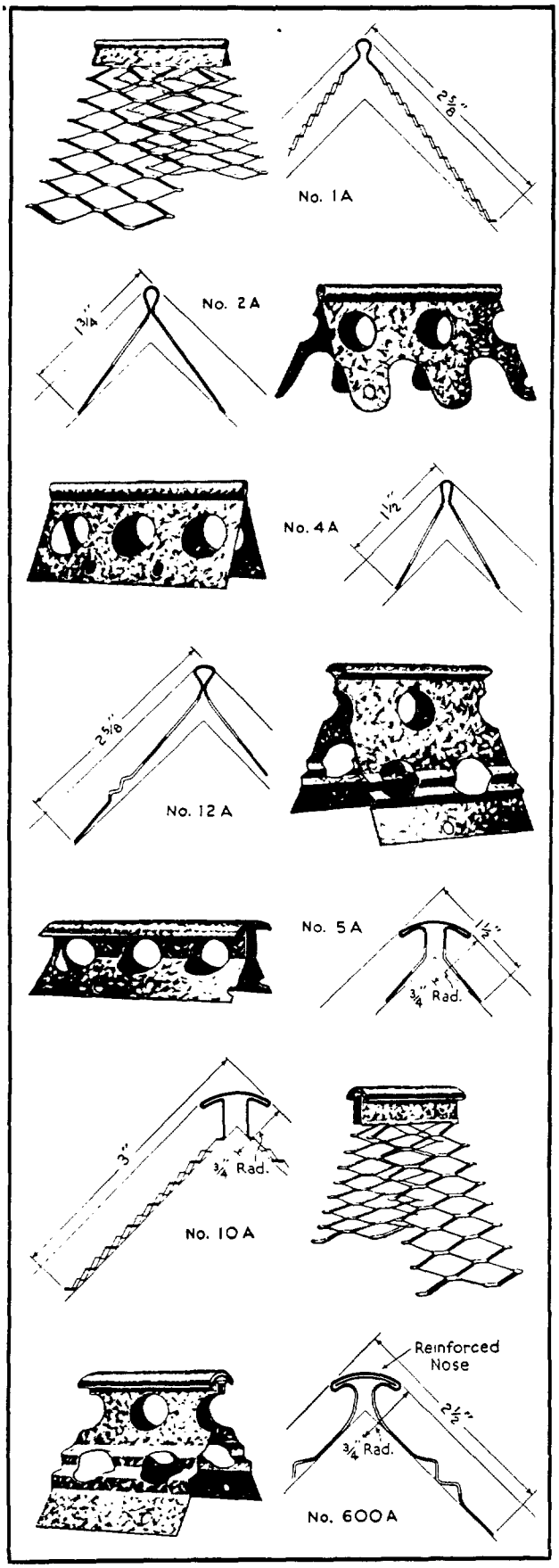


RED TOP CORNER BEADS

Description—A complete line of standard, high grade corner beads adapted to every construction need.

Material—Galvanized steel 26 gauge. 24-gauge material also furnished on special order.

SMALL NOSE CORNER BEADS TYPES and WEIGHTS

No. 1A—2½-in. Expansion Flange Type—230 lbs. per 1000 lin. ft.

No. 2A—1½-in. Short Scalloped Flange Type—220 lbs. per 1000 lin. ft.

No. 4A—1¼-in. Flange Standard Type—200 lbs. per 1000 lin. ft.

No. 12A—2½-in. Wide Flange Type—370 lbs. per 1000 lin. ft.

No. 16A—2½-in. Wide Scalloped Flange Type—370 lbs. per 1000 lin. ft.

BULL NOSE CORNER BEADS TYPES and WEIGHTS

No. 5A—1⅝-in. Short Flange ¾ in. Radius Bull Nose —290 lbs. per 1000 lin. ft.

No. 10A—2½-in. Expansion Flange ¾ in. Radius Bull Nose—375 lbs. per 1000 lin. ft.

No. 80A—2½-in. Expansion Flange 1½ in. Radius Bull Nose—550 lbs. per 1000 lin. ft.

No. 90A—2½-in. Expansion Flange 2 in. Radius Bull Nose—900 lbs. per 1000 lin. ft.

No. 600A—2½ in. Solid Flange ¾ in. Radius Bull Nose—reinforced nose—574 lbs. per 1000 lin. ft.

No. 603A—2½ in. Solid Flange 1½ in. Radius Bull Nose—reinforced nose—888 lbs. per 1000 lin. ft.

No. 14A—2½ in. Solid Flange ¾ in. Radius Bull Nose —non-reinforced nose—404 lbs. per 1000 lin. ft.

Packed—Crated approximately 500 lineal feet per crate, or packed 10 pieces per bundle. Expansion Beads crated only.

NO. 9A HUMP CLIPS

A 3-inch clip attachment for short flange beads to facilitate erection. Made from blued steel. Used generally with No. 5A Bull Nose Bead. Packed in boxes of 1000 each weighing 25 pounds.

RED TOP METAL ARCHES

Description—A ready-formed plastering arch for doorways, etc. Eliminates two difficult operations—the construction of curved wooden forms and the forming of corner beads around these curves. They are made for standard 2 x 4-in. partitions. The various units have many obvious combination possibilities.

Manufactured under License of Merryweather Patent No. 1782147 granted Nov. 18, 1930.

TYPES and SIZES

No. 11—10-in. radius (true half circle) for 20-in. opening (21½-in. stud space).

No. 22—15¾-in. radius (true half circle) for 30-in. opening (33-in. stud space).

No. 33—Gothic design for 2 ft. 6 in. opening (33-in. stud space).

No. 44—Gothic design for 4 ft. 0 in. opening (51-in. stud space). (Can be easily cut down to fit a 42-in. doorway.)

No. 55—Elliptic design for 5 ft. 0 in. opening (63-in. stud space).

No. 66—Elliptic design for 6 ft. 0 in. opening (72-in. stud space).

Material—"Galvannealed" sheet steel.

Packed—In individual one-set cartons.

INNERWALL* FURRING BRACKETS

Description—A patented bracket for furring outside masonry walls for rapid metal lath erection. They provide an innerwall clear air space. These brackets are installed in the mortar joint as the work is laid up, approximately 6 in. on centers vertically and 12 in. on centers horizontally.

SIZES and APPROXIMATE SHIPPING WEIGHTS

No. 1—1¼-in. furring space, 3-in. anchorage flange, 144 lbs. per 1000 brackets.

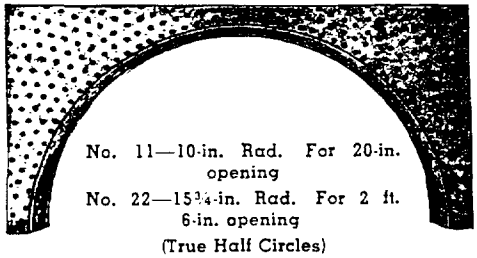
No. 2—2¼-in. furring space, 3-in. anchorage flange, 175 lbs. per 1000 brackets.

No. 3—3¼-in. furring space, 3-in. anchorage flange, 203 lbs. per 1000 brackets.

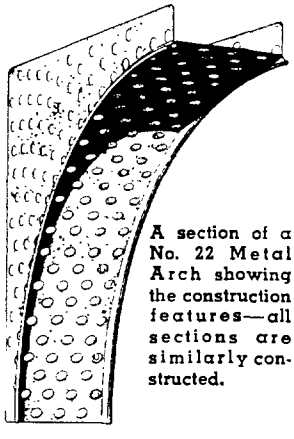
No. 4—4¼-in. furring space, 4-in. anchorage flange, 255 lbs. per 1000 brackets.

Material—16 gauge copper bearing steel, painted black.

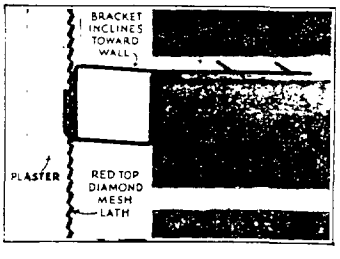
Packed—100 brackets to the carton.



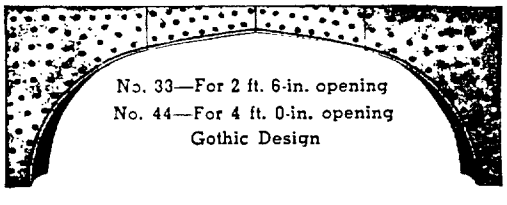
No. 11—10-in. Rad. For 20-in. opening
No. 22—15¾-in. Rad. For 2 ft. 6-in. opening
(True Half Circles)



A section of a No. 22 Metal Arch showing the construction features—all sections are similarly constructed.



RED TOP INNERWALL FURRING BRACKETS



No. 33—For 2 ft. 6-in. opening
No. 44—For 4 ft. 0-in. opening
Gothic Design





No. 55—For 5-ft. opening
No. 66—For 6-ft. opening
Elliptic Design

RED TOP METAL PLASTER ARCHES

*Trade-Mark

RED TOP COLD ROLLED CHANNELS

Description—A complete line of cold rolled channels for furring, suspended ceiling and partition construction. The legs and webs are true and have square corners. They can be readily spliced and formed.

Material—Open hearth steel.

Stock Lengths—14, 16, 18, 20 feet.

SIZES and WEIGHTS

NOTE—*Sold only in full, unbroken bundles.*

¾ in.—276 lbs. per 1000 lin. ft.; packed 20 pieces to bundle.

1 in.—332 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

1½ in.—442 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

2 in.—553 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

Pencil Channels—7/16 x 7/16 in., 113 lbs. per 1000 lin. ft., packed 20 pieces to bundle. (12 and 14-ft. lengths only.)

Box Channels—9/16 x 11/16 in., 276 lbs. per 1000 lin. ft., packed 20 pieces to bundle. (16 and 20-ft. lengths only.)

RED TOP LATHING SUNDRIES

General—The following sundries supplement the Red Top Line of Lathing and Plastering Accessories. In addition, practically any other sundry item necessary for lathing can be furnished.

HOT ROLLED SHAPES and ROUND RODS

Flats—1 x ⅛ in., 1 x 3/16 in.

Angles—1½ x 1½ x ⅛ in., 1½ x 1½ x 3/16 in.

Channels—¾ in., 1 in., 1½ in., 2 in.

Round Rods—3/16 in., ¼ in., and 7/32 in. in diameter.

CLIPS, TIE WIRE, NAILS and STAPLES

No. 1 Lath Clips—Lath Clips for attaching diamond mesh or flat lath to ¾-in. channels.

No. 2 Lath Clips—Lath Clips for attaching ⅜-in. Rib Lath to ¾-in. channels.

No. 3 Lath Clips—Lath Clips for attaching ⅜-in. Rib Lath to steel joists.

No. 1½A Channel Clips—Channel Clips for attaching ¾-in. channels to 1½-in. channels.

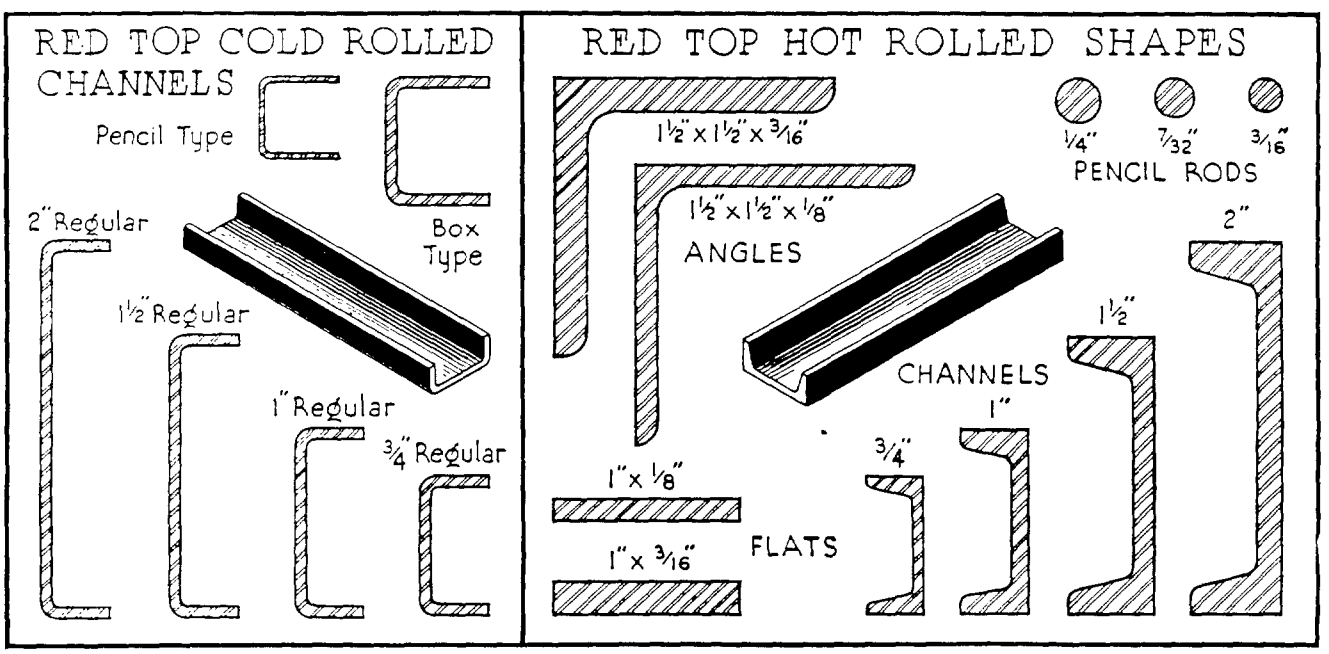
No. 1½B Channel Clips—Channel Clips for attaching 1-in. channels to 1½-in. channels.

No. 2A Channel Clips—Channel Clips for attaching ¾-in. channels to 2-in. channels

No. 2B Channel Clips—Channel Clips for attaching 1-in. channels to 2-in. channels.

Tie Wire—18, 16, 14, 10, 9, and 8 gauge, galvanized annealed.

Nails and Staples—4d Blued Nails; ¾-in. Concrete Stub Nails; 1 and 1¼-in. Blued Staples.



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Plastering Systems

RESILIENT PLASTERING SYSTEMS

Economical Bases for Plaster
More Sound-Proof and Crack-Proof
Eliminate Lath Streaks

GENERAL DESCRIPTION

The USG Resilient Plastering Systems are an adaptation of the highly successful USG Sound Control System of resiliently connected walls, ceilings, and floors. This adaptation permits Rocklath (gypsum lath units) or metal lath and plaster to be connected to wood or steel framing or furring members of walls, partitions, and ceilings by means of spring clips which form a floating unit. There are two distinct types of the USG Resilient Plastering System—namely, that using Rocklath for a plaster base and that using Red Top Metal Lath as a plaster base as described on page 19 and detailed on pages 20 and 22.

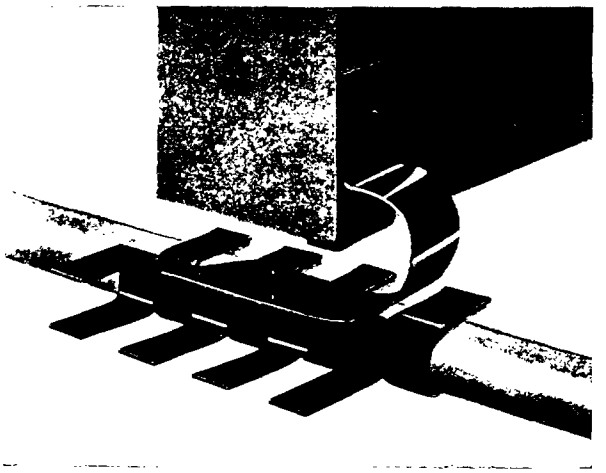
ADVANTAGES

REDUCES PLASTER CRACKS — Ordinary settlement and movement in the structural framing is not transmitted to the plastered walls and ceilings because of the free floating construction.

STOPS SOUND—Sound that strikes the plaster finish and sets it in vibration is largely dissipated by the springs supporting the lath. Instead of the construction vibrating as a unit and thus setting up sound waves on the opposite side of the partition or ceiling, the lath and plaster finish vibrates as a unit suspended on springs more or less separate from its supports.

A partition built according to this specification provides a sound reduction of approximately 46 decibels. (This is equal to or better than two 3-in. tile partitions with a 1-in. air space between—a construction often used for its soundproofing efficiency.)

This system is probably even more useful on ceilings than walls. Its feature of resilient action is very effective against ceiling cracks. It also eliminates lath marks and provides efficient sound insulation between stories.



ELIMINATES STREAKING—The floating construction prevents the formation of lath and joist marks that otherwise develop due to differences in heat passage.

FIREPROOF—All materials used in this construction are fireproof. See pages 1 and 11 for fireproof qualities of gypsum and Rocklath. Metal lath is likewise a recognized fireproof plaster base.

EASILY ERECTED—The system is erected by the lather. The clip is nailed to the wood framing with one Rocklath nail and the Rocklath is set in the clip. In metal lath construction, the lath is wired to pencil rods tied to the clip.

LOW IN COST—The cost of the materials is the same as standard Rocklath and Metal Lath plaster bases plus the addition of the clips, partly offset in the case of the Rocklath wood frame construction by the saving in cost of nails, since only about one-fourth as many nails are required as for the standard Rocklath application.

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TWO TYPES of RESILIENT PLASTERING SYSTEM

USG ROCKLATH RESILIENT PLASTERING SYSTEM

WOOD FRAMING—The spring clips attached 16 in. on center to each framing member (about six per sq. yd.) hold the back of the lath ¼ in. away from the face of the framing member. The prongs engage the long side of the Rocklath. The construction is 1⅛ in. thick from the framing member face to the face of the plaster (¼-in. back of the lath, ⅜-in. lath, ½-in. plaster.)

STEEL STUD PARTITIONS—To the floor and ceiling construction are attached, 16 in. o.c., steel stud seats. In the seats are attached USG No. 600 1¾-in. Cold Rolled Channels with crimped flanges. To the stud flanges, resilient clips are attached on both sides supporting gypsum lath in the manner above described. The partition is 4¼-in. thick from face of plaster to face of plaster. This construction is 1¼ in. thick from the face of channel to the face of the plaster.

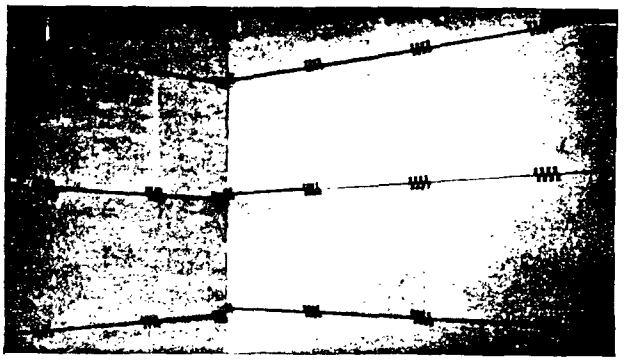
SUSPENDED FIREPROOF CEILINGS—1½-in. runner channels, 4 ft. apart on centers are suspended in the usual manner from the floor construction. Cross furring of ¾-in. channels, 16 in. o.c., are attached in the usual manner to the runner channels. To the furring channels are attached the resilient clips supporting gypsum lath in the manner above described. In the case of bar joists the runner channels are omitted and the ¾-in. furring channels are clipped directly to the bottom flange of the joist.

The face of plaster in this construction is 1⅜ in. away from the lower face of a ¾-in. channel—1⅛ in. away if a 1-in. channel is used.

NUMBER OF CLIPS REQUIRED—For rough estimating purposes, allow 5½ to 6 clips per square yard of wall and ceiling area.



USG Resilient Plastering System on ceiling and side walls. These walls which are furred over brick use No. 4 clip, ceilings a No. 1 clip.



No special clip used in vertical corner angles. Same clip used here as in rest of wall area. All lathing over wood framework done with three clips or less.

USG METAL LATH RESILIENT PLASTERING SYSTEM

WOOD FRAMING—The spring clips are attached 16 in. o.c. to studs and 12 in. o.c. to joists. The metal lath is wired to pencil rods tied directly to the back face of each clip which sets the back of the lath ⅜ in. away from the face of the framing member. The construction therefore is 1⅛ in. thick from the framing member face to the face of the plaster (⅜ in. space back of lath, ¾ in. lath and plaster thickness).

STEEL STUD PARTITIONS—To the floor and ceiling construction are attached 16 in. o.c. steel stud seats. In the seats are attached specially designed 1¾ in. cold rolled steel channel studs. To the stud double resilient clips are attached 16 in. o.c. and directly to the back faces of these clips pencil rods are tied to which the metal lath is wired. The partition is 4 in. thick from face of plaster to face of plaster.

FIREPROOF MASONRY WALL FURRING—Resilient clips are attached 24 in. o.c. vertically to support ¾ in. furring channels wired vertically 12 in. o.c. to the wall side of the clip face (18 in. o.c. for 16 in. spacing of channels). The metal lath is attached in the usual manner to the vertical furring channels. The construction is 1¾ in. thick from face of wall to face of plaster.

SUSPENDED FIREPROOF CEILINGS—1½ in. runner channels, 4 ft. apart on centers, are suspended in the usual manner from the floor construction. Resilient clips are attached 12 or 16 in. o.c. to the runner channels which in turn support ¾ in. channels. The metal lath is attached in the usual manner to the ¾ in. channels.

In concrete joist or pan construction wire hangers are cast into the joists 12 or 16 in. o.c. to which are attached resilient clips carrying ¾ in. channels similar to the construction described above for fireproofing masonry wall furring.

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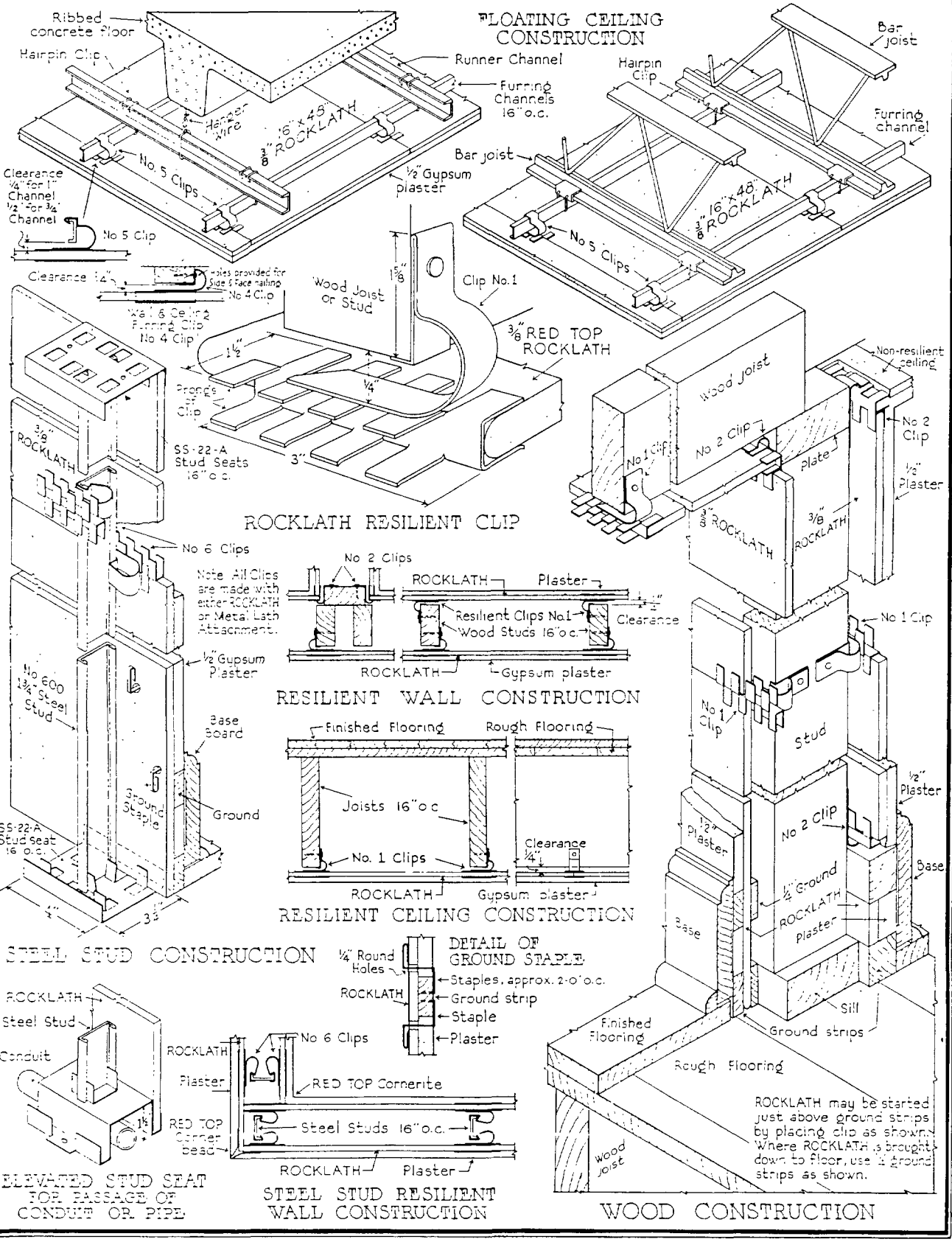
U S G RESILIENT SYSTEM – ROCKLATH DETAILS



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USG ROCKLATH RESILIENT PLASTERING SYSTEM

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words within brackets in bold face type are selective.*

(1) CORRELATIVE PROVISIONS

NOTE—*The following provisions should be included as they apply under the proper headings of the specifications to be executed by others.*

(1a) CARPENTRY WORK—

(1a1) Furring—All masonry surfaces shall be furred.

(1a2) Framing—All studding, joists, and furring shall be set plumb, level, and true, spaced accurately 16 in. on centers.

(1a3) Grounds—(distance from face of framing member to face of finished plaster)—

1⅛ in. for wood framing and steel furring.

1¼ in. for steel stud partitions.

1⅜ in. for suspended or bar joist ceilings using ¾ in. furring channels (1⅛ in. for 1 in. furring channels).

(1a4) Bucks—Furnish wood bucks of sizes detailed at all door openings rigidly attached to steel buck supports.

(1b) ELECTRICAL CONSTRUCTION—All outlet boxes, etc., shall be accurately set with their faces flush with the finished plaster as established in paragraph (1a3) above.

(2) WORK INCLUDED

NOTE—*Here list and locate all walls, partitions, and ceilings to be constructed with USG Rocklath Resilient Plastering System.*

(3) MATERIALS

(3a) GENERAL—All materials shall be made by the United States Gypsum Company, 300 West Adams Street, Chicago.

(3b) METAL FURRING—Red Top cold rolled channels, 1½ in. for runner channels and ¾ in. for cross and wall furring.

(3c) ROCKLATH METAL PARTITION STUDS—USG No. 600 1¾ in. Cold Rolled Channels furnished with USG Rocklath Resilient Plastering System Stud Seats No. SS-22A.

(3d) GYPSUM LATH—Rocklath, ⅜ in. thick, 16 in. wide, 32 or 48 in. long.

(3e) RESILIENT CLIPS—Clips for attachment of lath to framing shall be USG Rocklath Resilient Clips. These shall be of such design as to adapt them for use in the field of the lath, angles, for starting and finishing at floors and ceilings, and surrounding windows and other openings.

(3f) CORNERITE—3 x 3-in. Cornerite for all internal angles where gypsum lath is used.

(3g) CORNER BEADS—[Specify No. and Type] Red Top Galvanized Expanded Metal Corner Beads.

(4) APPLICATION

(4a) STANDARD WOOD FRAMING—Starting at the floor, ground strips shall be applied which also serve as a backing for wood trim. A No. 2 clip shall be nailed to the stud with clearance above the ground strip and the Rocklath inserted in the clip. Framing members are spaced 16 in. on center and a clip applied at each framing member. Next place No. 1 clips over the upper edge of the first course of lath units and attach the clips to the studs as above. Continue with successive courses of lath in similar manner, breaking end joints of lath units in alternate courses. A No. 2 Clip shall be used at the angle where the wall meets the ceiling.

(4b) STEEL STUD PARTITIONS—METAL FURRING—

(4b1) Attach metal stud seats to floors and ceilings spaced accurately 16 in. on centers and in line vertically. Set channel studs in seat clips plumb and true.

(4b2) Where so indicated on plans **[or listed in schedules]** exterior walls shall be furred with ¾-in. channels spaced 16 in. o. c. with flange to wall. Secure furring channels to floors and ceilings in a substantial manner. Substantially secure channels to walls, every 3 ft. approximately with special hook nails driven into the mortar joints. Provide rigid framing at all openings.

(4b3) Starting at the floor hook No. 6B clips on each channel with the lower prongs of clips resting directly on the floor. In the upper prongs of these clips set the bottom of the first row of gypsum lath units. Place the next row of No. 6B clips over the upper edge of the first course of lath units, each attached to a metal stud. As located, attach ½ in. thick grounds with ground staples to the face of the lath. Continue with successive courses of lath units, breaking end joints in alternate courses securing each with No. 6B clips set over the upper edges each attached to the metal stud. Secure top of the last course of units at the ceiling in the stud seat clips.

(4c) STEEL FURRED OR SUSPENDED CEILINGS—

NOTE—*Construction of furred or suspended ceilings shall be as specified in (B2), page 28.*

Starting at one side of the ceiling hook a row of No. 5 clips on the flanges of the ¾-in. runner channels. Slip the edge of the first lath course into the clips thus provided. Hook the next row of No. 5 clips over the channel runners spaced 16 in. o. c. and then slip the clip over the outer edges of the lath. Continue successive courses of lath in similar manner, breaking end joints in alternate courses.

(4d) CORNERITE—Secure Cornerite over the face of the Rocklath in all internal angles of walls and ceilings with staples placed along the outer edge 12 in. apart in centers staggered.

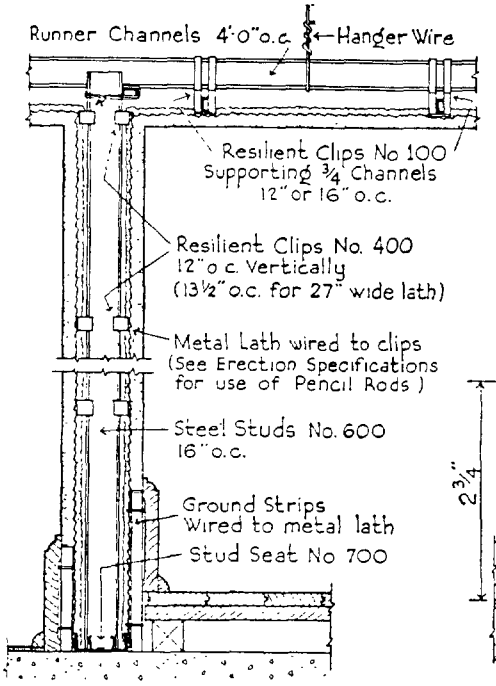
(4e) CORNER BEADS—All external corners shall be reinforced for their full height or length with Corner Beads.

(5) PLASTERING

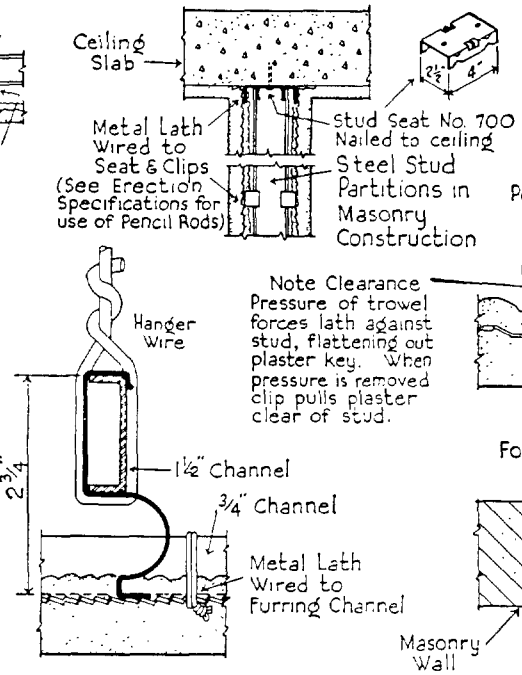
Do not wet lath. Apply plaster in three (3) coats (scratch, brown, and finish) to a full ½ in. thickness. Scratch coat shall be well scratched in to fill all interstices between lath units. Allow scratch coat to set before brown coat is applied. (Do not "double back" with brown coat.)

NOTE—*Otherwise plastering shall be applied as specified in Master Specification, pages 26 to 34 inclusive.*

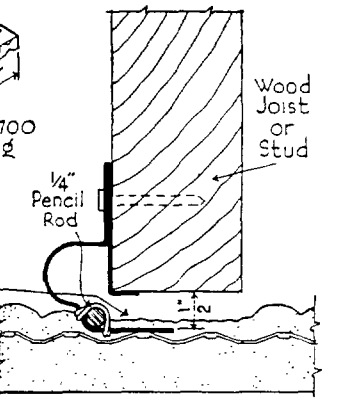
USG RESILIENT SYSTEM — METAL LATH DETAILS



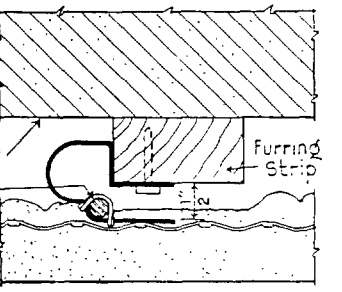
STEEL STUD PARTITION & SUSPENDED CEILING CONST



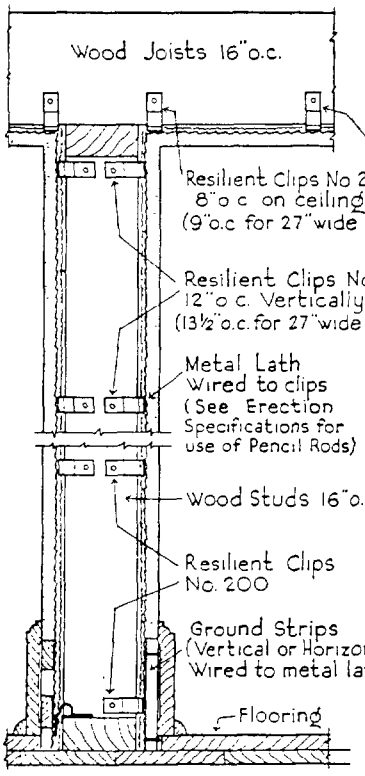
CLIP No 100
For Suspended Ceilings



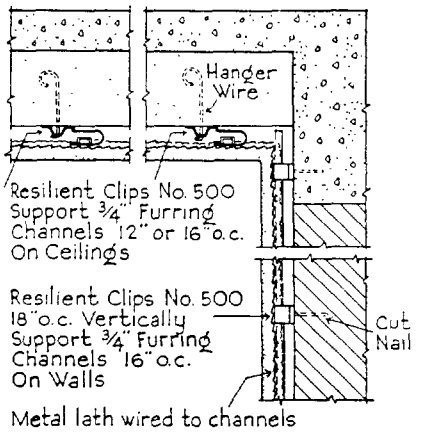
CLIP No. 200
For Wood Construction



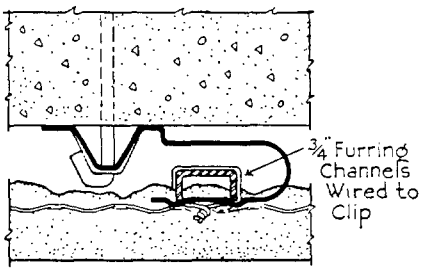
CLIP No. 300
For Wood Furring on Masonry Construction



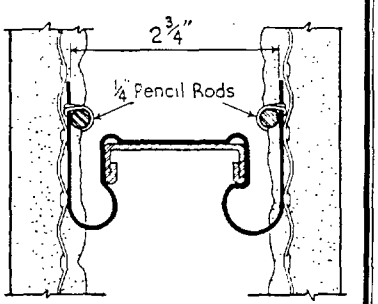
WOOD CONSTRUCTION



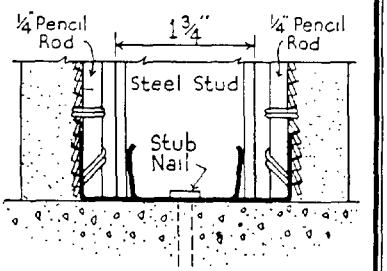
MASONRY CONSTRUCTION



CLIP No. 500
For Masonry Walls and Ceilings



CLIP No. 400
STEEL STUD No 600
For Steel Stud Partitions.



STUD SEAT No. 700
For Steel Stud Partitions

BB024 0858

USG METAL LATH RESILIENT PLASTERING SYSTEM

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words within brackets in bold face type are selective.*

(1) CORRELATIVE PROVISIONS

NOTE—*Correlative Provisions given in paragraph 1, page 21, applying to Rocklath Resilient Systems, apply also to these specifications.*

(2) WORK INCLUDED

NOTE—*Here list and locate all walls, partitions, and ceilings to be constructed with USG Resilient Plaster.*

(3) MATERIALS

(3a) GENERAL—All materials shall be made by the United States Gypsum Company, 300 West Adams Street, Chicago.

(3b) METAL FURRING—Red Top **[cold] [hot]** rolled channels, 1½ in. for runner channels and **[¾ in.] [1 in.]** for cross and wall furring.

(3c) METAL PARTITION STUDS—Specially designed No. 600 1¾ in. cold rolled steel channel studs with USG Resilient Plastering System stud seats.

(3d) PENCIL RODS—Pencil Rods shall be ¼ in. in diameter.

NOTE—*Pencil Rods are recommended. See detail page 22.*

(3e) METAL LATH—[Specify brand, material and finish] lath; **(?)** lbs. for horizontal positions and **(?)** lbs. for vertical position.

NOTE—*See (Cld), page 29. Red Top Junior Diamond mesh Lath is recommended—2.5 lb. per sq. yd. for walls and 3.0 lb. per sq. yd. for ceilings of wood construction and 12 in. spacing of furring channels. For 16-in. ceiling furring channel spacing, use 3.4 lb. weight. If Red Top ⅛-in. Z-Rib Lath (Flat Rib) or ⅜-in. Rib Lath are selected, a weight of 3.0 lbs. per sq. yd. will be adequate for both walls and ceilings.*

(3f) WIRE—Wire shall be No. 18 ga. Galvanized Annealed Tie wire.

(3g) RESILIENT CLIPS—Clips for attachment of lath to framing shall be USG Resilient Steel Clips. These shall be of such design as to adapt them for use in the field of the lath, angles, for starting and finishing at floors and ceilings, and surrounding windows and other openings.

(3h) CORNER BEADS—[Specify No. and Type] Red Top Galvanized Expanded Metal Corner Beads.

(4) APPLICATION

(4a) STANDARD WOOD FRAMING—[Wood studs] [wall furring] [and] [joists] shall be spaced 16 in. O.C.

(4a1) Starting at the juncture of the wall and ceiling, attach No. 200 clips with 4d common nails through clip nail holes, spacing clips **[16 in. O.C.] [12 in. O.C.] [along studs] [wall furring] [and] [12 in. O.C.] [8 in. O.C.] [along joists].**

NOTE—*For spacings, see Note B under (4a2).*

(4a2) Pencil Rods shall be wired to the back face of the clips, inside the wiring tongue, fitted into the radius at the shoulder.

NOTE A—*Pencil Rods may, optionally, be run at right angles to the direction of the framing members, wired to the out side face of the clip tongue.*

NOTE B—*Pencil Rods may be eliminated by spacing clips 12 in. O. C. along studs (13½ in. for 27 in. wide lath) and 8 in. O. C. along joists (9 in. for 27 in. wide lath) and attach lath directly to the clips.*

(4a3) Metal lath shall be wired to **[pencil rods at 6 or 8 in. intervals] [directly to clip faces].** Lath at junction shall be bent over 6 in. from ceiling on to wall.

(4b) STEEL STUD PARTITIONS—No. 600 Channel Studs shall first be set in No. 700 Stud Seats at top and bottom and then set in position spaced 16 in O.C. Stud Seats shall then be securely nailed to floor and ceiling.

(4b1) Starting at the juncture of the wall and ceiling, attach No. 400 clips to Channel Studs, spaced **[16 in. O. C.] [12 in. O.C.]** by springing the clips (deep throat side first) over the channel flanges.

(4b2) Pencil Rods shall be wired to the back face of the clips, inside the wiring tongue.

NOTE—*See Note B under (4a2) above.*

(4b3) Metal lath shall be wired to **[pencil rods at 6 or 8 in. intervals] [directly to clip faces].**

(4c) MASONRY WALLS, CONCRETE JOISTS, ETC.—No. 500 clips shall be securely attached to **[brick and clay tile walls with 10d cut nails] [Pyrobar walls with 2 in. staples] [concrete slabs or joists by No. 9 ga. wire or a 10d hook nail which has been placed in position before concrete is poured and extending 1¼ in. below the surface].**

(4c1) Spacing of clips along **[walls] [flat concrete slabs]** shall be **[24 in. O.C. for 12 in.] [18 in. O.C. for 16 in.] [15 in. O.C. for 19 in.]** furring channel spacing.

(4c2) Spacing of clips on concrete joists spaced 24 to 26½ in. O.C. shall be 12 in. O.C. along joists.

(4c3) Furring channels, set flat (not on edge) with flanges in contact with the lath, shall be attached to the **[inside] [outside]** face of the clip tongue with a double strand of wire.

(4c4) Metal lath shall be wired to furring channels at 8 in. intervals.

(4d) SUSPENDED CEILINGS—Hanger rods (¼, ⅜, or ½ in. in diameter) set in concrete forms and cast into concrete shall be spaced 4 ft. O.C. in each direction extending **[give depth of suspended ceiling]** plus 12 in. for tying. 1½-in. runner channels shall be attached to hanger rods.

(4d1) Running at right angles to runner channels, furring channels spaced **[12 in.] [16 in.]** O.C. shall be attached by slipping No. 100 clips over the furring channels and hooking the upper portions of the clips over the runner channels.

(4d2) Metal lath shall be wired to furring channels at 8 in. intervals.

(4e) CORNER BEADS—All external corners shall be reinforced for their full height or length with Corner Beads.

(4f) PLASTERING—

NOTE—*Follow standard specification for plastering over metal lath as given in Master Specification, pages 30 to 33 inclusive. Plaster shall be full ¾ in. from back face of lath to face of plaster.*

United States USG Gypsum Company

USG STANDARD X* PLASTERING SYSTEM

A Controlled System of Installation

Fireproof • Highly Crack Resisting • Moderate in Cost

•

GENERAL DESCRIPTION

INTRODUCTION—Through its over thirty-five years' experience in the manufacture and sale of lathing and plastering materials, the United States Gypsum Company has had forcibly impressed upon it the fact that unsatisfactory plaster work is usually the result of thinness ("skimming") of plaster coats, oversanding of plaster, or both. Exhaustive investigation has disclosed that these difficulties are eliminated with the Standard X Plastering System.

The Standard X Plastering System adequately provides at moderate cost all the factors for a satisfactory plastering job—a fireproof, verminproof, non-deteriorating lath with a strong plaster bond and a controlled system of installation. See Rocklath advantages, page 11.

PASSES THE ONE-HOUR FIRE TEST — This system has successfully withstood the Standard One-hour Fire Test in accordance with specifications of the American Society for Testing Materials.

DEFLECTION TESTS— Tests showing the strength or resistance to cracking of Standard X Plastering System as compared with standard metal lath and gypsum plaster laid to ¾-in. grounds, show conclusively the superiority of the Standard X System.

ELEMENTS — The Standard X Plastering System is formed of Rocklath Red Top Striplath, Red Top Cement Plaster sanded two to one and United States Gypsum Company finish.

ROCKLATH—Rocklath is a gypsum lath used as an incombustible, fire-retarding plaster base, especially for frame buildings. Rocklath is fireproof, rigid, and non-warping. For complete sizes and specifications see Pages 29 to 31 of this Section.



Red Top Striplath—Red Top Striplath consisting of strips of expanded galvanized metal 3 in. wide, and made with a patented selvage edge is applied over all joints and corner angles after Standard X Lath has been erected.

Standard X Base Coat—For the base coat of The Standard X Plastering System, Red Top Cement Plaster is used, sanded in accordance with standard specifications for application over Gypsum Lath. Red Top Prepared Plaster may also be used.

INSTALLATION—To assure maximum good workmanship where the Standard X Plastering System is installed, installation is by licensed plastering contractors only. In each locality the United States Gypsum Company issues licenses for the erection of the Standard X Plastering System to reliable contractors, who bind themselves to install the Standard X System according to complete specifications.

STANDARD X SUSPENDED CEILINGS— Standard X Suspended Ceiling System provides a strong, rigid and economical ceiling construction for any type of building requiring a suspended or attached ceiling.

Standard X Suspended Ceilings are hung in the manner regularly employed for supporting suspended ceilings, following standard lathing practice.

The complete construction is formed of hangers and main channels and where necessary ¾ in. runner channels; Standard X Clips, Thumb Tacks, and Base Coats, Red Top Striplath and USG Finish Coat.

SPECIFICATIONS — Furnished on request.

*Registered Trade-Mark

BB024 0860

Steel·H·Studs*

A MODERN, FIREPROOF SYSTEM OF PARTITION CONSTRUCTION

EASY TO ERECT—Because of practical design, light weight, and the adjustable feature, Steel-H-Hollow Stud Partitions are easily and quickly erected. One workman can erect the system. The studs are placed in runner tracks which are attached to floor and ceiling. They are secured at proper spacing with wire, looped in holes provided on the flanges. Metal lath attachment is standard practice.

ADJUSTABLE—Steel-H-Studs are adjustable to variance in ceiling heights. The sliding extension permits an upward extension of two inches or a reduction from the stock length of six inches. A ten-foot stud, therefore, is adjustable from nine feet, six inches to ten feet, two inches. This adjustable feature which becomes an integral part of a Steel-H-Stud is a time and labor saver.

RIGID—The unique "H" design provides a bracing effect which adds rigidity and strength that enables the partition to resist impacts, vibration, etc. When properly erected and plastered, a Steel-H-Partition should have strength equal to a tile or precast block partition of equal thickness.

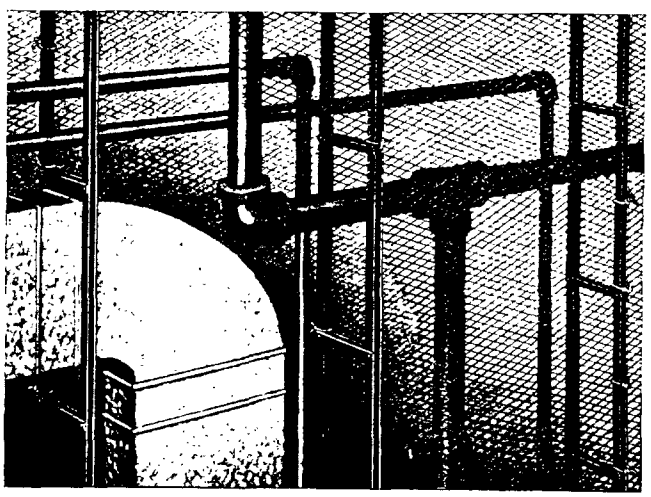
EASY TO PLASTER—Because Steel-H-Studs provide a rigid support for the metal lath plaster base, the procedure of plastering in no way differs from a regular metal lath job. The type of lath to be used depends upon the stud spacing. The legs or open side of the stud face the lath.

CONCEALS VENTILATING DUCTS, PIPES, ETC.—The fact that Steel-H-Studs provide a hollow partition, ventilating ducts, pipes, conduits, etc. can be concealed by running them through the studs in the ample space provided between the cross supports and the uprights. Since the cross-bracings are twelve inches on center, ventilating ducts can be run horizontally, as well as vertically, through the partition. Two-inch pipes can be run through a 3¼-inch Steel-H-Stud.

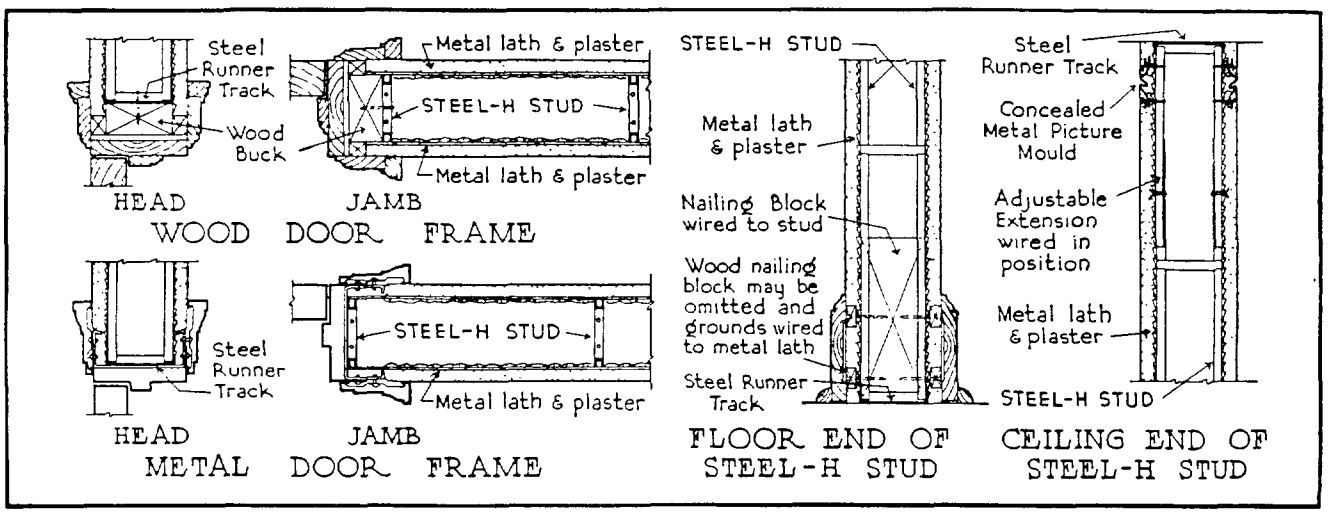
STOCK SIZES—Lengths—7, 8, 9, 10, and 12 feet. These are the stock or "fixed" lengths. The adjustable feature on each of these lengths permit adjustment from six inches under to two inches over the stock length purchased.

Widths—2, 3, 3¼, 4, and 6 inches. Five popular sizes to meet average requirements. Packed in bundles of convenient size to fit order requirements.

RUNNER TRACKS—Made in eight-foot, two-inch lengths. Packed in bundles of convenient size to fit order requirements.



A six-inch Steel-H-Stud Partition allows ample room for concealing 4 in. by 10 in. duct work, both vertical and horizontal runs. In addition, there is unrestricted space for piping.



*Trade-Mark

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Master Specifications

INTERIOR LATHING and PLASTERING

PREFACE

SPECIFICATION FORM—The form of this specification is that of a "Master" which includes all clauses which in ordinary practice apply to average work. All clauses, obviously, do not apply to every building. In formulating the "Interior Lathing and Plastering Specifications" for a particular building, only those clauses which apply should be selected for inclusion. Special provisions or methods but seldom required are not included—such clauses should be added wherever necessary to clearly define the procedure and especially to obviate controversy involving responsibility and cost.

LOCAL ORDINANCES—Correlate these specifications with the requirements of Local Ordinances and Trade Customs relating to this division of the work.

ALTERATIONS and ADDITIONS — These specifications cover new work only. For additions and alterations add such clauses covering repairs and replacements and the joining of old and new work as may be required.

ADVISORY SERVICE — The technical staff of the United States Gypsum Company is at all times accessible for advice and recommendations in the formulating of the specification for Interior Lathing and Plastering. Special data, the result of much extended research work, relating to the selection and application of Interior Plastering and "Explanations of Job Conditions which Affect Plastering" will be furnished on request.

NOTES—Notes in italics are explanatory or advisory only and should not be included in the specification.

SELECTIVE WORDS or PHRASES—Wherever words or phrases occur in the body of the specification paragraph printed in bold face type and enclosed in brackets, choose that word or phrase which applies to the particular work, omitting those that are irrelevant. Wherever the word "specify" occurs enclosed in brackets, thus **[specify]**, add the particular word or clause applicable, optional with the specification writer.

(A) GENERAL PROVISIONS

NOTE—*For complete plastering systems see USG Resilient Plastering Systems and Standard X Plastering System, pages 18 to 24 inclusive.*

NOTE—*For Sabinite Acoustical Plaster, see the* United States Gypsum Company's *complete section covering "Sound Control Service."*

NOTE—*For "Master Specifications" for "Red Top Insulating Lath" see the* United States Gypsum Company's *complete section covering "Thermal Insulation."*

(A1) GENERAL CONDITIONS

The general conditions governing the General Contract apply to the work under this division.

NOTE—*The American Institute of Architects' Standard forms of General Conditions is advocated.*

(A2) WORK INCLUDED

(A2a) The work included under this heading shall be the following:

(A2b) All metal suspended or furred ceilings.

(A2c) All metal stud partitions.

(A2d) All metal wall furring.

(A2e) All miscellaneous metal furring.

(A2f) All lathing.

(A2g) All plastering.

(A3) GENERAL SCOPE

NOTE—*List and locate either in schedules on plans or here portions of the building to be finished, the base to receive plaster and here include sufficient data to insure accuracy in estimates.*

(A3a) The following require no plaster **[list and locate]**.

(A3b) The following require but **[one (1)] [two (2)]** coats of plaster **[list and locate]**.

(A3c) Ceilings noted as furred **[on plans] [in schedules]** are furred with **[metal] [gypsum board] [wood]**.

(A3d) All supports for lath are spaced 16 in. on centers.

(A3e) All exterior walls are furred with **[specify]**.

(A3f) Exterior walls are not furred. Plaster shall be applied directly on the **[specify]**.

(A3g) Partitions are of **[specify]**.

(A3h) Walls back of finished tile work shall be lathed only. No plaster shall be applied.

(A3i) Omit all plaster on interior masonry walls and **[hollow tile] [Pyrobar]** partitions back of marble work.

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(A3j) All exterior masonry walls, not furred, shall receive one coat of plaster back of marble work.

(A3k) Omit the finish coat of plaster on all stud walls back of **[marble work] [blackboards] [specify].**

(A3l) Omit the finish coat of plaster back of all **[wood wainscots] [specify]** and similar solid trim.

(A3m) **[Specify]** shafts shall be plastered full height.

(A3n) All chases in unfurred masonry walls which are to be plastered shall be lathed with metal lath. Lap the masonry at least 3 in. and secure at masonry joints. Wide chases (over 16 in.) shall be furred to receive lath.

(A4) SCAFFOLDING

(A4a) This contractor shall provide and erect all scaffolding, staging, etc., necessary for the proper execution of his work.

(A4b) He shall co-operate with other trades to the extent that erection of scaffolding shall not conflict with the execution of other work immediately preceding or carried on, without undue conflict, simultaneously with the lathing and plastering.

(A4c) If, after due authority has been granted to erect scaffolding, it is necessary to remove parts thereof for the accommodation of others, demolition and re-erection shall be done only after allocation of cost has been equitably adjusted.

(A5) HEAT and VENTILATION

(A5a) Adequate temporary heat and ventilation will be provided by others for the proper execution of work under this contract.

(A5b) This contractor shall provide salamanders, fuel and attendance and shall maintain without fire hazard adequate heat and ventilation for the proper execution of work under this contract.

(A6) CLOSURES

(A6a) Provide temporary cloth closures for all exterior openings during plastering.

(A6b) During the summer months exterior openings shall be screened to prevent plaster from drying out before it has set.

(A7) PROTECTION

(A7a) Adequately protect from damage and plaster droppings all finish of the building.

(A7b) Adequately protect the building with layers of heavy waterproof paper from damage by water at sources, gauging barrels and mixing boxes.

(A8) DAMAGE

Breakage of glass or other damage to the building or equipment through accident or carelessness incident to work under this contract shall be satisfactorily repaired or made good by replacement at this contractor's expense.

(A9) CLEANING

(A9a) At completion, remove all rubbish, plaster droppings, etc., and leave the building broom clean.

(A9b) This contractor shall remove all plaster from glass and other finish and leave in the condition found.

(A10) CUTTING and PATCHING

After the erection of finish by others, this contractor shall, when called upon, cut out where required, patch and point up all finished plaster work and leave the entire work in perfect condition.

(A11) SAMPLE PANELS

This contractor shall furnish and erect, where directed for the approval of the architect, sample panels of one square yard area each, to illustrate each type of finish required under this contract. The finished work shall equal in all respects the approved panels.

(A12) CONCRETE SURFACES

NOTE—*Concrete surfaces to receive plaster must not be smooth. Use rough form boards. Avoid dressed or oiled boards.*

(A12a) Concrete surfaces must be dry and free from dust, oils and efflorescence.

(A12b) Burn off all oil or grease from surface with a torch.

(A12c) Remove efflorescence with a wire brush and wash with a one (1) to five (5) solution of muriatic acid and water. Thoroughly wash off acid with clean water.

(A12d) Surfaces too smooth to receive plaster shall be thoroughly hacked.

(A12e) Hacking will be done by others.

(A13) GROUNDS

All lathing and plastering shall be laid to not less than the following grounds:

¾ in. for **[¼ in. gypsum lath] [wood lath] [expanded metal lath] [⅞ in. for ⅜ in. gypsum lath]; [1 in. for ½ in. insulating board lath]; ⅝ in. for [brick] [or] [clay tile] [½ in. for Pyrobar].**

NOTE—*See pages 20 to 23 inc. for Resilient System Grounds*

(A14) GUARANTY

(A14a) This contractor shall guarantee all work and materials under this contract for a period of **[specify]** from the date of completion and acceptance.

(A14b) Any defects attributable to faulty workmanship or material furnished under this contract shall be made good at this contractor's expense.

(A14c) This shall include the cost of repairs or replacement of any decorating or other finish damaged by the defects.

(A15) WORKMANSHIP

All work shall be executed by skilled workmen in a manner to satisfactorily fulfill the provisions of these specifications.

(A16) EXAMINATION

(A16a) All construction to receive lathing and plastering is presumed to be substantial, sound, level, plumb and true.

(A16b) This contractor shall examine all construction, supports and base to receive lathing and plastering and shall report to the architect in writing any defects which will deleteriously affect work under this contract.

(A16c) Failure to so report defects for correction or replacement prior to execution of the work under this contract will be construed as acceptance of the construction and shall not relieve the contractor from obligation under his guaranty.

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(B) METAL FURRING · METAL STUD PARTITIONS

(B1) MATERIALS

NOTE—*See page 17.*

(B1a) Metal Furring—[Specify sizes] Red Top Cold Rolled Channels.

NOTE—*USG Red Top Inner Wall Furring Brackets, installed by the masonry contractor, prove for deep furring an economical and practical substitution for metal furring.*

(B1b) METAL PARTITION STUDS—[Specify sizes] Red Top Cold Rolled Channels.

(B2) FURRED or SUSPENDED CEILINGS

NOTE—*See "Standard X Suspended Ceilings," page 24.*

(B2a) GENERAL—Where so indicated on plans **[or listed in schedules]** ceilings shall be furred or suspended with metal furring members.

(B2b) HANGERS—Hangers shall be placed not to exceed 4 ft. center to center in either direction. The minimum size for hangers shall be No. 8 galvanized wire, 1 x 3/16-in. flats or 1/2-in. round mild steel rods.

Upper ends of hangers of wire, rods, or flats, shall be of sufficient length to wrap around beams or provide a suitable anchorage in the concrete or tile. Where steel beams or purlins are not more than 4 ft. center to center, hangers may be attached directly to them. When hangers are hung from concrete beams or arches, the hangers shall be placed before concrete is poured. When ceilings are hung from terra cotta floors, hangers may be installed at tile joints during erection, or may be installed after tile is in place, holes bored clear through tile and secured on upper side by steel rod or toggle bolt.

(B2c) RUNNER CHANNELS—Runner Channels shall be placed not to exceed 4 ft. on centers, and shall be not less than 1½ in. weighing not less than 456 lbs. per thousand lineal feet. Lower end of wire hangers shall be secured to runner channels by three twists; lower end of rod hangers shall be secured to runner channels by two twists, or by wiring, lower end of flat steel hangers shall have holes punched at the proper distance to which the runner channels shall be bolted with not less than 3/8-in. diameter bolts.

Runner channels shall conform to the contour of the ceiling.

(B2d) FURRING CHANNELS—Furring Channels, spaced **[specify]** shall not be less than ¾ in. with a minimum weight of 276 lbs. per thousand lineal ft.; they shall be erected at right angles to the runner channels and shall be securely saddle tied to them by at least three strands of No. 16 galvanized annealed wire at each crossing, or by No. 9 wire hairpin clips.

NOTE—*Maximum spacing should be 12 and 13½ in. for 3.0 and 3.4 lb. flat lath; 12 in. for 2.75 lb.; 16 in. for 3.0 lb.; 19 in. for 3.4 lb. 3/8 in. Flat Rib Lath; 16 in. for 2.5 lb.; 24 in. for 3.0 lb.; 31½ in. for 3.4 lb. or 4.0 lb. 3/8 in. Rib Lath.*

(B3) METAL STUD PARTITIONS

(B3a) SOLID PARTITIONS—Metal studs for solid partitions shall be not less than ¾-in. cold or hot rolled channels weighing not less than 276 lbs. per thousand lineal feet, and spacing of studs shall conform with the requirements for the weight of lath specified.

(B3b) HOLLOW PARTITIONS—Metal studs for hollow partitions shall be constructed of a double row of ¾-in. channels weighing not less than 276 lbs. per thousand lineal feet and spacing of studs shall conform with the requirements for the weight of lath specified.

(B3c) GENERAL—

(B3c1) Studs shall be secured in position by inserting ends in holes punched ¾ in. in top of concrete or other masonry floors or in soffits of masonry ceilings, or by attaching to stud shoes, or by placing ends in holes drilled in wood floor bucks anchored to masonry floors at 4-ft. intervals.

(B3c2) Studs shall be secured on wood floors by wire tying to nails driven 1 in. into floors and projecting at least 1 in. above.

(B3c3) Where metal lath ceilings are used a small hole shall be made in the ceiling lath and the end of the channel allowed to project through it and be wired to a channel attached to the ceiling lath.

(B3c4) Splicing of studs shall be made by lapping channels not less than 8 in. with the flanges interlocked and tied.

(B3c5) Solid partitions over 6 ft. high shall be temporarily braced horizontally on the channel side at intervals not exceeding 6 ft. vertically before applying plaster. Such bracing shall not be removed until scratch coat on the lath side of the partition has set.

(B3c6) In every case one channel shall be set next to wood buck at each side of openings and double wired securely to 8d nails driven on each side of channel in pairs into buck at 2-ft. intervals. Bottom of door buck shall be securely spiked to wood plug in floor, or attached by metal anchors.

(B4) METAL WALL FURRING

Where so indicated on plans **[or listed in schedules]** exterior walls shall be furred with ¾-in. channels spaced **[specify]** on centers with flange to wall. Furring channels shall be substantially secured to floors and ceilings and shall be substantially secured to walls with special hook nails driven into the mortar joints. Provide rigid framing at all openings.

(B5) MISCELLANEOUS METAL FURRING

Provide ¾-in. channel furring for all **[false beams] [ornamental plaster cornices] [stair soffits] [specify]**, etc., as shown on the plans and as detailed. Furring shall be set **[specify]** o.c. and rigidly secured to the building construction.

(C) LATHING

(C1) MATERIALS

(C1a) WOOD LATH—No. 1 **[white pine] [cypress] [spruce]** free from knots, sap and bark.

(C1b) GYPSUM LATH—[Perforated] [Insulating] Rocklath 3/8 in. thick, 16 x 32 in. and 16 x 48 in.

NOTE—*For Rocklath, see pages 9 and 10.*

(C1c) INSULATING LATH—Red Top Insulating Lath **[½ in.] [1 in.]** thick, 18 x 48 in.

NOTE—*See USG Co.'s "Thermal Insulation" section for complete details and specifications.*

(C1d) METAL LATH—[Specify brand, material and finish] lath; —— lb. for horizontal positions and —— lb. for vertical positions.

NOTE—*See pages 12, 13 and 14. Select and specify weight for both horizontal and vertical positions.*

NOTE—*Minimum weights should be as follows:*

(a) Expanded Metal Lath—

(a1) ***(For vertical positions, partitions, etc., attached to metal supports)*** *12 and 13½ in. on center, lath shall weigh a minimum of 2.5 and 3.0 lbs., respectively except for solid partitions where 2.2 lath may be used on 12 in. spacings and 3.4 lath on 16 in. spacing. For nailed-on partitions, maximum spacing shall be 16 in. for all flat laths, minimum weight to be 2.5 lb.*

(a2) ***(For tied-on ceilings attached to metal supports)*** *maximum spacing shall be 12 and 13½ in. for 3.0 and 3.4 lb. flat lath; for nailed-on ceilings maximum spacing shall be 16 in. for these laths.*

(b) ⅛ in. Flat Rib Lath—

(b1) ***(For nailed or tied-on partitions and furring)***

For supports spaced not to exceed 16 in. o.c.	*2.75 lb*
For supports spaced not to exceed 19 in. o.c.	*3.0 lb.*

(b2) ***(For nailed or tied-on ceilings)***

For supports spaced not to exceed 12 in. o.c	*2.75 lb.*
For supports spaced not to exceed 16 in. o.c	*3.0 lb.*
For supports spaced not to exceed 19 in. o.c.	*3.4 lb.*

(c) ⅜ in. Rib Lath—

(c1) ***(For nailed or tied-on partitions and furring)***

For supports spaced not to exceed 19 in. o.c	*2.5 lb.*
For supports spaced not to exceed 24 in. o.c	*3.0 lb.*
For supports spaced not to exceed 31½ in. o.c.	*3.4 lb.*

(c2) ***(For nailed or tied-on ceilings)***

For supports spaced not to exceed 19 in. o.c	*3.0 lb.*
For supports spaced not to exceed 24 in. o.c	*3.4 lb.*
For supports spaced not to exceed 31½ in. o.c	*4.0 lb.*

(C1e) CORNERITE—Red Top Cornerite, 3 x 3 x 96 in. with special selvage edge.

(C2) APPLICATION of WOOD LATH

(C2a) All **[exterior stud walls] [wood furring] [interior stud partitions] [ceiling joists] [stair soffits] [specify]** shall be lathed with wood lath. Lath shall be spaced not less than ¼ in. nor more than ⅜ in. apart and shall be secured to each bearing with standard wood shingle nails, two (2) to each end and one (1) to intermediate bearings.

Lathing shall break joints every eight laths, all put on horizontally. Under no circumstances shall lathing stop and form a long, straight, vertical joint nor be put on vertically to finish out at angles or corners; neither shall any lath run through and behind studding from one room to another. All corners must be made solid before lath is applied.

(C2b) All re-entrant angles shall be reinforced over the wood lath with Cornerite. Strips shall butt (not lap) at ends and shall be substantially secured.

(C3) APPLICATION of ROCKLATH

All **[exterior stud walls] [wood furring] [interior stud partitions] [ceiling joists] [stair soffits] [furred or suspended ceiling] [specify]** shall be lathed with Rocklath.

(C3a) Cutting shall be done by scoring with a sharp hatchet or knife and then breaking down and up over a straight edge.

Nails shall be 1⅛ in., 13 gauge, blued, 7/16 in. flat head, smooth diamond point.

Rocklath boards shall be applied with the long dimension at right angles to the framing members, butted, with broken joints in each course. Stagger joints between walls and ceilings so that the vertical joints on wall will not meet ceiling joints.

Fit Rocklath tight together at all re-entrant angles and corners. Cut accurately and fit Rocklath neatly around all electric outlet boxes, etc.

Space nails approximately 4 in. apart using 5 nails per stud. First nail ½ in. from edge, nailing to center support first, then outer edges. Each nailing edge must have a firm bearing on studs, joists and furring. Drive nails home.

(C3b) All re-entrant angles shall be reinforced over the Rocklath with Cornerite. Strips shall butt (not lap) at ends and shall be substantially secured.

(C4) APPLICATION of INSULATING LATH

NOTE—*See USG section on "Thermal Insulation" for complete specification data.*

(C5) APPLICATION of METAL LATH

(C5a) GENERAL—All **[specify location]** shall be lathed with metal lath.

(C5b) ATTACHMENT TO WOOD SUPPORTS—Metal lath shall be attached to wood studs and joists by not less than 4d and 6d nails, respectively, driven to a penetration of not less than ⅞ in. and 1 in., respectively, and spaced not to exceed 6 in. o.c. or by clips or devices with equivalent penetration and holding power. There shall be one tie on side laps, half way between supports.

(C5c) ATTACHMENT TO METAL SUPPORTS—Metal lath shall be wired to metal supports at intervals not exceeding 6 in., with not less than No. 18 gauge galvanized soft annealed wire and tie shall always occur where sides of sheets lap at channels. There shall be one tie on side laps half way between channels.

(C5d) ERECTION OF METAL LATH—

(C5d1) Metal lath shall be erected with the long dimensions of sheet across the supports.

(C5d2) Lath shall be first applied to the ceilings and the sheets carried down 6 in. onto the walls and partitions. If metal lath is not used on the ceilings, the lathing shall start at the top of the wall and be bent and carried up 6 in. onto the ceiling joists so that no joints occur at juncture of ceiling and walls; and on walls, all lath shall be started one framing member away from corner and bent into the corner and carried onto the abutting wall so as to avoid a joint at juncture of walls. Where ⅜-in. ribbed lath is used on ceilings or walls it shall be butted into all joints, and strips of flat lath shall be bent into the shape of an "L", 3 in. on each side, and securely wired along each edge in all corners. Strips shall not be fastened at the corner, but only along each edge of the sheet.

(C5d3) Lath shall be placed so that the lower sheet laps over the upper (not vice versa) and shall be securely attached to the supports. Fastenings shall be so placed that they shall occur where sides of sheets lap at supports.

(C5d4) Expanded metal lath shall be lapped at sides not less than ½ in. and at ends not less than 1 in. End laps shall occur only over supports.

(C5d5) Rib lath shall be lapped at sides by nesting outside ribs, and at ends, 1 in.

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(D) PLASTERING ACCESSORIES

(D1) MATERIALS

(D1a) METAL PLASTER ARCHES—Red Top Metal Plaster Arches No. **[s] [specify]**.

NOTE—*See page 16.*

(D1b) CORNER BEADS—Red Top Corner Bead No. **[specify]**.

(D1c) BASE SCREEDS—Red Top Base Screed No. **[specify]**.

(D1d) METAL PICTURE MOULD—Red Top Picture Mould No. **[specify]**.

(D1e) METAL EXPANSION CASING—[specify].

(D2) APPLICATION of METAL PLASTER ARCHES

Secure metal plaster arches in position over the lath, set accurately in accordance with the details. Corner beads on vertical jambs shall join arch beads without break at the juncture.

(D3) APPLICATION of CORNER BEADS

All corners **[both vertical and horizontal]** shall be protected with corner beads for their full height **[or length]**.

NOTE—*If there are exceptions, so note.*

Corner beads shall be rigidly and substantially secured, accurately set, plumb, true and straight.

(D4) APPLICATION of METAL BASE SCREEDS

The following rooms shall have base screeds:

NOTE—*List and locate here or in schedules on plans.*

Screeds shall be substantially secured, accurately set, straight and true to line and parallel with the finished floor line.

(D5) APPLICATION of METAL PICTURE MOULDS

The following rooms shall have metal picture moulds:

NOTE—*List and locate here or in schedules on plans.*

Picture moulds shall be substantially secured, accurately set, straight and true to line and parallel with the ceiling line.

(D6) APPLICATION of METAL EXPANSION CASINGS

The following openings shall have metal expansion casings

NOTE—*List and locate here or in schedules on plans.*

Expansion casings shall be accurately set in line with jambs. Secure with screws, locking clips and stamped casing miters

(E) PLASTERING · BASE COATS
(Scratch and Brown Coats)

(E1) MATERIALS and MIXING

NOTE—*See pages 4 and 5.*

NOTE—*Select type best adapted.*

(E1a) GENERAL—Store all plaster at the site in a dry place, raised above the bare ground.

Provide clean, water-tight mixing boxes (approximately 3½ x 7 ft. x 10 in. deep for base coats and 2½ x 4½ ft. x 10 in. deep for finish coats) raised 4 in. at one end. Clean mixing boxes after each mix. Machine mixing is permitted providing machine is kept clean and free from set plaster.

Keep tools clean. Do not rinse tools in mixing water.

Do not mix more material than can be applied in approximately one (1) hour nor one mix with another. Never retemper plaster after it has commenced to set.

All material except sand shall be as manufactured by the United States Gypsum Company.

(E1b) WATER—Water shall be clean and free from impurities.

(E1c) SAND—Sand shall be clean, sharp and free from organic matter with grains graded from fine to coarse, meeting the Standard Specifications for Plastering Sand of the American Society for Testing Materials. Screen through a 6-mesh screen.

(E1d) (Specify brand) CEMENT PLASTER (UNSANDED)—

(E1d1) For scratch coat on gypsum lath, wood, wire and expanded metal lath, mix 2 parts by weight of dry sand with 1 part of plaster.

(E1d2) For scratch coat on brick, Pyrobar gypsum tile, clay tile and for second or brown coat, mix 3 parts by weight of dry sand with 1 part of plaster.

(E1d3) Do not mix sand and plaster until ready to add water.

(E1d4) First put in raised end of the mixing box a layer of sand, then one of plaster. Hoe dry from one end of box to other and then back again, working sand and plaster thoroughly together to a uniform color. Put water in the low end of box; hoe plaster into the water, mixing thoroughly.

(E1e) (Specify brand) WOOD FIBER PLASTER—

(E1e1) Neat—Put the plaster in upper end of mixing box and water in lower end. Hoe plaster into water and allow to soak from 10 to 15 minutes. Then mix to proper consistency.

NOTE—*Used for wood lath and gypsum lath and scratch coat on wire and metal expanded lath.*

(E1e2) Sanded—Mix equal parts by weight of plaster and dry sand. Mix as specified above in (E1e1).

NOTE—*Used for brown coat on wire and expanded metal lath and for all plaster on brick, gypsum or clay tile.*

(E1f) (Specify brand) PREPARED PLASTER (SANDED)—

(E1f1) Add nothing to the material but water.

(E1f2) Put the plaster in upper end of mixing box and water in lower end. Hoe plaster into water, mixing thoroughly. Mix thin at first, then add sufficient dry material to bring to the proper consistency for application.

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(E1g) BONDCRETE (FOR ALL CONCRETE SURFACES)—

(E1g1) For both scratch and brown coats.

(E1g2) Add nothing to the material but water.

(E1g3) Put the plaster in the upper end of mixing box and water in lower end. Hoe plaster into water. Allow the material to soak from 10 to 15 minutes and mix thoroughly.

(E2) APPLICATION of PLASTER—GENERAL

Keep plaster from freezing for 24 hours after application.

Do not apply finish coat on a base coat which contains frost.

In hot, dry weather screen all openings while plastering to prevent material from drying out before it has set. If plaster should dry out (showing soft, white spots or areas) sprinkle these portions so affected with clean water from a spray pump or a brush.

After plastering has set, open the windows and permit the wall to dry out as quickly as possible. Use judgment in procedure during freezing weather.

For grounds see "Grounds," par. (A13), page 27. Unless specially otherwise noted, all plaster shall be applied in three (3) coats—scratch, brown and finish. Scratch coat shall be applied and the surface well scratched. When scratch coat is set and nearly dry, follow with brown coat. Brown coat shall be brought to a true level plane with rod and darby flush with the grounds, ready to receive finish coat. Angles and corners shall be left straight, true and plumb.

(E3) APPLICATION • Cement and Prepared Plasters

(E3a) ON WOOD LATH—Soak lath thoroughly the day before and again an hour or so before applying the plaster. Apply in two (2) coats, scratch and brown, the scratch with sufficient pressure to obtain a good key. Darby the brown coat lightly, and use water sparingly.

(E3b) ON GYPSUM LATH—Do not wet lath. Apply in two (2) coats, scratch and brown. Scratch coat shall be well scratched in to fill all interstices between lath boards. Darby brown coat lightly and use water sparingly.

(E3c) ON WIRE OR EXPANDED METAL LATH—Apply in two (2) coats, scratch and brown. Scratch coat shall be applied lightly covering the lath and filling meshes. Scratch first coat and allow to set before applying brown coat. Darby brown coat lightly and use water sparingly.

(E3d) ON BRICK, PYROBAR GYPSUM TILE, OR CLAY TILE—[Soak brick or tile wall thoroughly.] [If necessary, sprinkle Pyrobar lightly to reduce suction.] Apply in two (2) coats, scratch and brown, and fill out to grounds. Darby lightly and use water sparingly.

(E4) APPLICATION • Wood Fiber Plaster

NOTE—*Neat Wood Fiber Plaster may be troweled down to a smooth finish omitting further finish coat.*

(E4a) ON WOOD LATH—Soak lath thoroughly the day before and again an hour or so before applying the plaster. Apply scratch coat with sufficient pressure to obtain a good key. Rake or scratch the surface. Apply brown coat using sufficient material to fill out to the grounds.

Before the plaster begins to set, broom the surface to receive the finish coat.

(E4b) ON GYPSUM LATH—Do not wet lath. Apply in two (2) coats, scratch and brown. Scratch coat shall be well scratched in to fill joint between lath units. Before the plaster begins to set, broom surface to receive finish coat.

(E4c) ON WIRE OR EXPANDED METAL LATH—Apply in two (2) coats, scratch and brown. Scratch coat shall be applied a little stiff, covering the lath and filling meshes. Scratch first coat and allow to set before applying brown coat. Brown coat shall be applied to fill out to the grounds. Before the plaster begins to set, broom the surface to receive the finish coat.

(E4d) ON BRICK, PYROBAR GYPSUM TILE, OR CLAY TILE—[Except over dampproof paint.] [Soak brick or tile walls thoroughly.] [If necessary, sprinkle Pyrobar lightly to reduce suction.] Apply in two (2) coats, scratch and brown, and fill out to the grounds. Before the plaster begins to set, broom the surface to receive the finish coat.

(E5) APPLICATION • Bondcrete for Concrete

NOTE—*See paragraph (A12), page 27.*

NOTE—*Bondcrete may be troweled down to a smooth finish omitting further finish coat. If desired, so specify.*

(E5a) Apply in two (2) coats, scratch and brown, in just sufficient thickness to obtain an even surface. Before the plaster begins to set, broom the surface to receive the finish coat.

NOTE—*Use for all large areas of concrete.*

(E5b) Apply Bondcrete scratch coat only on girders and beams (under 24 in.) in concrete joist and clay tile floor construction. Leave the surface well scratched and roughened. Over this scratch coat apply a brown coat of sanded cement plaster brooming coat used for scratch and brown coat on tile surfaces.

(F) PLASTERING • FINISH COATS

(F1) MATERIALS and MIXING

NOTE—*Select type best adapted.*

(F1a) GENERAL—Store all plaster at the site in a dry place, raised above the bare ground.

Provide clean, water-tight mixing boxes (approximately 3½ x 7 ft. x 10 in. deep for base coats and 2½ x 4½ ft. x 10 in. deep for finish coats) raised 4 in. at one end. Clean mixing boxes after each gauging. Machine mixing is permitted providing machine is kept clean and free from set plaster.

Keep tools clean. Do not rinse tools in gauging water.

Do not mix more material than can be applied in approximately one (1) hour nor one gauging with another. Never retemper plaster after it has commenced to set.

All material except sand for job sanded sand float finish shall be as manufactured by the United States Gypsum Company.

(F1b) WATER—Water shall be clean, free from alkali and impurities.

(F1c) SAND—Sand shall be clean, sharp and free from organic matter with grains graded from fine to coarse, meeting the Standard Specifications for Plastering Sand of the American Society for Testing Materials. Screen through a 6-mesh screen.

(F1d) (Specify brand) PREPARED GYPSUM FINISH—

NOTE—*See page 6.*

Put the finish in the upper end of mixing box and water in lower end. Hoe plaster into water (using approximately 1 part of water to 2 parts of plaster measured by volume). Allow the material to soak and draw in the water without hoeing for at least 20

minutes. When the material has soaked and shows no further signs of air bubbles, mix thoroughly and, with particular care, break down the mix to a smooth, even, creamy consistency. Bring the mix finally to a very thin consistency. Transport in buckets.

(F1e) (Specify brand) FINISHING LIME and (Specify brand) GAUGING PLASTER—

NOTE—*See page 7.*

(F1e1) ***(Hydrated Lime)*** Fill water-tight box one-half to two-thirds full of clean water.

Add dry lime gradually, preferably sifting through a ¼-in. mesh screen, until all water is dried up.

Allow lime to soak overnight to develop full plasticity.

Do not hoe or screen after soaking unless lime is dirty or lumpy.

(F1e2) ***(Quick Lime)*** Add water and lime gradually while mixing, constantly agitating the mixture to prevent burning of the unslaked portion. Mix to a thin consistency and screen. Run into ageing box.

(F1e3) Mix 3 parts of lime putty by measure with 1 part of dry Gauging Plaster (equal to 2 parts of dry hydrated lime and 1 part of dry gauging plaster by weight). Mix thoroughly.

(F1f) (Specify brand) PREPARED GYPSUM SAND FLOAT FINISH—

NOTE—*See page 6.*

Put the finish in the upper end of mixing box and water in lower end. Hoe finish into water.

Allow the material to soak and draw in the water without hoeing for at least 10 minutes.

When the material has soaked and shows no further signs of air bubbles, mix thoroughly and, with particular care, break down the mix to a smooth, even, creamy consistency. Transport in buckets.

(F1g) (Specify brand) SAND FLOAT FINISH (JOB SANDED)—

NOTE—*See page 4.*

Screen sand through a No. 12 screen. Mix dry to a uniform color 1 part of Cement Plaster to 1 part of dry sand by weight (equal to from 4 to 6 shovels of sand to each 100-lb. bag). Put dry mix in upper end of box and water in lower end.

Hoe material into water and mix thoroughly to a smooth, creamy consistency. Transport in buckets. Keep tools and box clean.

(F1h) ORIENTAL INTERIOR (COLORED FLOAT OR TEXTURE FINISH)—

NOTE—*See page 6.*

(F1h1) Color **[s]** shall be **[specify]** as subsequently determined upon.

(F1h2) Put the Oriental Interior in upper end of box and water in lower end. Hoe material into water, using approximately 1 part water to 2 parts Oriental Interior, by volume.

Let Oriental Interior soak overnight. After soaking, mix thoroughly and carefully hoe the mix to a smooth, creamy consistency. Transport in buckets.

(F1i) RED TOP KEENE'S CEMENT—

NOTE—*See page 6. Clauses which follow are for finish coats only.*

(F1i1) Add water only, mix thoroughly and bring to a working consistency.

(F1i2) Add **[80 lbs. lime putty] [25 lbs. lime putty] [specify]** to each 100-lb. bag of Keene's Cement, or use Keene's Cement without lime.

(F2) APPLICATION OF FINISH COAT • GENERAL

Keep plaster from freezing for 24 hours after application.

Do not apply finish coat on a base coat which contains frost.

In hot, dry weather screen all openings while plastering to prevent material drying out before it has set. If plaster should dry out (showing soft, white spots) sprinkle portions so affected with clean water with a spray pump or brush.

After plastering has set, open the windows and permit the wall to dry out as quickly as possible. Use judgment in procedure during freezing weather.

Angles and corners shall be left straight, true and plumb.

(F3) APPLICATION • Trowel Finish

(F3a) LOCATION—The following shall receive trowel finish.

NOTE—*List and locate either in schedules on plans or here.*

(F3b) LIME AND GAUGING PLASTER—

Apply over *fairly dry* walls, using more water if the walls are bone dry. Scratch in a thin coat, then go over a second time filling imperfections and cat faces. Trowel to a smooth finish applying water with a damp brush. Troweling should be completed before the finish has set. In cold, damp weather, provide heat and ventilation until the finish is dry.

(F3c) PREPARED GYPSUM FINISH—

Base coat must be fairly dry before finish is applied. If suction is too great, sprinkle lightly with clean water from a clean brush.

Apply in three (3) coats. The first time over, put on sufficient material to cover the surface completely, using material as thin as possible and grinding it thoroughly into the base coat. Allow this to draw a few moments to avoid blistering.

The second time over, lay the material on perfectly level.

The third time make the material as thin as can be handled on the hawk and fill in cat faces and imperfections. After it has drawn a few moments, trowel to a smooth surface, applying water with a damp brush. Do not drench with water (drenching will kill the face of the material). Work top and bottom of the wall at the same time to avoid joinings.

(F4) APPLICATION • Sand Float Finish

(F4a) LOCATION—The following shall receive sand float finish:

NOTE—*List and locate either in schedules on plans or here.*

(F4b) PREPARED SAND FLOAT FINISH OR CEMENT PLASTER SANDED—

Apply sand float finish after base coat has set firm and hard, but while still green.

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"Grind in" a thin coat first; then "come back" with the final coat, laying it on in an even surface. Then use a **[cork] [carpet]** or **[felt]** float, working the material to a true, even surface, free from float marks and cat faces.

NOTE—*Cork float preferred*

Use as little water as possible while working, so as to avoid killing the surface. Use damp brush only. Do not attempt to work after the material begins to or has set.

Work top and bottom of the wall at the same time to avoid joinings.

(F5) APPLICATION • Oriental Interior (Colored Finish Coat)

(F5a) LOCATION—The following shall receive Oriental Interior Finish:

NOTE—*List and locate either in schedules on plans or here.*

(F5b) GENERAL—Brown coat should be broomed or left rough under darby to insure a good bond. Remove all loose or projecting particles from base coat which may show through finish coat.

The base coat must be set firm and hard before the application of Oriental Interior. On all types of masonry construction, such as gypsum tile, clay tile, etc., the base coat must be thoroughly dry. On other types of lathing base, such as plaster board, wood or metal lath, Oriental Interior may be applied after the base coat is 90% dry. If the suction in the base coat is too great to permit ease of application, wet down lightly and uniformly with clean water.

To avoid cutting re-entrant angles, use a trowel with edges rounded to a curve the circumference of a dime.

Use as little water as possible while working, so as to avoid killing the surface. Use damp brush only. Do not attempt to work material after it begins to or has set.

Work top and bottom of wall at same time to avoid joinings.

(F5c) FLOAT FINISH—Apply in two (2) coats. First apply a thin coat, grinding this into base, thoroughly covering the surface, and allow to draw a few moments. The second time over lay the material on perfectly level and then use a **[cork] [carpet]** or **[felt]** float, working the material to a true, even surface, free from float marks and cat faces.

(F5d) TEXTURE FINISH—Apply in two (2) coats. First apply a thin coat, grinding this into base, thoroughly covering the surface, and allow to draw a few moments. The second time over, lay the material on perfectly level, working it into the desired texture.

Proper drying conditions must be maintained in order to protect the color. During the late fall, winter and early spring months, the slow-drying periods of the year, artificial heat and proper ventilation must be arranged for. Failure to provide this protection may result in color difficulties.

NOTE—*The* United States Gypsum Company *will furnish on application a Special Bulletin covering the execution of textured finishes.*

(F5e) TILE OR MASONRY EFFECTS—Mark off with a straight-edge while the material is "green"—preferably from 4 to 5 hours after application. Units shall be rectangular and joints shall be clean cut and even.

(F7) APPLICATION • Keene's Cement Finish

(F7a) LOCATION—The following shall receive Keene's Cement Finish:

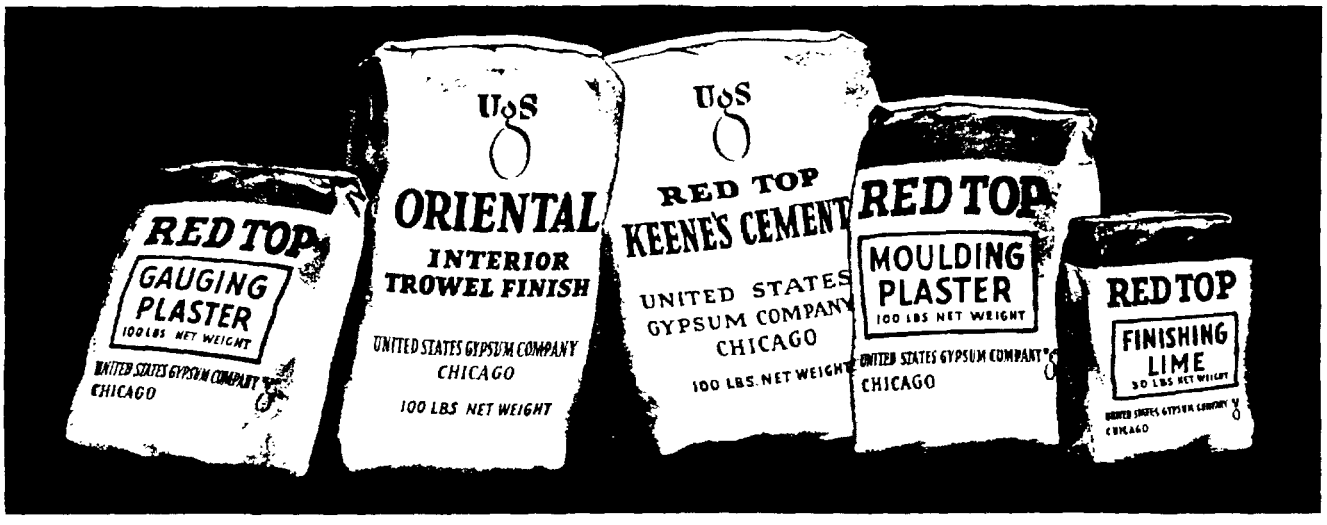
NOTE—*List and locate either in schedules on plans or here*

(F7b) GENERAL—Apply over *dry* walls, using more water if the walls are bone dry. Scratch in a thin coat, then go over a second time filling imperfections and cat faces. Trowel to a smooth finish applying water with a damp brush. Troweling should be completed before the finish has set. In cold, damp weather, provide heat and ventilation until the finish is dry.

(F7c) MARBLE PANELS—Keene's Cement wainscots shall be divided into even vertical panels with V-joints while the material is "green"—preferably from 4 to 5 hours after application. First rake out plaster base at joints for a depth of ¼ and ½ in. wide, laid to a straightedge, plumb and true—clean of loose particles. Apply Keene's Cement as above and form clean cut, even vertical V-joints at panel divisions.

(F7d) TILE EFFECTS—Mark off with a straightedge while the material is "green"—preferably from 4 to 5 hours after application. Units shall be rectangular and joints shall be clean cut and even.

(F7e) POLISHED SURFACES—After the cement is dry, polish with a cloth to a highly polished surface.



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(G) ORNAMENTAL PLASTER WORK

(G1) LOCATION

The following rooms require ornamental plaster in accordance with details.

NOTE—*List and locate either in schedules on plans or here.*

(G2) MODELS

(G2a) All ornamental work shall be executed from models.

(G2b) Models shall be furnished at the contractor's expense for all ornamental work. These shall be made by a skilled modeler **[selected]** **[approved]** by the architect, preferably in **[name place]** so that they may be under the direct supervision of the architect while being prepared. Models must be submitted for approval while in the clay.

(G2c) The contractor shall allow the sum of **[specify]** to cover the cost of models prepared under the direction of the architects, delivered f.o.b. cars **[specify]**.

(G2d) The owner will furnish, without cost to the contractor, models prepared under the direction of the architect, delivered f.o.b. cars **[specify]**.

(G3) MATERIALS and MIXING

(G3a) (Specify brand) Red Top Moulding Plaster—

NOTE—*See page 8.*

(G3b) Add water only, mix thoroughly and bring to a working consistency.

(G3c) Add 50% lime putty to the moulding plaster where extra plasticity is required for run work.

(G4) APPLICATION • GENERAL

(G4a) All curved work shall be **[run]** **[or]** **[cast]** to true radial lines.

(G4b) Leave all ornamental plaster work in perfect condition for decorating, true and smooth, with surfaces and intersections rubbed down with fine sandpaper if necessary.

(G6) CAST WORK

All run work shall be executed in Moulding Plaster or Gauging Plaster gauged with lime putty.

Furnish clean cut, accurate templates made in strict accordance with the architect's **[full size]** details.

Run all mouldings true with perfect arrises and miters.

All cast work shall be executed in Moulding Plaster.

Ornamental work shall be cast hollow or solid as best suited to conditions, thoroughly strengthened with fiber and braced where necessary.

All cast work shall be set accurately—true, plumb and straight.

If necessary, members shall be substantially fastened around furring; where nails are used, they shall be galvanized.



Rigid Laboratory Research and Control assure uniform performance in both workability and Finished Plaster





Job Conditions

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An Explanation of Job Conditions which Affect Plastering with Gypsum Plaster

● **INTRODUCTION**—Due to the advanced manufacturing and testing methods employed by the United States Gypsum Company, USG Plasters will give satisfactory results if properly used.

That architects, dealers, contractors, and mechanics may be fully informed in the use of gypsum plastering products and the common job troubles and how to prevent and remedy them, the following data is here set forth.

Many of the provisions in the Master Specifications given on pages 26 to 34 inclusive are based on the preventable defects here given.

● **GENERAL**—Gypsum Plaster is made by subjecting gypsum rock to heat (calcining), which process drives off a large percentage of the water of crystallization contained in the rock. When plaster is mixed with water on the job, it takes up the water that was expelled during calcination and recrystallizes.

For the various uses in base and finish coat plastering, small amounts of retarder or other set controlling agents, fiber, etc., are added and the setting time controlled by mill mixing of these substances with the calcined gypsum. These added materials are varied to suit the plastering requirements in different localities.

Setting or crystallization of gypsum plaster when mixed with water is a natural action which is controllable as to time. This time element is so controlled in USG Cement Plasters that it is practically independent of ordinary job mixing methods, sand quality or amount, water quality, or weather conditions. From this it will be seen that the crystallization or setting of gypsum is a law of nature; plaster must set if conditions are satisfactory.

Following are nine general rules addressed to the mechanics. Their observance will avoid trouble and assure the best results in plastering.

Rule 1—Keep Moisture Away from the Plaster before Mixing—Moisture causes plaster to partially set. Therefore, plaster should be stored in a dry place, and circulation of air through the warehouse should be prevented. Do not pile plaster out-of-doors or on the bare ground or next to green walls. Do not allow plaster to stand dry-mixed with sand.

Rule 2—Have Lath Conditions Right—Wood lath should be of good grade and properly spaced and nailed. Look out for dry lath. Wood lath are bound to swell when wet and if not swelled before plastering, they are likely to swell and buckle afterwards. Therefore, wet the lath. It is better to do it the day before and again about one hour before plastering. It is especially important to wet wood lath over doors and windows, where the walls dry out very rapidly. Brick walls have great suction; sprinkle them well before plastering.

NOTE—*The use of USG Resilient Plastering System, Standard X Plastering System, USG Metal Lath and Accessories, Rocklath, USG Insulating Lath, or Metal Reinforced Lath will avoid much trouble inherent in the use of present day wood lath.*

Rule 3—Water Quality—Clean water is desirable where obtainable for all plastering. The set of USG cement plaster is practically independent of water quality. Finishes, however, may be stained if the gauging water contains soluble impurities.

Rule 4—Sand Quality—Sand meeting the requirements of A.S.T.M. for fineness is desirable (see page 30). The setting time of USG cement plaster is practically independent of sand quality. Sand should be free from frost.

Rule 5—Keep Set-up Plaster out of the Mix—Set plaster causes quick-set. Clean the mortar box and tools after each gauging. Do not wash tools in the gauging water. Do not mix one gauging with another. Do not retemper plaster after it has commenced to set. Throw it away—it is time and money saved.

Rule 6—Mix Material as Needed—Apply mortar immediately after mixing and do not mix more material than can be handled in about one hour.

Rule 7—Mixing Methods—The maximum strength and uniformity of sand and plaster mixture depends on getting a perfect mix on the job. Uneven distribution of sand in plaster may result in weak oversanded spots due to incorrect mixing practice. The following is recommended:

Box Mix—In the box mix the bottom of the box should be covered with sand followed by layers of plaster and sand so that the top of the box also is covered with sand. Plaster and sand should never be put into the box above the level of the top of the box. The sandwiched layers of sand and plaster should then be dry mixed thoroughly by cutting through with a hoe at least twice from one end to the other of the box.

Following this dry mixing, water may be added as required and it will be found that it is relatively easy to control the amount of water and prevent drowning of the mix. Sand is recommended on the bottom of the box to facilitate easy cleaning of the box, on the top of the layers to prevent dusting under windy conditions. Mixing should be continued until sand and plaster are thoroughly incorporated.

Machine Mixing—The amount of water required per bag can be readily determined after one or two mixes. This amount of water should be added to the machine, followed by part or all of the sand if the machine will carry it. Under any circumstances at least half the sand should be added and allowed to mix until the inside of the mixer and the mixing blades are scoured clean for each batch.

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The plaster can then be added slowly to the mixer and thoroughly incorporated with the sand and the water. The rest of the sand should be added after the plaster is thoroughly mixed. The use of the sand in the mixer first keeps the mixer clean and cuts down labor in cleaning. The addition of the plaster after the sand is in gives an easier mix, one in which there is less tendency for the fibers in the plaster to cling to the mixing paddles, and the mix is more uniform throughout than when the plaster is dumped into the water in the mixer first. Machine mixers should be kept clean and free from set plaster.

Rule 8—Keep Green Walls from Freezing until Set Hard—Frost will not injure plaster after setting occurs, and walls may be allowed to freeze dry. Whenever there is likelihood of frost in basecoat plasters, they should be warmed and dried thoroughly before finishing. (See "Plaster Finishes—General," page 31.)

● **DRYOUTS**—"Dryouts" occur when plaster coats dry before the plaster sets. USG cement plaster, with ordinary protection from too rapid drying, is practically proof against this condition under wide variations in sanding conditions.

Where dryout occurs, it is indicated by soft, weak, chalky areas in the plaster. It is corrected by spraying the area affected with water to dampen it thoroughly, then keeping the wall damp until plaster sets. Dried out plaster retains its setting properties and need never be removed unless buckling of wood lath has caused failure of keys.

Where rapid correction of dryouts is required, the surface may be wetted with a solution made up by dissolving 6 ounces of zinc sulphate or alum in 12 quarts of water. Wet the area involved evenly with this solution, then dampen thoroughly with spray or brush.

● **SWEAT-OUTS**—

Cause—A "sweat-out" is the opposite condition to a dry-out. Walls in this condition are set, but the water in excess of the amount needed to cause crystallization has not been expelled, thus causing a partial re-dissolving of the gypsum. They occur more often in winter than in summer.

How to Detect—This condition will be recognized when walls remain damp. Instead of being white and chalky, as in the case of a dry-out, the walls are dark in color and soft; and, if the condition is permitted to continue uncorrected, the walls will have a damp, musty odor.

How to Prevent—It is important to dry out the walls quickly after they are set. Plaster which has set but still remains damp over an extended period of time loses its strength and may result in a total loss. When a sweat-out is detected, immediate provision for heat and ventilation will preserve the remaining strength of the plaster.

If, after the walls are set, doors and windows are opened to permit free circulation of air, and if, in extremely cold weather, artificial heat be introduced together with proper ventilation, there will be no danger of sweat-outs.

Remedy—After the plaster has set, open up doors and windows. In very cold weather, also use artificial heat to dry out the walls.

● **FROZEN PLASTER**—

Cause—Walls freezing before they are set.

How to Detect—If the temperature inside the building was at a freezing point before the plaster set and if the walls remain damp and dark in color, the plaster is probably frozen.

How to Prevent—In order to prevent freezing before the plaster has set, use artificial heat in the building with good ventilation. Frost will not injure plaster which has set if no excess moisture is present.

Remedy—Keep the building closed. Provide artificial heat and completely thaw out walls. When plaster has thawed and set, provide ventilation and heat to remove moisture and prevent a sweat-out.

Never apply a finish coat over a base coat containing frost.

● **TOO SLOW SETTING**—

Cause—The setting time of USG cement plaster is adjusted to meet the requirements of the locality into which it is shipped. If, because of special conditions, this setting time is too slow, it may be adjusted; and dealer should be notified so that this adjustment can be made.

How to Detect—When plaster fails to set in a reasonable time after mixing (1½ to 6 hours, depending on locality), it is slow setting. USG cement plasters set from the lath out, the surface setting evenly and uniformly so that the surface is last to harden. Surface softness, therefore, should not be confused with slow setting.

Before concluding that a plaster is slow setting, it is well to make a simple test as follows: Mix dry a sample of sanded plaster on a clean hawk or mortar board. Put about a pint (two tumblerfuls) of the mixture in the center of the hawk or mortar board. Now, with the handle of a pointing trowel, make a hole in the center of the dry-mixed material and work it into a ring about 5 to 8 inches in diameter. Into this ring, pour clean water; then fold the plaster into the water slowly and mix thoroughly. Place the mixture on a well cleaned wet board or, better still, on a piece of glass or the bottom of an old plate or saucer. Take the time of set. The time will vary from an hour and a half in some parts of the South to four hours or more in other sections.

Remedies—Below are listed five things which may be done to make plaster set more quickly. None of these remedies will have any injurious effect on the plaster.

(1) Send to the United States Gypsum Company for USG accelerator. Add 4 to 6 oz. (about a handful) to each sack of plaster.

(2) Crush some plaster droppings, screen through a fly screen, and use about a quart of this set plaster to each sack of plaster.

(3) Add about a quart of hydrated lime to each sack.

(4) Add about a quart of Portland cement to each sack.

Caution—The use of lime or Portland cement to accelerate the set is **not** recommended over Rocklath, Insulating Lath, or any sheet type of lath.

(5) Put 15 lbs. of any kind of unretarded plaster (plaster of Paris, moulding plaster, etc.) into a barrel of water about one hour before it is desired to mix the plaster. Use this water, thoroughly stirred, for mixing.

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● **TOO QUICK SET—**

Causes—The setting time of USG cement plaster is adjusted to meet the requirements of the locality into which it is shipped and is practically independent of water supply and sand quality. Quick set may be due to (1) use of water in which tools have been washed for mixing; (2) presence of set plaster in the mix; (3) mixing more material than will be used up in an hour.

How to Detect—Material which sets in the box or the mixer or hardens on the wall before it can be straightened is quick set. If there is any doubt as to the condition, mix a little as described under "TOO SLOW SET—How to Detect."

How to Prevent—Most quick-set troubles can be prevented by correcting local conditions described under "Causes" above.

Remedies—Correct local conditions. See that tools and mixing box are free from set plaster. See that mixing water does not contain set plaster. Do not permit plaster and sand to stand dry mixed before adding the water. Do not mix more material than can be used up in an hour.

If an investigation of local conditions does not suggest a remedy, obtain from the United States Gypsum Company some USG Retarder. Use this by stirring up the desired amount in a pail containing part of the mixing water to get a good solution free from lumps. Start with a fair handful (1 to 2 ounces) per bag, increasing or decreasing the amount as necessary to obtain desired setting time.

If there is not time to procure USG Retarder, the set may be retarded by the addition of glue water. Pulverized glue in the proportions of 1 lb. of glue to 5 gallons of water should be mixed and about a quart pail full of this solution used with the gauging water for each 100-lb. sack of plaster. USG Retarder is much better than glue.

NOTE—*The use of such retarders as cream of tartar or tartaric acid is not recommended either for base or finish coat plasters.*

● **SHORT-WORKING PLASTER—**

Causes—Gypsum is composed of minute crystals. When the gypsum is made into plaster, these crystals are broken down and set and return to their crystalline form when the plaster is mixed with water. When stored for long periods, it absorbs moisture from the atmosphere; this causes a partial re-crystallization, resulting in short-working plaster.

USG cement plasters are specially processed to resist the atmospheric action which causes short-working and keep well in ordinary storage for long periods of time.

Plaster may become short working from improper storage either in the warehouse or on the job.

How to Detect—The plaster will not carry the usual amount of sand. It will be difficult to mix and difficult to apply. After being mixed, it will look sloppy—thin in some places and stiff in others. The plaster will not take the water properly, the excess water remaining on the surface. The mortar will appear oversanded, and it will not adhere to the ceilings. Squeeze a handful of the mortar and if a core of sand remains in the hand, you may know the plaster is short-working provided that it has not been oversanded.

How to Prevent—Proper storage should be provided and the older stock should be sold first. Plaster should never be piled against a green plastered wall or on the damp ground.

Remedies—

(1) Plaster which seems short may frequently be brought to satisfactory workability by a little extra mixing in the box or a few minutes more mixing in the machine.

(2) The best remedy is to add one sack of fresh plaster to one sack of the short-working material. In some cases it may be necessary to use two sacks of fresh plaster to one of the old plaster. A more thorough mixing will often improve the working qualities.

(3) Use a well slaked lime putty or hydrated lime that has been soaked overnight, in proportions of about two shovelfuls of lime to each sack. The same amount of dry hydrated lime may be used if lime putty is not available. Since lime accelerates plaster, about 1½ oz. of USG Retarder will usually also have to be added.

(4) A short-working plaster can usually be used by decreasing the amount of sand and water in the mixture.

● **OVERSANDING—**

Cause—In order that a sanded plaster wall may be strong, each grain of sand must be cemented to the grains on all sides of it. When the proportion of sand to plaster is too great, it is obvious that the sand grains cannot be properly cemented.

How to Detect—The walls are not strong. Holes may be easily bored into the walls with a key or a coin. Sand may be brushed off the wall by rubbing the hand over it, and the excess sand can be seen by close inspection. The color of the wall indicates that the condition is not a dry-out. If any of the mixed mortar is at hand, squeeze a handful, permitting it to ooze out between the fingers, and if a core of sand remains in the hand, it indicates one of two things: oversanding or old plaster.

Fresh plaster is more easily oversanded than aged plaster, due to its ability to work well and spread easily. It is not common to hear of old plaster being oversanded, because it is impossible to apply old material in this condition due to its inability to carry over a certain amount of sand and work well.

Whether plaster is oversanded can be proved by a wash test made as follows:

Crush and dry a sample of set plaster. Place 100 grams of this material in a quart pan, add a liberal quantity of water, stir, then pour off most of the water, being careful to retain the sand. Repeat this operation until sand alone remains and until the water you add remains clear when the mixture is stirred. Dry over a stove or a Bunsen burner, and the weight in grams will give you the percentage of sand used. More than 67 grams of sand is proof of oversanding on scratch coats, as this means more than a 2-to-1 mix. More than 75% sand is proof of oversanding on brown coats (3-to-1 mix). The proportion of sand actually added will be a little greater than shown by the test, for the reason that some particles of loam, etc., contained in the sand will have been washed away. A druggist will lend you the necessary apparatus, or he will usually make the wash test for you at small cost.

NOTE—*Some sands contain a large percentage of clay and loam, so for accurate results sample of sand used on the job should be washed and the loss entailed calculated and added to the set plaster wash test.*

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How to Prevent—Architects can do much to insure the proper sanding of material by rigid and detailed specifications.

Plasterers who understand that proper sanding not only will save them much trouble and expense but also will save much time and labor in application of the material will be very particular about the sanding of plaster.

The proper amount of sand to be used with gypsum cement plaster for application to wood lath, gypsum lath, or first coat on metal lath is two parts of sand to one of plaster by weight. This is equal to 12 No. 2 shovels of sand to a 100-lb. bag of cement plaster or 10 No. 2 shovels of sand to one 80-lb. bag of cement plaster.

For application to brick, gypsum tile, or clay tile, the correct proportion is three parts of sand to one of cement plaster by weight. This is equal to about 18 No. 2 shovels of sand to a 100-lb. bag of plaster or about 15 No. 2 shovels of sand to an 80-lb. bag of plaster.

A positive method of preventing oversanding is to specify Gypsum Wood Fiber Plaster to be used without sand. The wood fiber plaster has supplanted the sanded material in many markets; and, owing to its greater strength and durability, to its superior resistance to heat, cold, sound and fire, and to its low cost on the wall, this material is recommended. The use of prepared plasters (mill sanded) likewise is a positive preventive.

● TOO FINE, TOO COARSE OR DIRTY SAND—

How to Detect—When the finished walls are weak, the trouble may be due to the quality of sand. Sand should be clean, sharp, and graded from fine to coarse. It should be free from clay, loam, or other foreign matter.

To determine whether a sand contains loam or clay, note whether the hands are dirtied when a sample of the damp sand is rubbed between them. Or fill a bottle half with sand and half with water, shake it, let it stand, and the clay or loam sediment will settle on top of the sand.

The following is the American Society for Testing Materials' Standard Specification for Gypsum Plastering sand:

> "Sand used for plastering in which gypsum is employed shall consist of fine, granular material naturally or artificially produced by the disintegration of rock containing not less than 80% by weight of silica, feldspar, dolomite, magnesite, or calcite and shall be free from saline, alkaline, organic, or other deleterious substances.
>
> "Gypsum plastering sand shall be graded from fine to coarse within the following limits:
>
> Retained on a No. 4 mesh 0.0%
> Retained on a No. 8 mesh ..... 0.0 to 10%
> Retained on a No. 30 mesh ..... 15 to 80%
> Retained on a No. 50 mesh ..... 70 to 95%
> Retained on a No. 100 mesh ..... 95 to 100%
>
> Weight removed by decantation—not more than 5%."

How to Prevent—Use clean sand—not too fine or too coarse—although there is less danger in the coarse than in the fine sand.

The danger of poor sand can be eliminated by the use of Gypsum Wood Fiber Plaster (without sand), Prepared Plaster (mill sanded), or Standard X Plaster.

● TOO THIN COATS—

How to Detect—When walls are hard but lacking in strength, provided the sand conditions are all right, the trouble is probably due to too thin grounds. This can be determined by pulling off a piece of plaster and measuring its thickness.

How to Prevent—The architect should specify the grounds as follows: For wood lath, 3/4 in.; for 1/4 gypsum lath, 3/4 in.; for 3/8 in. gypsum lath, 7/8 in.; for metal lath, 3/4 in.; for brick or clay tile walls, 5/8 in.; for gypsum tile walls, 1/2 in.

The architect should also specify that the work is to be rodded and brought to a true and even surface, so that the plaster will not vary in thickness between ground strips.

● WOOD LATH DEFECTS—

General—Probably 80% of the cracks in wood-lathed walls not due to building settlement are due to lath.

The principal causes of lath troubles are four:

(1) Inferior lath which expand and contract unduly, shearing the keys and cracking the plastered surface, or which contain sap that stains the plaster.

(2) Neglecting to wet the lath so that they will swell as much as they can before the plaster is applied.

(3) Failure to space the lath properly.

(4) Insufficient nailing.

How to Detect—Cracks and buckles in the plaster coat running horizontally with the lath are always traceable to lath conditions. When plaster sounds hollow and loose when tapped but is hard faulty spacing may be looked for, except in cases of dry-outs or oversanded plaster where the keys have fallen off for lack of strength.

Straight vertical cracks, either chip cracks or larger cracks, are often the result of failure properly to break joints in the lath. Settlement and shrinkage cracks are very liable to follow lath joints that are not properly staggered.

Lath stains on the surface of the plaster are due to sap, pitch, resin, oil, tar or gum in the lath.

How to Prevent—

(1) *Quality of Lath*—Architects should specify No. 1 lath and also the kind of wood desired. White pine, balsam or spruce lath are preferable when they are to be had. Lath should be free from knots, sap and bark. However, this is not the only test of a good lath, because many clear laths on the market today are of very inferior quality.

(2) *Proper Wetting*—Wetting of lath before plastering is important in the prevention of plaster cracks due to the swelling, warping, twisting and buckling of wood lath. Wood lath should be wet the day before plastering and again an hour or so before plastering. Swelling lath exert tremendous pressure, which shears off the keys and causes the plaster to loosen and crack. This in time means a loss of bond, for the face side of wood lath has no bonding properties. This condition can be avoided only by using a good grade of lath and by swelling the lath to the limit before plastering, so that it will not swell afterward.

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(3) *Proper Spacing*—Lath should be spaced ¼ to ⅜ in. apart, and at ends as well as at sides, as lath swells endwise as well as sidewise. Narrower spacing will not provide sufficient room for the lath to swell, without pinching the plaster, and weakening keys. A wider spacing, on the other hand, is unnecessary and is a waste of materials. Lath should be applied in groups of five to eight lath, which should be staggered—i.e., the ends of each group moved to the stud at right or at left of the group below.

(4) *Proper Nailing*—Requires two lath nails at the ends of lath and one at intermediate studs, the nails driven home so as to hold the lath tightly against the stud.

Remedy—The only remedy for this condition is to remove the parts of the wall that are defective and replaster.

● GYPSUM LATH—

General—Gypsum lath does away with the three great causes of plaster cracks which are present when wood lath are used. It is uniform in quality and does not swell, warp or buckle, when properly applied. It also keeps the water from the studding and joists. Gypsum lath and gypsum plaster bond perfectly.

Causes—It will be seen from the foregoing that by the use of gypsum lath the factors which can cause trouble are reduced to three, as follows.

(1) Defects in the general structure of the building which result in the expansion and contraction of heavy timbers, settling in the foundation, and deflection of the floor joists, all of which produce stresses which will crack the strongest plastered walls.

(2) Failure to observe the simple directions for applying gypsum lath.

(3) Improper preparation or application of the plaster.

Too thin coats of plaster cause by far the greater number of cracks in plaster applied to gypsum lath. The strength of the plaster coat must be depended upon to maintain the integrity of the wall at the joints—i.e., where there is no gypsum lath—and when the plaster coat is too thin, vibrations and strains cause cracks at the joints. This skimping of the plaster is more likely on ceilings than on walls.

How to Detect—When cracks following the joints of the lath are noted, measure the thickness of the plaster. On ceilings look for large deflections in the joists, especially in large rooms where joists are of long span.

How to Prevent—Specify ¾-in. grounds when ½-in. gypsum lath is used, and ⅞-in. grounds when ⅜-in. gypsum lath is used. This means ½-in. coat of plaster over the lath in each case. As it is extremely difficult to apply the required thickness of plaster in one coat, it is recommended that the base coat be applied in two coats—first a scratch coat, and after this has set, a second or browning coat.

● METAL LATH—

General—One cause of weak walls when metal lath is used is the use of a lath of too light weight. It should be remembered that the stiffness of metal lath is determined by the weight. The minimum weights per square yard for 16-in. stud spacing that should be specified and used are: 2.5 lbs. for side walls; 3.0 lbs. for ceilings.

The use of too light a lath causes sagging on ceilings, as also does failure to properly stretch and staple the lath.

Failure properly to tie the lath between studs or to lap the bottom sheet over the one above, instead of vice versa, is a frequent cause of cracks at the horizontal joints.

Wet plaster standing against the unprotected studs and joists may result in cracks from swelling and shrinkage of the wood members.

Stresses due to defects in the design or general construction of the building as treated hereinafter under "Other causes of plaster cracks," will cause cracks in metal lath walls.

● BRICK OR TILE BASES—

General—Probably the majority of cracks found in plaster in fireproof structures are due to deflection and deformation strains, to which fireproof buildings as well as non-fireproof buildings are subject.

Expansion and contraction of the various materials used in fireproof structures is a frequent cause of cracks in partitions.

Cracks which occur at the wall and ceiling angle are likely to be due to failure to wedge the wall at the ceiling, or to the use of too much sand in the mortar, which permits settlement through shrinkage in the horizontal joints, or to settlement of the floors. Cracks around door openings—especially over doors are usually traceable to faulty laying of the tile, omission of proper keying in jack arch construction over doors or improper construction of the door bucks. Wood door bucks, when damp, swell and contract causing the plaster and sometimes the entire partition to crack.

Stains on the surface of the plaster come from efflorescence from clay or terra cotta tile.

A network of small cracks in the plaster would probably be due to either one of three causes:

(1) Failure properly to wet brick, clay tile or terra cotta tile before plastering.

(2) The use of too little sand (use 3 parts of sand to one of plaster by weight) with the plaster.

(3) One-coat instead of two-coat work.

● CONCRETE SURFACES—

General—Ordinary gypsum plaster or lime mortar does not adhere properly to concrete surfaces; consequently the use of Bondcrete, a specially made plaster for concrete surfaces, is recommended.

Causes—Failure to properly prepare the concrete surface is another source of trouble, regardless of what kind of plaster is used. The surface must not be too smooth and must be free from dust, oils, and efflorescence before the plaster is applied. All ceilings must be well hacked. Concrete must be dry.

How to Prevent—Use Bondcrete, the plaster that is specially prepared for plastering on concrete.

If there is any sign of efflorescence on the concrete surface, remove it entirely with a wire brush, then wash the concrete with a 1-to-5 solution of muriatic acid. Wash off the acid thoroughly before applying the plaster.

If the concrete is too smooth to afford a bond for the plaster, or if oil has been used on the concrete forms, the walls must be either furred and lathed, or else uniformly hacked or roughened before the plaster is applied.

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Do not apply Bondcrete until the concrete is thoroughly dry.
Do not apply a sanded browning coat over Bondcrete.

● PLASTER FINISHES—GENERAL—

Finishes made of gypsum or that contain gypsum are subject to some of the abuses that gypsum base coats are. Quick sets and slow sets are detected and treated similarly to these troubles in gypsum base coats. To prevent dry-outs, all precautions given for dry-outs under base coat plasters should be taken. Likewise, all precautions should be taken against a sweat-out condition by providing proper heat and ventilation. Freezing of the finish coat should also be prevented.

The base coat should not be too smooth for the application of the finish coat, neither should it contain frost.

Dry, brittle and cracked finishes, which can be easily removed from the base coat, are the result of one or more of the following conditions.

(1) Base coat being too dry when finish was applied.

(2) Improper application—that is, "laying on" in one thick coat only.

(3) Insufficient troweling.

(4) Insufficient amount of gauging plaster in lime putty finishes.

(5) Hard, smooth base coat.

(6) Oversanded, sweat-out or dried-out base coat.

None of the finishes should be "layed on" in a single coat. The best practice to obtain the maximum bond between the base coat and the finish coat is first to "grind in" a thin application of the finish coat.

● PREPARED FINISHES—

As these finishes are scientifically prepared at the mill and require the addition of water only at the job, the few troubles attending their use are due to wrong handling and application.

The base coat should be hard and firm, and not too smooth. It should also be in the proper stage of moisture when the finish is applied. If too dry, it can be conditioned by a light spray of water just before the finish is applied.

The finish material should not be mixed too stiff, and it should not be applied in one thick coat. A thin coat should first be "ground" well onto the base to give maximum bond to prevent hard working qualities and curling under the trowel. The use of these finishes by inexperienced mechanics may result in streaks and "slobbers." They can be avoided by the use of less water in the troweling; by troweling down the "slobbers" and incorporating them in the wall, instead of trailing the trowel with a brush; and by having a man on the scaffold and one below to finish the walls simultaneously so as to avoid joining marks.

Red Top Trowel Finish should be applied to a fairly dry base. When it is applied to a green base coat, it will appear to be slow setting, may blister, and will not attain its proper hardness.

The finish must be dry to attain its full strength and uniform color. Keep the mixing box clean to prevent quick set. USG Retarder may be added to the finish to slow the set. Dissolve the Retarder in water before adding to mix.

● LIME PUTTY FINISH—

Soft, weak lime putty finishes are often the result of using too small a percentage of gypsum gauging plaster. Failure to provide proper drying prevents the lime from carbonating and it remains soft. This is a common occurrence in winter or slow drying weather. Generally speaking, the more gauging plaster that is used the stronger the finish will be. An ideal mix would be one part gauging plaster to two parts lime putty, although good results can be had by using one part gauging plaster to three parts lime putty, provided a retarded gauging plaster is used. Lime putty is a strong accelerator, and when the gauging plaster is unretarded or quick set, there is danger of the putty being applied in a setting or retempered state.

Chip cracks in lime putty finish may be due to the shrinkage of the lime in a finish in which there is not a sufficiently large percentage of gauging plaster to prevent such shrinkage. Also chip cracks are sometimes due to the finish not being sufficiently troweled.

Chip-cracking may also be due to the condition of the base coat, to the condition of the putty being used, and to incorrect application. The following suggestions are designed to prevent chip-cracking:

(1) Use well soaked lime putty.

(2) Use at least ¼ by weight, preferably 1/3, of gauging plaster with the lime. Figure one cubic foot of lime putty (one average hod) requires 50 lbs. of hydrated lime, and should contain from 16 to 25 lbs. of gauging plaster for average white coat work. Enough gauging plaster must be used to stop chipping.

(3) Use 5 to 10% of fine silica sand in the putty.

(4) Apply always as directed under "Plaster Finishes—General."

Streaks and discolorations in lime putty finishes are due to the lime and the gauging plaster not being sufficiently mixed, or to the use of too much water in troweling.

Sometimes the hardened lime putty finish loosens from the brown or base coat, taking part of the sanded coat with it. This indicates an oversanded brown or base coat, or a sanded coat which has been weakened by being applied in a setting or retempered state. When the putty coat is applied, further weakening occurs, due to the absorption of water from the finish coat. Upon drying out, the hard, rigid putty coat flakes off in places, taking some of the sanded coat with it.

Pops and blisters in lime putty finishes are caused by the lime being insufficiently slaked before application. In order to be absolutely sure that pops and blisters will not occur, common lime should be slaked several weeks before being used. A better, quicker and cheaper insurance against these defects is to use Hydrated Finishing Lime.

● SAND FLOAT FINISH—

Walls to be sand floated should be about 50 per cent dry, or what a plasterer would call "a fairly dry wall." However, the base coat must be hard and firm. Walls too dry when this finish is applied will cause the material to roll and work extremely hard under the float.

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Oriental Exterior Stucco

Base Coats and Colored Finish Coats

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DESCRIPTION—Oriental Exterior Stucco is a completely factory-mixed exterior stucco material of the highest quality. The finish coat is scientifically colored in a wide range of tints. It is the product of careful and thorough investigation and research by the United States Gypsum Company.

The chief limitation of stucco heretofore has been the difficulty of producing the desired texture and color to harmonize with the architectural design when the color has to be mixed in on the job, or of matching a certain color when the batches are mixed at different times or under different conditions.

Oriental Exterior Stucco is scientifically compounded and is water-resistive, non-staining, plastic, easy to apply, and permanent. Its use eliminates much of the uncertainty and defects inherent in both quality and appearance in the usual job-mixed stucco work.

Bases—Oriental Exterior Stucco may be applied over stucco mesh weighing not less than 1.8 lbs. per sq. yd., self-furring diamond mesh metal lath weighing not less than 3.4 lbs. per sq. yd., rough masonry and concrete. It is particularly adapted to use, with metal reinforcing, over Weatherwood Insulating Board and Gyplap. It is also adaptable for overcoating old cement stucco walls, masonry surfaces and, with metal reinforcing over walls of frame buildings. Oriental Exterior Stucco contains no ingredient that will in any way weaken or corrode steel reinforcement.

Base Coat—Oriental Exterior Stucco Base Coat is a specially prepared, factory-mixed, permanent, water-resistive base for Oriental Exterior Stucco Finish, with the correct proportion of uniformly graded, selected sand, and other ingredients added to make it plastic.

Factory mixing prevents oversanding or improper proportioning of other ingredients on the job. Its uniformity assures perfect joinings of various mixes that will not show through the delicate coloring of the finish coat.

Being made ready for use by the addition of water only, it is economical of time and labor and assures a base of uniform suction and strength.

Finish Coat—Oriental Exterior Stucco Finish is mixed with mineral colors and prepared ingredients that make it water-resistive. The formula used is based upon methods used in producing the famous Old World stuccoes and one successfully used in America for 25 years.

Oriental Exterior Stucco Finish is furnished in white and eleven standard colors. All ingredients, including the mineral colors, are weighed and the charge thoroughly machine mixed. Water only needs to be added at the job. A uniform color and correct mixture are thus assured, entirely eliminating the unavoidable variations which occur when stucco is hand-mixed on the job.

CHARACTERISTICS—Oriental Exterior Finish sets slowly enough to permit proper finishing, thus avoiding unsightly streaks or shading.

Proper manipulation by the workman will produce in Oriental Exterior Stucco the beautiful texture and color effects that mark the finest of both Old World and modern stucco work. Besides the period textures, it is easy to achieve the smooth trowel, stipple, sponge, rough cast or spatter-dash finishes.

Oriental Stucco Finish increases in hardness, strength and water resistive qualities with age.

USE—Use for base and finish coats of exterior white or colored stucco of the highest quality.

NOTE—*Oriental Exterior Stucco Finish may be applied over standard portland cement base coats.*

PACKAGE—Oriental Exterior Base Coat is shipped in 100-lb. paper bags, and Oriental Exterior Finish Coat is shipped in 100-lb. paper bags. Order Finish Coat by the number on color cards or samples.

COVERING CAPACITY—

NOTE—*See "Covering Capacity," page 3.*

Base Coat—The approximate covering capacity of one ton of Oriental Exterior Stucco Base Coat (scratch and brown coats) on the basis of the average job, is as follows:

Plastering surface	Brick and clay tile	Metal lath	Wire fabric	Cement and cinder tile	Concrete
Sq. yd. per ton	20 to 25	25 to 30	22 to 28	20 to 22	20 to 25

Finish Coat—One ton of Oriental Exterior Stucco Finish, not to exceed ¼ in. in thickness, will cover from 150 to 200 sq. yds., depending on the texture selected.

BB024 0877

Master Specifications

ORIENTAL EXTERIOR STUCCO

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

The following surfaces shall be finished with Oriental Exterior Stucco:

NOTE—*Here list and locate all work included under this contract, together with the description of texture and color selected. If more than one texture or color is used on the work, list, locate and describe separately.*

(2) EXAMINATION

This contractor shall examine all base surfaces to receive stucco and shall report to the architect in writing any defects which will detrimentally affect the work under this contract. Commencement of work under this contract, without such notice, will be construed as acceptance of the base surfaces, and full responsibility for the final condition of the finished work.

(3) SAMPLE PANELS

The contractor shall furnish on the site, where directed, three (3) sample panels one (1) square yard in area for the approval of the architect. Panels shall be executed on the base specified and in accordance with the architect's selection of textures and colors. The stucco work shall be finished in accordance with the approved panel or panels.

(4) GENERAL

All materials shall be as manufactured by the United States Gypsum Company. All work shall be performed by skilled workmen.

(5) MATERIALS

(5a) Red Top Expanded Metal Stucco Mesh—1½-in. mesh, painted; weight **[1.8] [3.6]** lb. per sq. yd. Nails shall be Red Top Furring Nails.

(5b) Red Top Self Furring Diamond Mesh Lath—(Galvanized) (Copper bearing steel, painted) (Pure iron, painted); weight 3.4. Nails shall be 6d galvanized.

NOTE—*Select either for frame construction as desired.*

(5c) Base Coat—Oriental Exterior Stucco Base Coat.

(5d) Finish Coat—Oriental Exterior Stucco Finish, color **No. (specify).**

(6) LATHING

NOTE—*Include only for frame construction.*

(6a) Expanded Metal—Apply the expanded metal across the studs. Secure with self-furring nails in accordance with the manufacturer's directions approximately 6 in. apart on studs. Lap pieces of expanded metal 1 in. Carry metal around all corners to the first support. Thoroughly secure the metal at all openings.

(6b) Diamond Mesh Lath—Apply the Self Furring Diamond Mesh Lath across the studs. Lap lath ½ in. on sides and 1 in. on ends. Carry metal around all corners to the first support. Secure with 6d galvanized nails not more than 16 in. on centers horizontally and 6 in. on centers vertically. Drive nails well in and bend to engage at least two lath strands.

(7) MIXING AND APPLICATION OF STUCCO

(7a) General—

(1) Use a clean, tight mixing box, about 3½x7 ft., raised about 4 in. at one end. Mix with a hoe. Clean the mixing box after each gauging.

(2) Use only clean water, free from alkali and impurities. Keep tools clean. Do not rinse tools in gauging water.

(3) Do not mix more material than can be applied in about one hour.

(4) Do not mix one gauging with another and do not retemper stucco after it has commenced to set.

(5) Do not apply during freezing, cold or wet weather, nor when rainstorms threaten.

NOTE—*Freezing will cause disintegration as well as color difficulty. Slow or sluggish drying or a rainstorm before hardening takes place, generally results in cloudy effects and color distortion. Careful treatment of this phase of stucco work is the greatest guarantee of uniformity in color. The material should not be applied to greasy surfaces. Integral waterproofing or anti-freeze solutions should not be used.*

(6) Keep stucco in a dry place. Do not store on ground.

(7b) Base Coats—Add only clean water to Oriental Exterior Stucco Base Coat and mix to the proper consistency. Apply in two coats. The first coat shall be ⅜ in. to ½ in. thick, scratched. After from 3 to 5 days apply the second coat not less than ⅜ in. thick properly rodded and floated to a true plane. Rake or thoroughly scratch each coat to provide a key for the succeeding coat. Allow second coat to cure from 7 to 10 days. In hot weather, wet down each coat daily.

(7c) Finish Coat—Add only clean water to Oriental Exterior Stucco Finish and mix to the proper consistency. Allow finish coat to soak from 20 to 30 minutes. After the base coats are completely dry, spray wall sufficiently to cut suction (avoid drowning surface). Apply finish coat not less than ⅛ in. or more than ¼ in. thick, as required for the finish selected.

The finish shall be:

NOTE—*Here specify or describe the finish selected. USG Bulletin OS-3 describes in detail the methods used to obtain various textures.*

RED BOOK · SECTION B

Wallboards

• • •

SHEETROCK

The Fireproof Wallboard

GENERAL—Sheetrock* is a fireproof wallboard. It is made of gypsum, moulded while in a plastic condition between two sheets of tough protective paper. In the finished product the gypsum has recrystallized and the board is strong, lasting, tough, durable and slightly flexible. The long edges are reinforced and protected by the same material with which the board is sheathed. These patented edges are square, uniform and true. The Sheetrock Joint Treatments described on the following page provide a uniform, strong, jointless surface ideal for any finish.

TYPES and SIZES—

Standard Sheetrock—Sheetrock with square edge is made ¼-in., ⅜-in. and ½-in. thick; 32 and 48 in. wide and 4, 5, 6, 7, 8, 9, 10, 11 and 12 ft. long. The widths fit standard 16-in. centering of studding and joists and the lengths readily adapt it to average ceiling heights.

Recessed Edge Sheetrock—Recessed Edge Sheetrock is like square edge Sheetrock, except the thickness along the folded edge is slightly decreased. This permits application of any Standard USG Joint Treatment in such fashion that the surface of the treated joint will be level with the surface of the board.

Recessed Edge Sheetrock is made ½ inch thick, 48 inches wide, 4, 5, 6, 7, 8, 9, 10, 11, and 12 feet long. It can be applied with length at right angles to the framing members, thus strengthening the structure and reducing the number of joints; or it can be used vertically. Also made in ⅜ inch thickness.



Tongue and Groove Sheetrock—Tongue and Groove Sheetrock is made ½ in. thick (longitudinal edges tongue and groove); 48 in. wide and 8, 9 and 10 ft. long. It must be applied with the length at right angles to the framing members.

THE SURFACE—Sheetrock has a close-grained, highly calendered surface of ivory color. It is tough and resistant to abrasion. Light colored paints retain their freshness and clarity. All paints spread farther.

THE CORE—The cellular core makes new Improved Sheetrock more insulating. It also increases flexibility, reducing the chance of breakage in transport and application.

THE NAILING EDGES—Nailing edges on the standard ¼-in., ⅜-in. and ½-in. Sheetrock are square and uniformly thick. The paper enveloping the core has been chamfered so that the reinforced edges are of precisely the same thickness as the rest of the board, thus eliminating bowing in the piles. Panels join evenly and smoothly.

MARKING—On the edge of each sheet will be found a distinctive marking.

USES—Sheetrock is used for walls and ceilings in buildings of all types; building new rooms in old buildings; lining garages and attics; fireproofing over heating plants; factory dry rooms; remodeling work. It permits rapid erection without inconvenience to tenants.

Sheetrock walls take all types of painting and decorating, including wall paper.

*Trade-Mark

BB024 0879

United States USG Gypsum Company

ADVANTAGES OF SHEETROCK

FIREPROOF—Does not burn or readily transmit heat. It interposes a continuous fireproof sheet of substantial thickness over the wood frame construction.

PERMANENT—Does not disintegrate.

NO EXPANSION OR CONTRACTION—Does not warp, shrink or crack, because it is unaffected by climatic conditions.

SUBSTANTIAL THICKNESS—The standard ⅜-in. thick sheet is almost twice as thick as ordinary fiber wallboard.

STRONG, CLOSE LONGITUDINAL JOINTS—The boards fit close and even. The tough paper covering of Sheetrock is folded square over the longitudinal edges, forming a patented feature which insures an extra strong nailing edge and tight, flush joints. When finished with Sheetrock Armored Joint System, the joints are permanently hidden and are not apparent even under wallpaper.

SOUND AND HEAT INSULATION—Its greater thickness and permanently tight joints increase its insulating qualities materially over those of ordinary wallboard.

It is a non-conductor of sound to a surprising degree.

EASY TO INSTALL—It is sufficiently light in weight for easy rapid handling. The tough sheets can be sawed and nailed like lumber.

SHEETROCK JOINT TREATMENTS

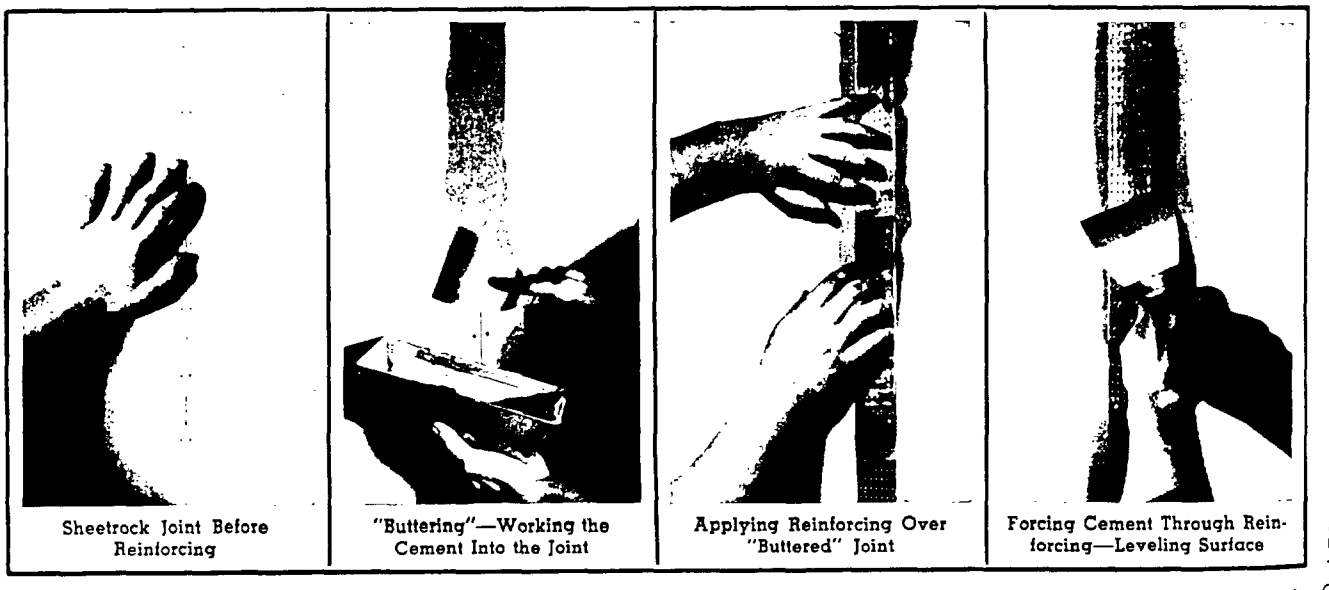
GENERAL—The United States Gypsum Company has developed three systems of joint reinforcement, which add permanent armored joint concealment to the other advantages of Sheetrock. The joinings between the boards are "laced" by a reinforcing member embedded in a perfected joint cement of unusual strength and adhesiveness. This assures permanent concealment of board joinings and lessens the possibility of joint cracks showing through the decoration.

SHEETROCK METAL "A"* JOINT SYSTEM—The Sheetrock Metal "A" Joint System of reinforcement consists of a perforated metal tape packed in a box containing 250 lin. ft. 1⅞ in. wide with 17 lbs. of joint cement which is sufficient to treat the joints on 500 to 650 sq. ft. of board surface.

SHEETROCK PERF-A-TAPE* JOINT SYSTEM—The Perf-A-Tape Joint System is designed especially for Recessed Edge Sheetrock but can be used equally well for Standard Sheetrock. It consists of specially fabricated, beveled and perforated Fiber Tape $2\frac{3}{16}$ inches wide. (Packed as described for Metal "A" with 17 pounds of cement.) The Perf-A-Tape Joint System develops tensile strength equal to Metal "A," combining high efficiency with economy.

SHEETROCK REINFORCED JOINT SYSTEM—The Reinforced Joint System consists of a specially woven and processed cloth fabric 2 in. wide, packed as above described for Metal "A" System, except the bag contains 10 lbs. of cement, sufficient to treat the joints on 500 to 650 sq. ft. of board surface.

SHEETROCK FINISHER—Sheetrock Finisher is a specially prepared material, far superior to so-called joint fillers, with none of the disadvantages of the old type of plaster filler. When mixed with water, Sheetrock Finisher forms a cement, which is easily, quickly and economically applied with a semiflexible scraping knife. It is used to conceal joints, spot nailheads and repair surface abrasions. Supplied in 5, 10 and 25-lb. packages. 5 lbs. should finish joints and cover nailheads for 500 to 650 sq. ft. of Sheetrock.



Sheetrock Joint Before Reinforcing

"Buttering"—Working the Cement Into the Joint

Applying Reinforcing Over "Buttered" Joint

Forcing Cement Through Reinforcing—Leveling Surface

*Trade-Mark

BB024 0880

United States USG Gypsum Company

Master Specifications

APPLICATION OF SHEETROCK

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words or clauses within brackets in bold face type are selective.*

(1) WORK INCLUDED

NOTE—*List and locate all walls and ceilings to be covered with Sheetrock.*

(2) FRAMING

All studding and joists shall be spaced 16 in. on center. Framing in general shall be standard as provided for the application of wood lath.

Provide 2 x 4-in. headers on ceilings to take all end joints of Sheetrock and where required to form nailing base for wood beams, cornices, etc. Cut in 2 x 4-in. headers on walls to form substantial nailing for baseboards, wainscot caps and similar interior woodwork trim.

(3) MATERIALS

(3a) WALLBOARD—Sheetrock as manufactured by the United States Gypsum Company.

(3a1) Standard Sheetrock—[¼-in.] [⅜-in.] [½-in.] thick lengths shall be full height from floor to ceiling on walls and to fit paneling or headers of ceiling.

(3a2) Tongue and Groove Sheetrock—½ in. thick, 8, 9, and 10 ft. long.

(3a3) Recessed Edge Sheetrock—½ in. thick, lengths same as Standard Sheetrock.

(3b) NAILS—

(3b1) 3d cement coated common nails (flat head) 1⅛ in. long. (5 lbs. of nails per M sq. ft. required.)

(3b2) Over old plaster, 6d cement coated common nails (flat head) 1⅞ in. long. (13 lbs. of nails per M sq. ft. required.)

(3b3) On building of two or more stories with a floor above Sheetrock ceiling, 4d cement coated common nails (flat head) 1⅜ in. long for ceilings. (8 lbs. of nails per M sq. ft. required.)

(3c) JOINT TREATMENT—

(3c1) Sheetrock Metal "A" Joint System.
(3c2) Sheetrock Perf-A-Tape Joint System.
(3c3) Sheetrock Reinforced Joint System.
(3c4) Sheetrock Finisher (cement).

(4) PREPARATION OF SHEETROCK

(4a) PILING—Pile flat on floor in center of room, back of board up, except first board. Protect edges.

NOTE—*Doors and windows should be in place before board is delivered on job.*

(4b) HANDLING—Always handle Sheetrock in a vertical position on its longitudinal edge.

(4c) SAWING—Place back of board down and use a sharp hand saw. Support board close to sawing edge. Cuts that are covered with trim may be made with a knife or chisel and a straightedge. Immediately after a cut is made, bevel the cut edges on the face side with coarse sandpaper. Also bevel all mill-cut ends before the board is nailed in place. In no case leave loose paper on cut edges unless they are to be covered with wood trim. Recut the mill ends of any boards that have been made imperfect by handling.

(5) APPLYING SHEETROCK

(5a) GENERAL—All ends and edges shall be perfect. All exposed ends shall be face-beveled. All board shall butt tight along the covered edges and shall be left open ⅛ in. at all abutting cut ends (do not force mill-cut or sawed ends together).

(5a1) Standard Sheetrock shall be applied with the length parallel with framing members.

(5a2) Tongue and Groove Sheetrock (½ in.) shall be applied at right angles to framing members.

(5a3) Recessed Edge Sheetrock (½ in.) shall be applied with length at right angles to framing members.

(5b) CEILINGS—Erect ceilings first. Apply **[Tongue and Groove] [Recessed Edge]** Sheetrock **[parallel with] [at right angles to]** joists. Tack a strip of wood along the top of studs ½ in. from ceiling joist. Then raise Sheetrock, resting one end on the strip, and place a tee (made of 1 x 2-in.) under the board about one-third the distance from the opposite end to hold Sheetrock in position while nailing. When cross joints are necessary they shall be broken except when the joints are to be covered with wood panel strips or beams.

(5c) WALLS—Apply **[Tongue and Groove] [Recessed Edge]** Sheetrock full length **[vertically] [at right angles to framing].** Edges shall fit tightly against ceiling boards. Scribe and saw to fit if necessary. Square the first board with adjacent walls. Fill spaces above and below windows last. Break joints on partitions (on opposite sides of partitions perpendicular joints shall not come on the same stud).

(5d) NAILING—Drive nails "home," straight in, with heads slightly below surface; do not use a nail set. On intermediate supports space nails 6 in. apart on ceilings and 9 in. apart on walls. At **[all sides and]** ends, space nails 3 in. apart ⅜ in. from edge. First, drive **[a few]** nails at the edge adjoining board last applied; nail the first intermediate stud or joist; nail the second intermediate stud or joist; finally nail **[sides and]** ends. Do not stagger nails on joining edges. **[Nail from the center of the board towards each end.]** If there is a slight bow, set several nails in the board along the nearest support, pushing the board tightly against the support and driving the nails home.

NOTE—*Omit clauses in bold face type in above par. (5d) if Tongue and Groove or Recessed Edge Sheetrock is specified.*

(6) APPLYING JOINT TREATMENTS

NOTE—*Complete direction sheet is contained in each package containing reinforcing tape and cement.*

(6a) Remove the roll of reinforcement, direction sheet and the bag of cement from the package.

(6b) CAUTION—Do not mix more cement than can be used in one day. Mixed cement must not be allowed to stand over night. Never add Plaster of Paris or any other material to the cement.

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(6c) Into a water pail or other metal receptacle containing the prescribed quantity of water (see direction sheet), gradually add the contents of the large bag of powdered cement and while adding, mix thoroughly to a consistency thinner than putty (in cold weather take the chill from the water). Be sure to get the entire batch plastic and completely mixed, so it will be pliable enough to work through the weave of the fabric reinforcing to insure a uniformly good bond. Place a wet cloth over the material and let stand for one hour before using.

(6d) After the mixed cement has stood for one hour it is ready for use. If too thin, add some dry joint cement.

(6e) Where any joinings between Sheetrock boards are open more than ⅛ in. because of careless application, first fill them level to surface of board with Sheetrock Finisher. After the Sheetrock Finisher is completely "set" and dry, the joint shall then be treated with the reinforcement and cement.

(6f) Cut **[Metal "A" tape] [Perf-A-Tape] [Fabric]** Reinforcing into proper lengths to correspond to the joints; or cut off a strip as the workman begins to treat each joint.

(6g) With a semi-elastic broad knife, liberally "butter" the joint with the plastic cement working cement well into the joints and immediately place a strip of **[Metal "A" tape] [Perf-A-Tape] [Fabric]** reinforcing over this cement, pressing down evenly. Then draw broad knife firmly over reinforcing, exerting pressure enough to force cement through the **[perforations] [fabric mesh].**

Remove excess cement leaving a thin covering over the reinforcing and at the same time level the surface on each edge of reinforcing. Caution: Be sure to work the cement well through **[perforations] [fabric mesh]** and see that cement covers tape

When dry, sand lightly and feather edges with a thinner coat of cement.

(6h) If a good, level and uniform job has not been secured with this single application, the joint, when dry, shall be gone over again with cement to properly prepare it. Sand smooth if required.

NOTE—*Where decoration over this reinforced joint is to be paint or wallpaper, more care must be taken to make a smooth, even job. A second application is often required. Joints and nailheads should be carefully sandpapered after the cement is dry, or slight imperfections and rough places may show up distinctly under the paper or through paint. Sheetrock Finisher can be used for the second application, as it produces a smooth finish for concealment with paint or wallpaper.*

(6i) Spot all intermediate nailheads with cement.

DECORATING SHEETROCK

GENERAL—Sheetrock can be painted, calcimined, wallpapered, enameled or covered with lining cloth or paper, either with or without panels. It can also be decorated with Textone Plastic Paint or Texolite. Always conceal joints and nailheads by means of a Sheetrock Joint Treatment or with Sheetrock Finisher.

WALLPAPER—Before hanging wallpaper or wall fabric, apply a varnish size to facilitate their removal when redecorating.

PAINTING—See that the surface of Sheetrock is absolutely clean, dry and free from dust. Use a sizing coat or primer, made by mixing equal parts of a good grade of varnish size and ready mixed paint of desired color; or, with white lead thinned with turpentine or benzine, and tinted to suit. Before priming surface, apply a coat of primer over joints and nailheads and stipple with a stubby brush. When dry apply a coat of primer uniformly and carefully over surface. Let priming coat dry at least 24 hours, then touch up any "flat spots" and let dry before applying the first coat of paint.

TEXTURE DECORATION—USG'S Method of Low Cost Texture Decoration uses Textone for texture, Texolite for color. Three simple steps produce finished decoration: (1) Application of extremely thin coat of Texture; (2) Working in desired texture; (3) Application of Texolite.

TEXOLITE*—Texolite, an exclusive USG product, is a flat, washable paint particularly well adapted for use over Sheetrock. It is unexcelled for hiding power and light reflection. Made in pastel shades or deep colors which may be intermixed to provide a wide variety of shades. Dries in an hour.

CALCIMINE—Before calcimining apply a varnish size, following same method of first brushing joints and nailheads as for painting.

TEXTONE*—Uniformity in color of tinted Textone over Sheetrock and Sheetrock Reinforced Joint Systems is best secured when joints are painted with a coat of tinted Textone, well brushed out. When this is dry the regular Textone texture coat may be applied.

USG RESILIENT SHEETROCK SYSTEM

Reduces Sound Transmission

The USG Resilient Sheetrock System is an adaptation of the USG Sound Control System (see Section on Sound Control Service—Engineering Sales Division) to the application of Sheetrock on either wood studs, metal studs, or wood or metal wall furring. It reduces sound transmission in wallboard construction and permits the wallboard to be attached to steel studs and to be used in suspended ceiling construction.

This adaptation consists of an attachment for fastening the Sheetrock resiliently to the framework of the building. The attachment is in the form of a spring clip to which a perforated metal plate (3¾ x 2⅜ in.) is welded.

The Sheetrock is fastened to this perforated metal plate with Standard USG Self Threading Screws. Holes are punched in the Sheetrock with an awl or similar tool to receive the screws.

Four types of clips permit attaching Sheetrock to wood studs, joists, and furring strips; steel studs, furring channels, and channel suspended ceiling construction.

Perforated plates are furnished alone (without clips) to tie Resilient Sheetrock ceilings to Resilient Sheetrock partitions and are also used in ceiling construction as tie plates in lieu of headers.

The exposed Sheetrock joints in the Resilient Sheetrock System are finished with Sheetrock Reinforced Joint Systems as described and specified for standard Sheetrock application.

*Trade-Mark

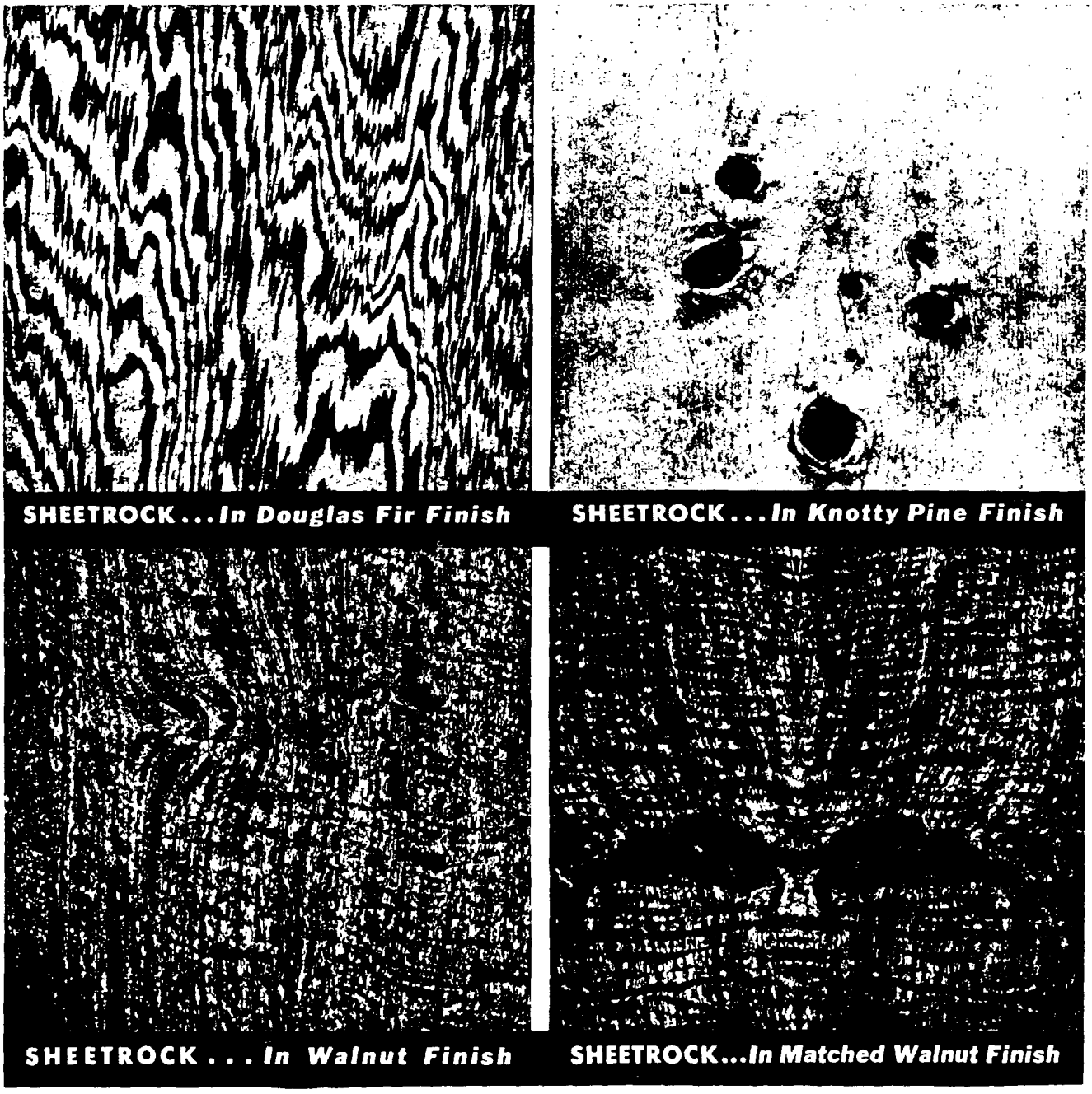
United States U.S. Gypsum Company

WOOD GRAINED SHEETROCK*

Reproductions of Actual Wood

DESCRIPTION—Wood Grained Sheetrock (a new type of Wallboard) now makes it possible to have the beauty of wood-paneled interiors at wallboard costs. The face surface of this new board so closely resembles wood that it is not easily distinguishable from the actual material itself. It is a reproduction by engraving and printing processes of the graining and color of a genuine wood surface, specially selected for beauty.

LIGHT AND DARK WOODS—Wood Grained Sheetrock is made in four finishes; walnut panels with a repeating pattern that can be matched, plain walnut with a continuous grain pattern, knotty pine and Douglas fir. This choice affords a light, a dark and a medium toned finish, the three groups into which all decorative woods are classified. The surfaces are true reproductions of the woods themselves.



*Registered Trade-Mark

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TYPICAL INSTALLATIONS OF WOOD GRAINED SHEETROCK



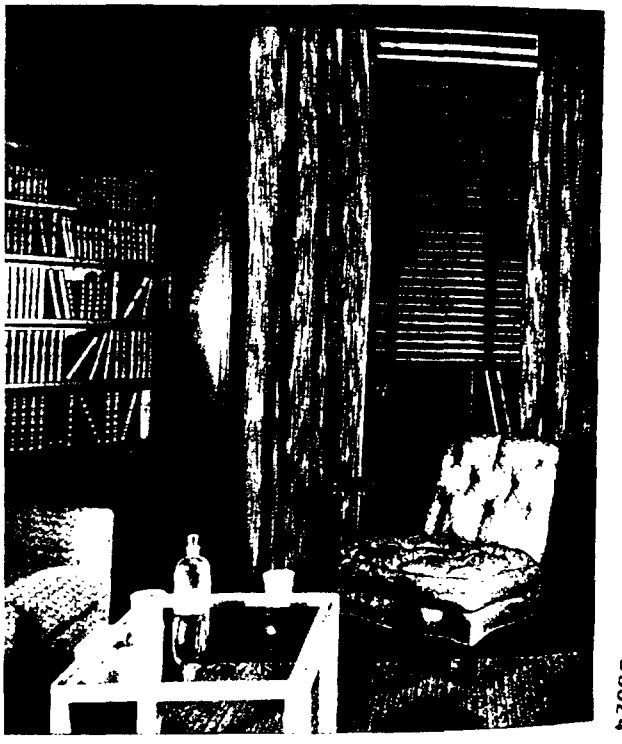
The same office before and after finishing with Walnut Wood Grained Sheetrock



Wood Grained Finishes of Sheetrock realistically reproduce wood. This is Douglas Fir



Knotty Pine Sheetrock used for walls, ceilings, doors, mouldings, beams, and pilasters



Modern living room and library having Sheetrock walls in Walnut Wood Grained Finish

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(Wood Grained Sheetrock Continued)

ALL THE ADVANTAGES OF SHEETROCK — Like Sheetrock with the ivory finish, Wood Grained Sheetrock is fireproof, non-warping, strong, durable, and easy to handle and erect. It has a tough gypsum core that grips nails tightly with the same tough fiber covering that is largely responsible for Sheetrock strength.

Wood Grained Sheetrock stays in place wherever it is nailed, little affected by moisture or temperature changes. This is a distinct advantage in favor of this type of paneling because it avoids the possibility of panels pulling away from mouldings to leave an undecorated margin showing.

WALLBOARD SIZES—The matched walnut panels are made 4 ft. wide and in lengths of 8 and 9 ft. only. The standard walnut, Douglas fir, and knotty pine boards are 4 ft. wide and from 6 to 10 ft. long. Boards are ⅜ in. thick, with the exception of Douglas fir which is furnished in both ¼ and ⅜ in. thicknesses.

It is easily cut and fitted into place. It can be cut in the same way that Sheetrock with the ivory finish is cut, either by sawing or by scoring from the face side and breaking.

MANY USES—The use of Wood Grained Sheetrock extends to all interior construction that is adapted to wallboard treatment. It is used for wood-paneled effects in residences, stores, shops, offices, display rooms, restaurants, tea rooms, hotel lobbies, apartments, dentists' and physicians' offices, club rooms, and for window display backgrounds.

EASY TO ERECT—The method of erection is similar to the erection of Sheetrock where it is used with mouldings or panel strips.

Boards are nailed in place and joints are covered with decorative mouldings—just the same as if the panels were made of wood veneer.

Other mouldings are used as needed to create panel designs.

For intermediate nailing, use 4d finishing nails driven at a 45-degree angle. Nail heads may be concealed with linseed oil putty mixed with stain to match the surface, or stick shellac of the correct color may be used.

Directions will be found on each panel of Wood Grained Sheetrock.

FINISH—VARNISH, SHELLAC, OR WAX—In the manufacturing process the Wood Grained Sheetrock is treated with two lacquer coats to preserve the surface and bring out the wood pattern and coloring. The result is a durable, lasting surface.

If further finish is desired, this can be accomplished by first giving the surface a coat of white shellac (clear) followed, when dry, with one or more coats of varnish (light colored), lacquer, or wax. (Be sure shellac and not varnish is used for first coat.)

SHEETROCK PANELWOOD*

A Genuine Wood Veneer

DESCRIPTION—Selected cabinet woods are applied to the face of special, dense improved Sheetrock (The Fireproof Wallboard) thus creating a superior interior wood faced panel material with all of the advantages inherent in Sheetrock (see page 2). The appearance is identical to high class wood panels.

Sheetrock Panelwood is finished (staining, varnishing, etc.) in accordance with standard specifications for wood.

The Sheetrock is improved in that the gypsum core is denser and exceedingly tough and strong—the fiber covering (over which the wood is applied on the face side) is heavier and stronger than formerly. The material, full ⅜ in. thick, has sufficient body to assure rigidity, long life, and exacting service.

TYPES OF WOOD

Standard—The standard woods available in Sheetrock Panelwood are walnut, mahogany, and quartered American oak. They are shipped in the natural wood and are ready for whatever type of finish is desired.

Special—In addition to the standard woods above, Sheetrock Panelwood, on special order, can be furnished in other wood finishes (subject to their availability).

SIZES OF PANELS

Standard—Standard sizes are 4 ft. x 8 ft. and 4 ft. x 10 ft.

Special—Sheetrock Panelwood can be furnished in any size up to maximum standards to meet special requirements at additional cost.

HOW SHIPPED—Sheetrock Panelwood is crated with edges and faces protected to withstand shipment. Standard panels should be used wherever possible to obtain the utmost economy on the job.

Panels made in other than standard widths must be cut to size, entailing extra time and expense.

Further economy is obtained through the use of panels of standard sizes because an even number may be packed in a single crate.

It should always be kept in mind that Sheetrock Panelwood is a finished product, similar to fine wood finish.

It should be handled and piled so as to protect the face and edges, and wherever possible should be delivered to the mill or job in the original crates.

*Trade-Mark

BB024 0885

INSULATING SHEETROCK

Insulating Sheetrock* is Sheetrock upon the back of which is mounted a thin, smooth, bright sheet of aluminum. Insulating Sheetrock is applied to the interior face of exterior walls, rafters, or top story ceilings with the bright aluminum side next the framing members facing the open space between. Thus installed, its heat insulating value is equal to or better than that of standard ½ in. thick Fiber Insulating Board—at the same time it has all the inherent qualities of standard Sheetrock as an excellent interior wall finish. It is applied and finished as specified for Sheetrock. For complete data see USG "Thermal Insulation" Section.

SHEETROCK TILE BOARD*

A Wallboard Replica of Ceramic Tile

DESCRIPTION—Sheetrock Tile Board is a fireproof, gypsum wallboard made to obtain conveniently and at low cost, beautiful tiled-wall effects. It is a perfected product that makes possible lacquered and enameled surfaces that resemble the best ceramic tile in any shade of color desired, thus enabling the decorator to obtain complete color harmony.

After Sheetrock Tile Board has been erected and decorated, it can be washed clean when soiled. The surfacing of Sheetrock Tile Board is of heavy fiber, which has a distinctive cream color, especially adapted for decorating.

SIZES—Sheetrock Tile Board is made in panels ⅜ in. thick, 48 in. wide and 6, 7, 8, 9 and 10 ft. long. The tile impressions are 4¼ x 4¼ in., a standard size for built-in fixtures. There is a selvage or trimming edge on each panel end outside the tile pattern. The panels are packed two in a bundle, with the tile face inside and edges reinforced.

ADVANTAGES—Because it is made from gypsum, Sheetrock Tile Board does not burn. Neither does it warp or buckle, nor does it harbor vermin. It is light enough for convenient erection and can be nailed, sawed and fitted with the ease of wood.

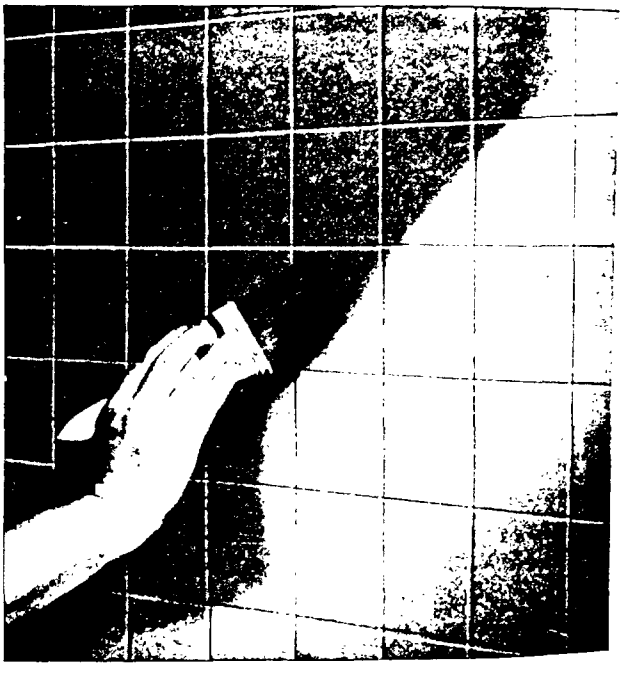
The material has all the advantages inherent in Sheetrock.

USE—Use for tiled-wall effect in bathrooms, kitchens, lavatories, lunchrooms, dairies, doctors' offices, restaurants, delicatessens and barber shops.

ERECTION AND DECORATING—Complete directions for erection and decorating of Sheetrock Tile Board are on the back of each panel.



Sheetrock Tile Board is Economical to Buy and Economical to Erect. The Large, Flat, True Sheets are Nailed in Place by any Carpenter.



Sheetrock Tile Board is Easy to Decorate. Paint Covers Well over its Ivory Non-absorptive Surface. Joints may be Painted to Simulate Tile Joints.

*Trade-Mark

B8024 0886

United States U.S. Gypsum Company

GYPLAP

Fireproof Sheathing

DESCRIPTION—Gyplap* is a fireproof solid sheet of gypsum encased in a tough, fibrous, water-resisting covering. The ends are coated to resist moisture. It is an ideal material for sheathing on frame structures under siding, shingles, stucco, and brick veneer Gyplap Sheathing has tongue and groove edges on the long dimension to provide positive assurance of a tight fit at the unsupported joints. Gyplap Sheathing does not open up at joints with moisture and temperature changes. It is applied with its length at right angles to the studs.

INSULATING GYPLAP—Insulating Gyplap is Gyplap, upon the back of which is mounted a thin, smooth, bright sheet of aluminum. Insulating Gyplap is applied to the exterior face of exterior walls with the bright aluminum side next the framing members. Thus installed, its heat insulating value is equal to or better than that of standard ½ in. thick Fiber Insulating Board.

SIZES—Gyplap is ½ in. thick, 24 in. wide, 6 ft. 8 in. and 8 ft. long to fit supports 16 in. on centers.

ADVANTAGES—

Fireproof—Does not burn or readily transmit heat. It interposes a substantially thick fireproof sheet over the wood frame.

Permanent—Does not disintegrate.

Moistureproof—The outer surface is specially treated to resist moisture. No building paper is required. The ends are coated to resist moisture.

Windproof—The continuous surface with wind-tight horizontal joints (the end joints occur only over supports) prevents air leakage.

Economy and Convenience—The sizes of Gyplap are convenient and economical to erect. It cuts and nails as easily as lumber, adapting it to any building condition. Every sheet of Gyplap is true and uniform—no knots or waste material.

Strength—The large units of Gyplap span across seven studs spaced 16 in. on centers and thoroughly brace the framework.

STRENGTH AND RIGIDITY TESTS—Strength tests of Gyplap and of ⅞-in. thick wood sheathing applied both horizontally and diagonally, conducted by Columbia University in New York City, and Armour Institute of Technology in Chicago, are ample proof of the strength and rigidity of gypsum sheathing, and its suitability for all purposes for which wood sheathing has usually been employed.

Master Specifications

GYPLAP—FIREPROOF SHEATHING

NOTE—*Siding, stucco and brick veneer may be applied over Gyplap or Insulating Gyplap in the usual manner.*

(1) SHEATHING

Sheathing shall be **[Gyplap] [Insulating Gyplap]** as made by the United States Gypsum Company, ½ in. thick, 24 in. wide, 6 ft. 8 in. or 8 ft. long. Nails for application shall be 1¾ in. long, No. 10½ gauge, galvanized flat head roofing nails.

(2) APPLICATION

Apply **[Gyplap] [Insulating Gyplap]** with groove side down and **[trade-mark] [aluminum foil]** side in, directly to framework with length at right angle to supports.

Butt the ends tightly over a support and interlock the side edges. Stagger vertical joints.

Fit tightly around all openings.

Fasten securely with nails spaced 4 in. apart on each bearing, set ⅜ in. from end edges.

Do not cover Gyplap with building paper.

*Trade-Mark

(3) SIDING

Apply siding at right angles to studding directly over Gyplap. Nail only to studs with nails sufficiently long to pass through the Gyplap.

(4) STUCCO

Apply Red Top Expanded Metal Stucco Mesh at right angles to the studs. Secure the Stucco Mesh with 2-inch self-furring nails spaced approximately 6 in. apart on centers driven through the Gyplap into the studs. Lap the pieces of expanded metal 1 in. Carry the metal around all corners to the first support. Thoroughly secure the metal at all openings.

NOTE—*Follow standard specification for the application of exterior stucco.*

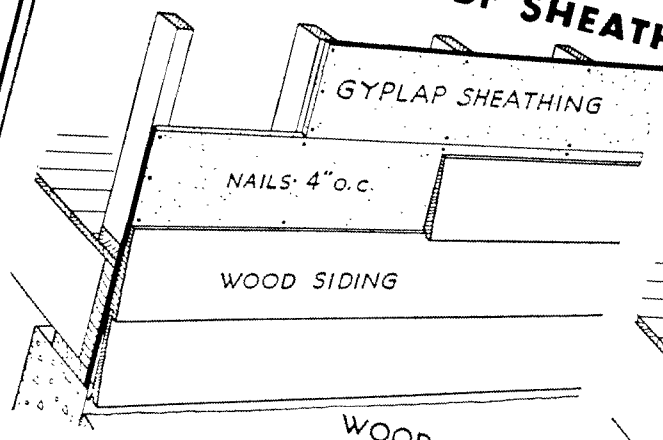
(5) SHINGLING

Over the Gyplap apply, secured through the Gyplap to each bearing, 1 x 2-in. furring strips to take shingle weathering specified.

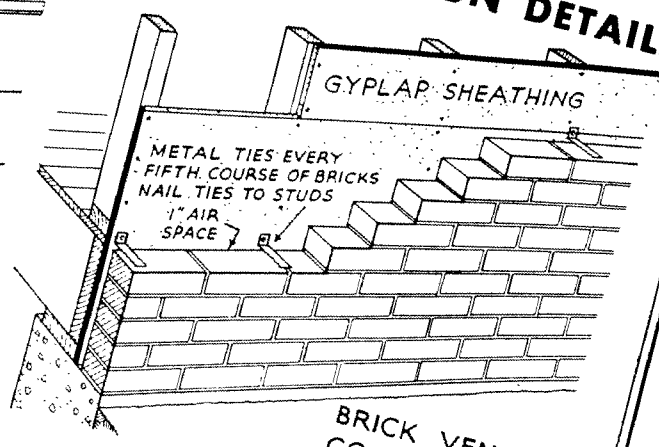
BB024 0887

United States USG Gypsum Company

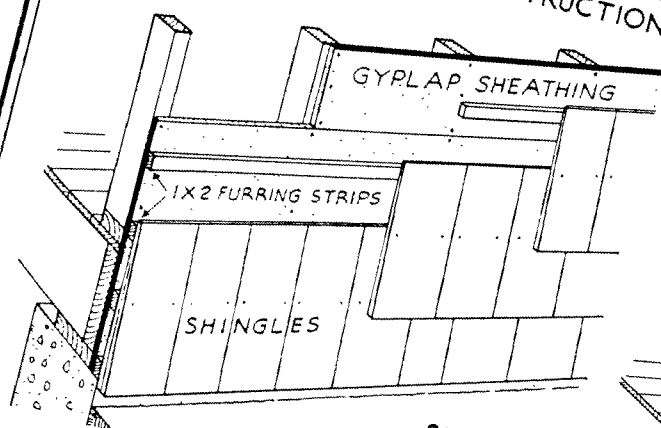
GYPLAP FIREPROOF SHEATHING CONSTRUCTION DETAILS



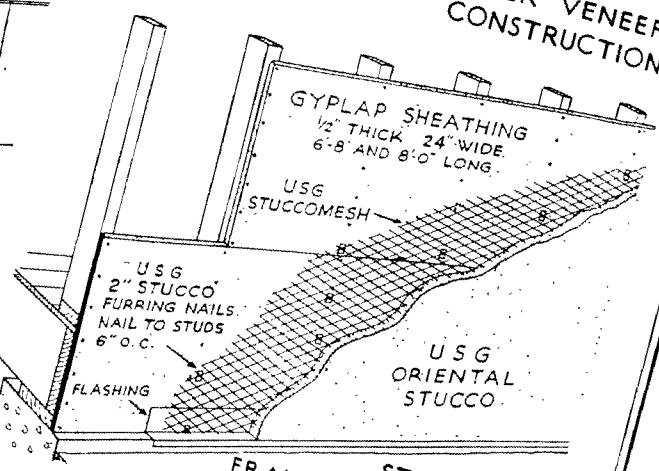
WOOD SIDING CONSTRUCTION



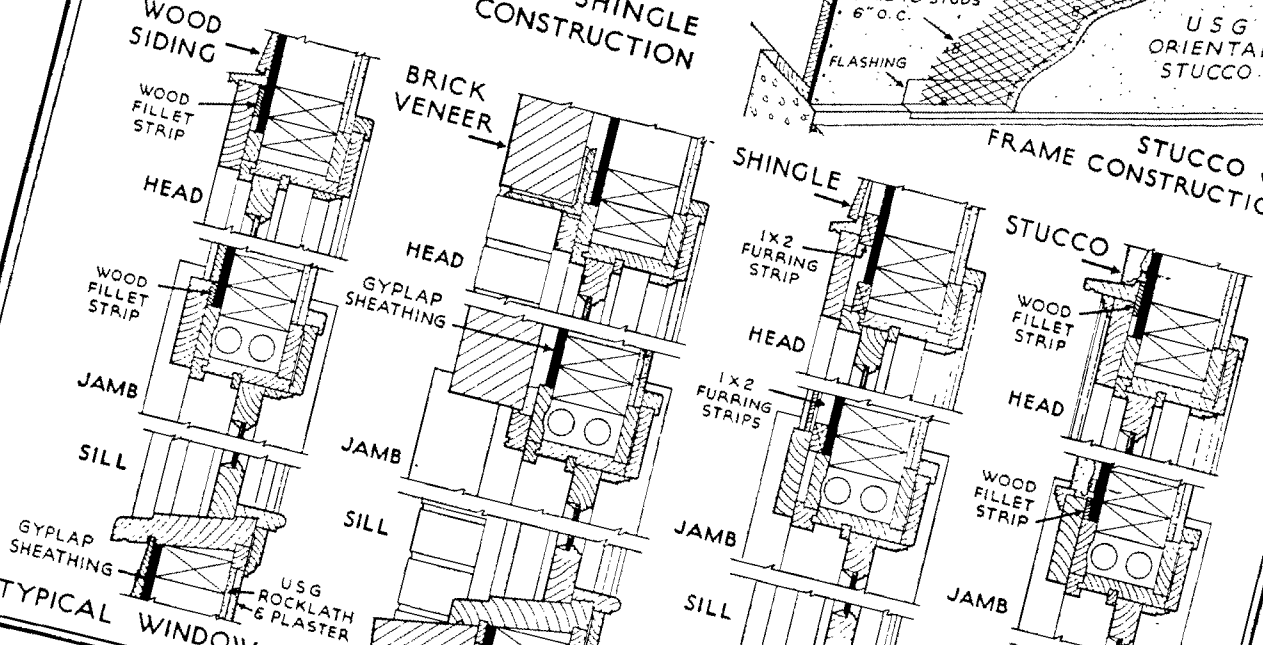
BRICK VENEER CONSTRUCTION



SHINGLE CONSTRUCTION



STUCCO ON FRAME CONSTRUCTION



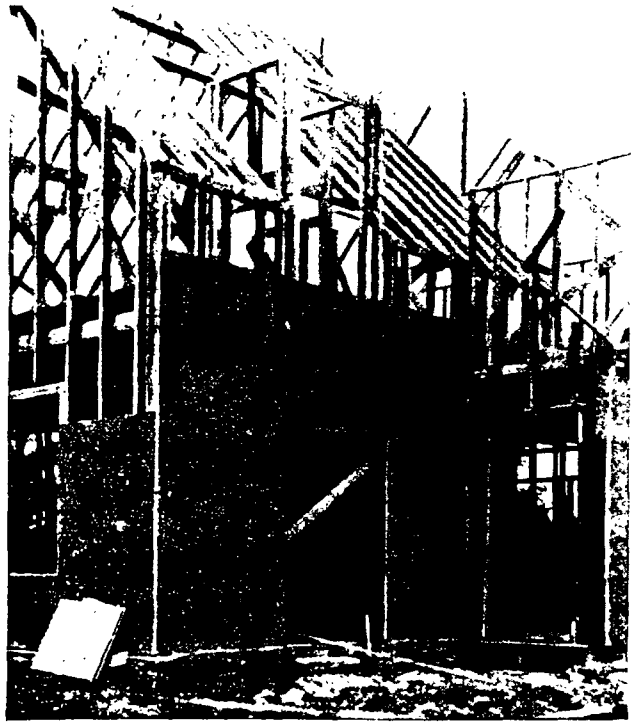
TYPICAL WINDOW DETAILS - GYPLAP SHEATHING WITH STANDARD FRAMES

SECTION B

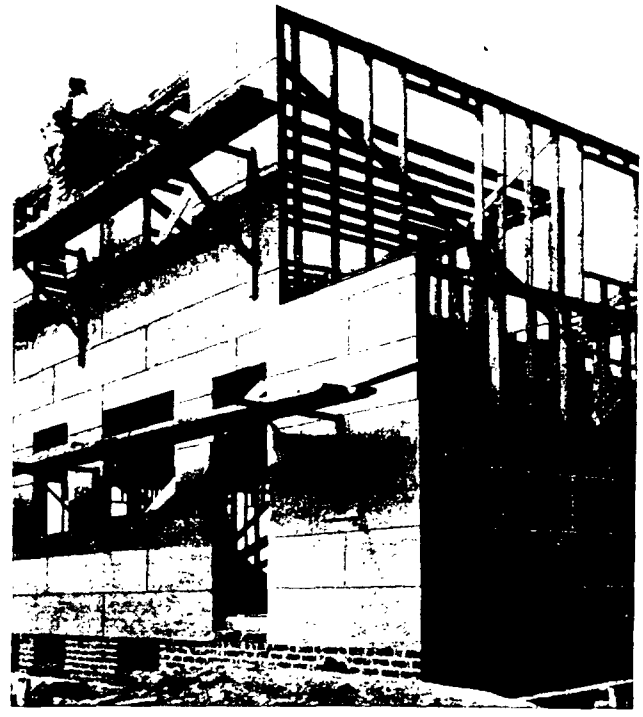
B8024 0888

United States U.S. Gypsum Company

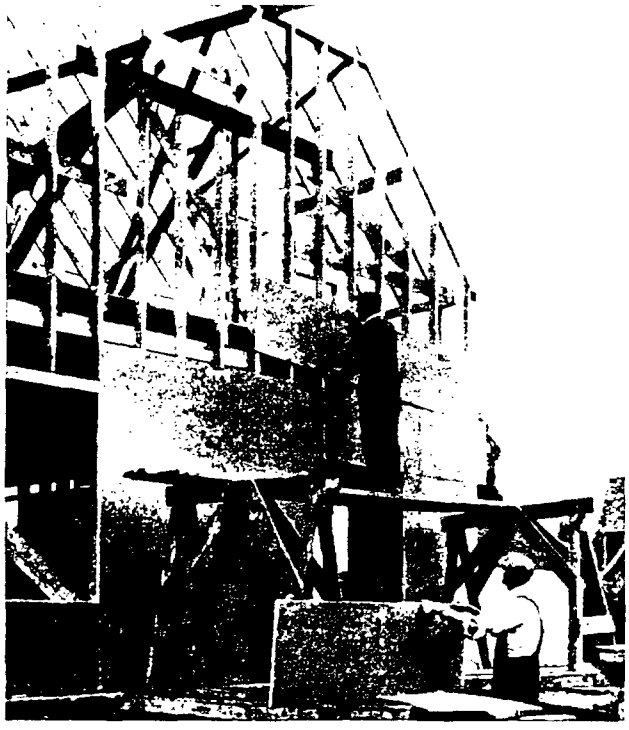
GYPLAP • THE FIREPROOF SHEATHING
TYPICAL INSTALLATIONS



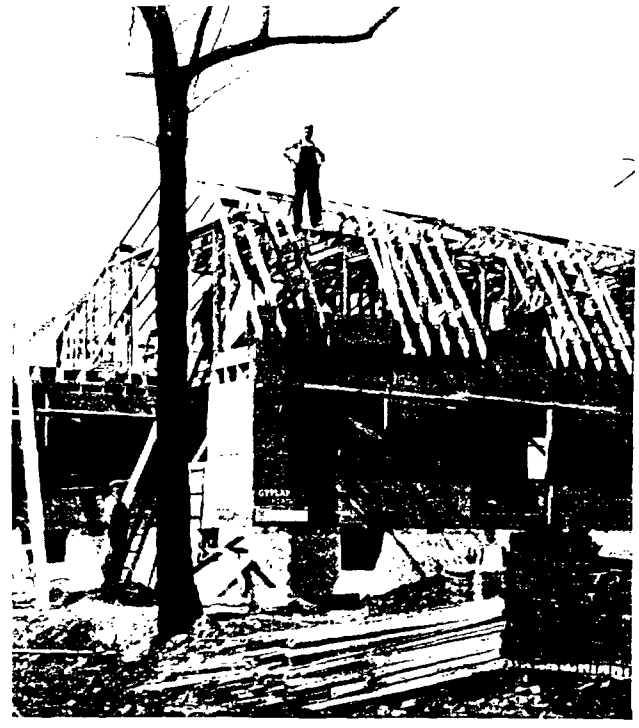
The convenient sized sheets of Gyplap quickly cover the framework of the house



Gyplap has tongue and groove edges on the long dimension to make tight-fitting joints



Gyplap sheets span six spaces between studding spaced 16 inches on centers



It is easy to cut Gyplap, the Fireproof Sheathing, for short lengths without waste

BB024 0889

WEATHERWOOD HARDBOARD

DESCRIPTION—Weatherwood* Hardboard is a compressed wood fiber product, extremely dense, hard, tough, and rigid. It has two smooth finished surfaces of a mottled brown color and presents a pleasing appearance. It is easy to paint, enamel, stain, varnish, etc., and can be sawed into any shape desired and nailed. Smooth, clean holes can be drilled in it.

Weatherwood Structoboard* is similar to the Hardboard, but as it is not compressed as much, it is not quite as dense and hard.

SIZES—Weatherwood Hardboard is furnished in thicknesses of ⅛ in. (.130 to .150), 3/16 in. (.180 to .200), ¼ in. (.240 to .260).

The ⅛ and 3/16 in. boards are furnished in the following sizes:

1x4 ft., 2x4 ft., 3x4 ft., 4x4 ft., 4x5 ft., 4x6 ft., 4x8 ft., 4x9 ft., 4x10 ft., and 4x12 ft.

The ¼ in. Hardboard is furnished in 4x12 ft. only.

Weatherwood Structoboard is furnished in ¼ in. thickness (.215 to .235) and in the same sizes as the ⅛ and 3/16 in. Hardboard.

USES—Both Weatherwood Hardboard and Structoboard are excellent in cabinet work for cupboard backs, drawer bottoms, etc. They are extensively used as wall and ceiling finish, especially when erected with bright metal joint mouldings; as decorative overlays over insulating board walls and ceilings; and for wainscots, paneling, booths, and partitions.

Weatherwood Hardboard and Structoboard have many uses in both the commercial and industrial fields. It is used extensively in furniture and toy businesses. It is an excellent material for signs, mountings, and for general display purposes. In the industrial field it has extensive uses, such as patterns, templets, drying racks, etc.

Another important use is in the permanent display field. Some of the finest displays in use today in shops, department stores, and traveling displays on truck and train are built of Weatherwood Hardboard.

ADVANTAGES—Weatherwood Hardboard and Structoboard are truly all-purpose products. They are strong and durable, yet light in weight and easily handled. Their hard surfaces resist the extremes in abrasion. They have extremely low moisture absorption.

FIBER WALLBOARD

DESCRIPTION—Tiger Fiber* and Red Top* Wallboards are unsurpassed in quality by any other fiber wallboard. They are uniform, tough, unusually strong for this type of board, and because of their lightness are easy to handle and apply.

The face side of Red Top Fiber Wallboard is either smooth or embossed, giving excellent surface for decoration. The back surface is smooth.

SIZES—Tiger Fiber Wallboard, approximately 3/16 in. thick, 48-in. widths, lengths 6, 7, 8, 9, 10, 12, 14 and 16 ft. Packed same as Red Top Fiber Board.

Red Top Fiber Wallboard, Standard Thickness full 3/16 in., 4-ply, 32-in. and 48-in. widths, lengths 6, 7, 8, 9, 10, 12, 14 and 16-ft. Packed ten boards to the bundle.

Red Top Fiber Board. "Extra Thick" ¼ in., 5-ply, 48-in. widths, lengths 6, 7, 8, 9, 10, 12, 14 and 16-ft. Packed eight boards to the bundle in the longer lengths.

ADVANTAGES—These wallboards are very carefully made of laminated layers of selected wood fibers, which interlace, forming a board that is strong and tough. The board is thoroughly kiln dried.

Red Top Fiber Wallboard is of even thickness and uniform size, as a result of which it can be applied with a minimum amount of labor.

By means of a special varnish sizing process the board is made unusually moisture resistant and the surface prepared for economical decorating. A wide range of decorative possibilities is afforded, the board taking the paint smoothly and easily and giving an attractive velvety finish.

The "Extra Thick" ¼ in. board is 5-ply instead of 4-ply and is processed in the same manner as the regular 3/16 in. board. It is recommended where an extra strong board is desired.

USE—Because of the sturdiness, light weight, ease of application and low cost of Tiger Fiber Wallboard, it has many important uses. It may be used for rapid partitioning wherever a fiber wallboard is desired; for building stock and storerooms, bin separators, display signs and exhibition booths; for backgrounds for window displays; and for lining garages, dairies, granaries, poultry houses, and other farm buildings. Red Top Fiber Wallboard is adapted for the same uses.

ERECTION and DECORATING—These wallboards are easily sawed and nailed. It should be nailed securely in every stud. All joints should be covered with wood panel strips. The surface, when prepared in accordance with the manufacturers' directions, is suitable for oil-paint, flat-paint, water-paint, Texolite, or for Textone or Em-Bel-Lo texture paint. It should not be wallpapered. Red Top Fiber Wallboard is often left in its own good-looking ivory color.

*Trade-Mark

88024 0890

RED BOOK · SECTION C

Thermal Insulation

• • •

WEATHERWOOD* INSULATION

Structural Board Type

PHYSICAL CHARACTERISTICS

DESCRIPTION—Weatherwood Insulating Board (also Red Top* Insulation and Red Top Weatherwood Insulation) is a felted wood fiber product, highly moisture resistant. It is a homogeneous board, free from laminations and tendencies to split through the center.

NOTE—*United States Gypsum Company has three Insulation Board mills: St. Joseph, Missouri; Greenville, Mississippi; and Lisbon Falls, Maine. While the raw materials from which the St. Joseph Mill insulation is made are basically different from those of the Greenville and Lisbon Falls Mills, the products of all mills are essentially the same.*

LOW THERMAL CONDUCTIVITY—The average thermal conductivity established in tests is .33 B.t.u.'s per hour, per sq. ft., per one inch thickness, per degree F.

RESISTANCE to MOISTURE—NON-ABSORPTION—Tests show that this board, after being submerged in water for a period of two (2) hours, has an average water absorption of less than 15 per cent. It absorbs less paint than any similar product.

STRUCTURAL STRENGTH—The tensile strength is over 350 lbs. per sq. in., and the modulus of rupture, over 500 lbs.

DURABILITY—There is nothing in this board that will deteriorate prematurely and impair the original insulation value. Since the board is homogeneous, the fibers being interwoven through the sheet, it will not split. The weatherproofing chemical with which the fibers are treated makes the board distasteful to rodents and insects. Weatherwood Insulation is also furnished, when specified, with treatment making it proof against attack by termites and fungi growth (dry rot). This treatment does not change its ivory color or other physical characteristics.

NON-COMPRESSIBILITY • RESILIENCE—When laid over roof decks under standard roofing materials, it is sufficiently firm to prevent denting or cutting of the roofing under normal use. Weatherwood will not compress under furring strips.

UNIFORMITY—Adequate laboratory control and mill inspection assure uniformity in density and strength.

APPEARANCE—TEXTURE and COLOR—The high quality of the product is reflected in its fine appearance. One surface is finished in a uniform semi-rough texture and the other in a smooth "skin" surface. For decorative use, one side, where so specified, may be obtained in either a sanded smooth, brushed, or textured finish. The standard color is an attractive ivory. All Weatherwood products, however, may be obtained in a choice of three colors—ivory, gray and tan.



New Textured Finish

COST—Advanced methods of manufacture, quantity production, and national distribution assure a reasonable cost. Because of the light weight and large units, the board is easy to install at low labor costs. It is cut and nailed like lumber.

*Trade-Mark

BB024 0891

WEATHERWOOD INSULATING and DECORATIVE PRODUCTS

BUILDING BOARD—Weatherwood Building Board is made ½ in., ¾ in., and 1 in. thick; 4 ft. wide; and 4, 5, 6, 7, 8, 8½, 9, 9½, 10 and 12 ft. long.

Used as interior wallboard, left natural or decorated, the joints may be merely beveled or covered with Weatherwood panel strips or mouldings or with wood or metal mouldings.

Used as exterior sheathing, it is practically as strong as matched diagonal wood sheathing and much stronger than horizontal sheathing.

INSULATING PANEL STRIPS—For covering joints of Weatherwood Building Board when used as a wallboard. ⅜ in. thick, 2 in. wide, and 9 ft. long; ⅜ in. thick, 4 in. wide, and 9 ft. long and ½ in. thick, 4 in. wide, and 9 ft. long—all with beveled edges.

MOULDINGS—In addition to the Insulating Panel Strips, eight (8) standard mouldings (see details) are carried in stock in 9 ft. lengths in three (3) colors—ivory, gray, and tan.

TONGUE-and-GROOVE INSULATING SHEATHING—Used as sheathing and roof boarding. Needs no headers, because applied crosswise to studding the same as lumber. The tongue-and-groove joint insures a heat-sealed joint that will not bulge and full, unbroken insulation coverage. Fits standard window frames. It is made ½, ¾ and 1 in. thick, 16 and 18 in. wide, and 8 ft. long with long edges tongue-and-grooved.

INSULATING LATH—Used as a base for gypsum sanded or wood fiber plaster. ½ in., ¾ in., and 1 in. thick; 18 in. wide; and 48 in. long. The 48-in. edges are tongue-and-grooved and beveled, preventing plaster from being forced between sheets to cause uneven walls and ceilings.

METAL REINFORCED INSULATING LATH—Used as a base for gypsum plaster where plaster cracks must be kept to a minimum. ½ in., ¾ in., and 1 in. thick; 18 in. wide, and 48 in. long with T and G and beveled joint on long edges and a wire fabric attached to one long edge so that the reinforcement can be slid into place over the joint after the lath is applied without further nailing. Where specified, it can be furnished with reinforcement on end edge as well as long edge.

ROOF INSULATION—Used over wood and incombustible roof decks. ½, 1, 1½, 2, 2½, 3, 3½, and 4 in. thick, stapled or waterproof glue laminated; 22 in. wide by 47 in. long. Can also be furnished stapled with offset edges where over ½ in. thick.

INSULATING TILE BOARD—Insulating Tile Board is made in two types—Standard Density fabricated from Standard Weatherwood Board and Low Density.

Standard Density—Is adapted to general use for decorative wall finishes. Made in three (3) thicknesses and two groups of standard sizes (areas) and in three (3) colors—standard ivory, gray, and tan, and in the three (3) surface finishes—smooth "skin," sanded smooth, and textured.

Low Density—A special low density product used for sound correction where a low cost, attractive sound absorbent is required. Made in three (3) thicknesses and two groups of standard sizes (areas) and in two (2) surface finishes,—sanded and brushed. The standard color is ivory, but in the ½-inch thickness it is made also in gray and tan. The sound absorption at 512 Cycles is:

½ inch thick	.40
¾ inch thick	.50
1 inch thick	.60

Thicknesses—Both standard and low density tiles are made in three (3) thicknesses—½, ¾, and 1 inch.

Sizes (Group 1)—Tile board with all four edges tongue-and-grooved. Specially designed for nailing application to standard framing. 16 in. x 32 in.; 16 in. x 32 in.; 24 in. x 32 in.; 18 in. x 48 in.; 24 in. x 48 in.

Sizes (Group 2)—Tile board with plain edges beveled four sides. (Obtainable with all four edges tongue-and-grooved when so specified.) 6 in. x 12 in.; 12 in. x 12 in.; 12 in. x 24 in.; 8 in. x 16 in.; 16 in. x 16 in.; 24 in. x 24 in.

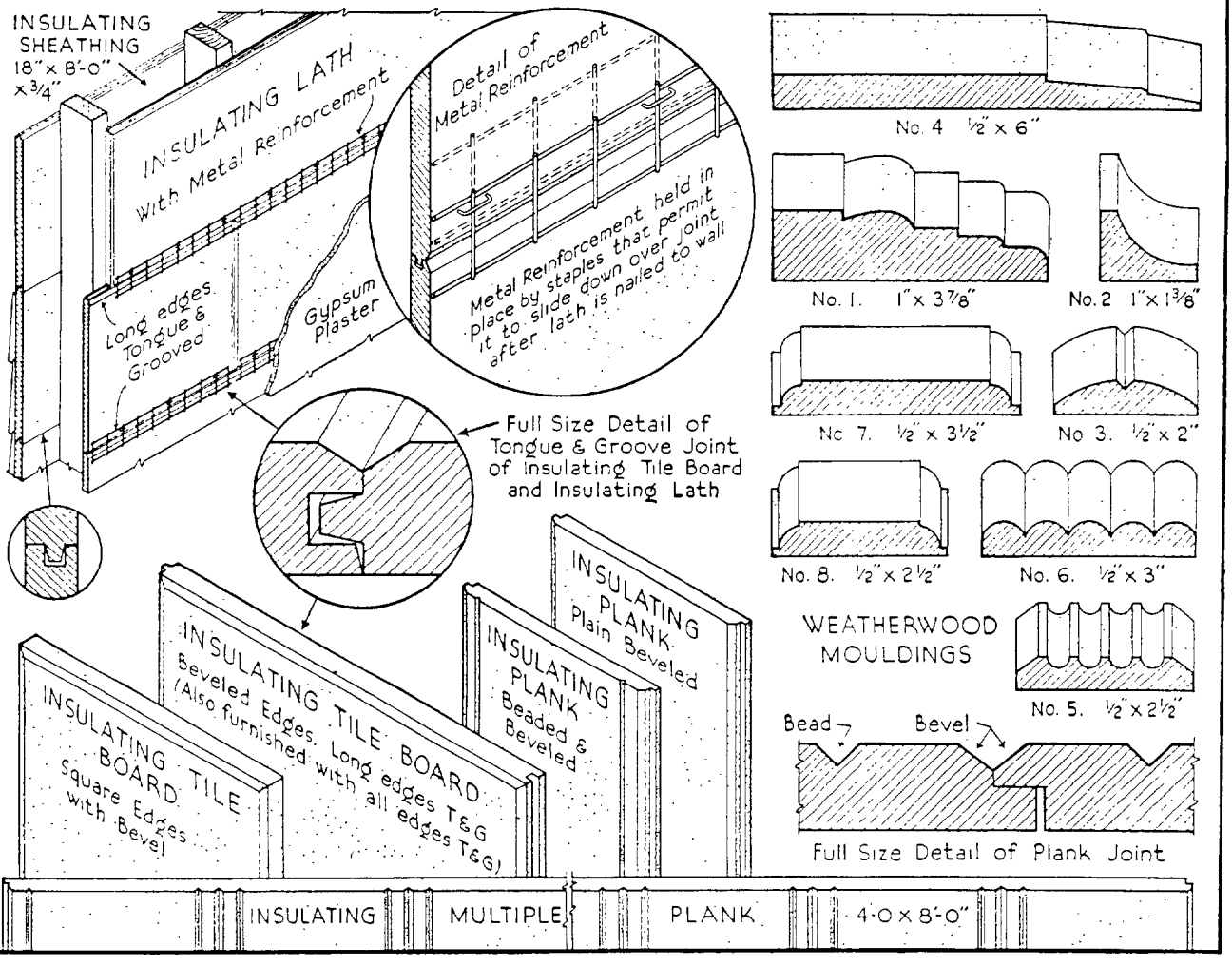
INSULATING PLANK—Used for interior wall finish and for wainscoting and similar treatment to combine insulation and decoration in one material. Insulating Plank is made with shiplap longitudinal edges and is furnished in three (3) colors—ivory, gray, and tan in three (3) surface finishes—smooth "skin," sanded smooth, and textured.

Planks are furnished in two (2) types—Individual Planks or Multiple Planks. Each type furnished beaded or plain bevel design (see details).

Individual Plank—½ inch thick, in widths 6, 8, 10, 12, and 16 inches by 6, 8, and 10 feet long.

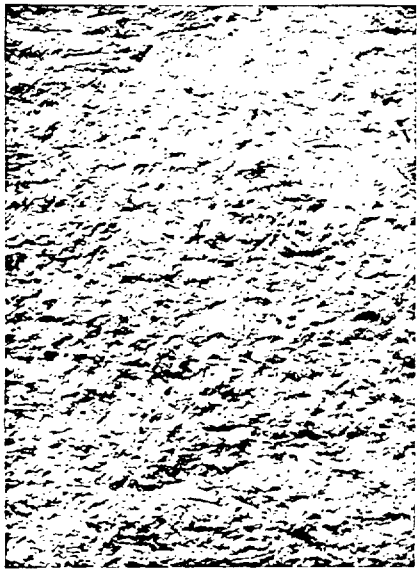
Multiple Plank—½ inch thick, 4 ft. wide by 6, 7, 8, 9, 10, and 12 ft. long with beads or bevels spaced uniformly (equal plank widths) 6, 8, 12, or 16 in. o.c. Random spacing of beads or bevels can be furnished on special order not less than 6 inches apart.

DETAILS OF WEATHERWOOD PRODUCTS

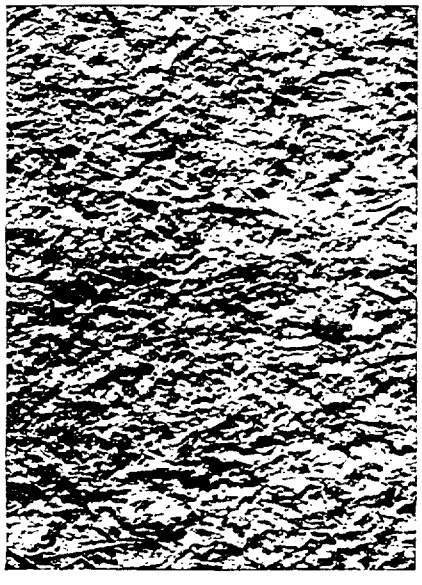


SURFACE FINISH of WEATHERWOOD • ACTUAL SIZE

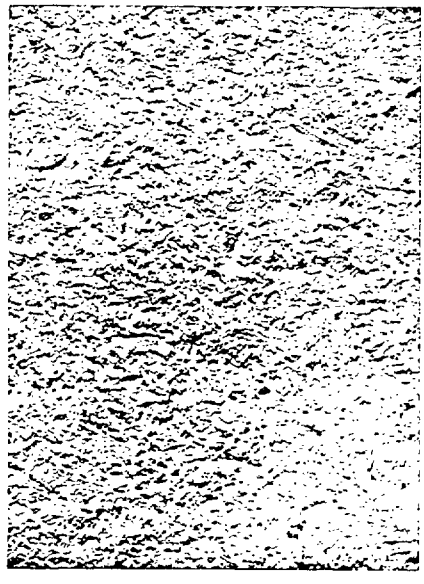
SMOOTH SKIN



BRUSHED



SANDED SMOOTH



BB024 0893

Master Specifications

WEATHERWOOD INSULATION as SHEATHING and ROOF BOARDING

NOTE—*On walls use under wood siding, shingles, stucco, or masonry veneer. On roofs use under shingles, slate, tile or similar rigid roof units which may be laid over wood furring strips.*

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words in bracketed bold face type are selective.*

(1) CORRELATIVE PROVISIONS

NOTE—*Provide for the following in other specification divisions.*

NOTE—*Weatherwood Insulation is not a nailing base.*

(1a) CONSTRUCTION—Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association.

(1b) WOOD SIDING—All joints shall butt over the center of a stud.

(1c) FURRING STRIPS—Provide 1 x 2-in. furring strips properly spaced over Weatherwood Insulation to take shingles, slate, tile and similar wall and roof covering. Nails shall be sufficiently long to pass through the furring and the board and penetrate the framing member at least 1 in.

(1d) STUCCO BASE—Stucco must be reinforced with self-furring expanded metal exterior stucco lath secured to studs with nails sufficiently long to pass through the board and penetrate the stud at least 1 in.

(1e) MASONRY VENEER TIES—Provide masonry ties at each stud spaced 16 in. apart vertically. Nails shall be sufficiently long to pass through the board and penetrate the stud at least 1 in.

(1f) FRAME FURRING, ETC.—Provide in accordance with the details window and door frame furring strips to compensate for the thickness of Weatherwood Insulation.

NOTE—*We advocate wide outside blind stops in frame construction. If, however, these are omitted, provide that the inside of the outside casings be lined with beveled strips of Weatherwood Insulation.*

(2) WORK INCLUDED

NOTE—*Here list and locate definitely the wall and roof areas to be covered. If ½-in., ¾-in. and 1-in. thicknesses are to be used, list separately and the respective locations or areas covered.*

(3) MATERIAL

(3a) GENERAL—**[Sheathing] [and] [roof boarding]** shall be Weatherwood Insulation Board as made by the United States Gypsum Company, 300 West Adams Street, Chicago.

(3b) WALLBOARD SIZE—Boards shall be full **[½ in.] [and] [¾ in.] [and] [1 in.]** thick **[as above designated]**, 4 ft. wide by 4, 5, 6, 7, 8, 8½, 9, 9½, 10, or 12 ft. long as best adapted.

(3c) TONGUE and GROOVE SHEATHING—Boards shall be tongue and groove sheathing **[½ in.] [and] [¾ in.] [and] [1 in.]** thick, **[as above designated]**, **[16 in.] [and] [18 in.]** x 8 ft. long.

(4) APPLICATION

(4a) GENERAL—Continuity of insulation is imperative.

(4a1) Wallboard Sizes—Apply boards with the length parallel with the framing members. Where possible, boards shall be of sufficient length to completely span between sills and plates or other structural members.

Where end joints are necessary, these shall only be made centered over 2 x 4 in. headers cut in between framing members. Side joints shall center over framing members.

Space ⅛ in. apart at all edges. Bring the boards in close contact with window and door frames and trim.

(4a2) Tongue and Groove Sheathing—Apply boards at right angles to framing members. Fit the tongue and groove joints snugly together. Leave a ⅛ in. space at end joints. Stagger end joints in successive courses.



(4b) NAILS—Galvanized roofing nails.

(4b1) Use 1½ in. nails for ½ in. thickness.

(4b2) Use 2 in. nails for ¾ in. and 1 in. thickness.

(4c) NAILING—

(4c1) Wallboard Sizes—At all edges space nails 3 in. apart on centers and ½ in. from the edge. On intermediate framing members, space nails 6 in. apart on centers. First nail the boards to intermediate studs and then nail the edges.

(4c2) Tongue and Groove Sheathing—Space nails 5½ in. apart, 4 nails to each support. Nail to intermediate studs first.

Master Specifications

WEATHERWOOD INSULATING LATH

NOTE—*Use as an insulating plaster base.*

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words in bracketed bold face type are selective.*

(1) CORRELATIVE PROVISIONS

NOTE—*Provide for the following in other specification divisions.*

(1a) **CONSTRUCTION**—Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association.

(1b) **FURRING**—For all exterior masonry walls to receive Weatherwood Lath with **[1 x 2-in.] [specify]** furring strips, accurately shimmed to a true, level plane, set 16 in. on centers, substantially secured to the masonry.

(1c) **GROUNDS**—Furnish and erect, substantially secured to framing members through the Weatherwood Lath, full ⅜ in. grounds on exterior frame walls and full ½-in. grounds elsewhere.

NOTE—*Full ½-in. thickness of plaster should be used over Weatherwood Lath. Where stock window and door frames are used, they provide for ⅞-in. thickness for lath and plaster; therefore on exterior frame walls, which are usually of less area due to window and door openings, a ⅞-in. thickness may be used. If special frames are detailed, provide for full ½-in. thickness of plaster over the lath.*

(1d) **PLASTERING**—

(1d1) **Caution**—Do not wet Weatherwood Lath before applying plaster.

(1d2) **Cornerite**—Apply metal lath "cornerite" strips over Weatherwood Lath at all re-entrant angles and all corners not protected with corner beads.

(1d3) **Plaster**—Use gypsum cement or gypsum wood fiber plasters.

(1d4) **Thickness**—Full ⅜ in. thick on exterior frame wall, elsewhere full ½ in. thick, flush with grounds.

(1d5) **Application**—Apply in three (3) coats in accordance with the plaster manufacturer's specification. Surfaces shall be rodded to a true plane. All corners and angles shall be plumb and true. Wherever necessary and particularly on ceilings, provide plaster screeds to insure an even and uniform plaster thickness.

NOTE—*The maintaining of a uniform and sufficient plaster thickness over a fibrous or board plaster base such as Weatherwood Lath, and especially on ceilings, cannot be too strongly stressed if permanent, satisfactory results are to be expected. Too frequently a weak, thin plaster coat, inadequate to withstand the usual strains of building settlement, shrinkage and vibration, results in plaster cracks which react against even the best of plaster bases.*

(1d6) **Ventilation**—Provide adequate ventilation for the proper drying of the plaster work.

NOTE—*Due to the moistureproof characteristics of Weatherwood Lath, all moisture emanating from the plastering operation must be carried off by the air coming in contact with the exposed surface. Particular attention to proper ventilation is necessary.*

(2) WORK INCLUDED

NOTE—*Here list and locate definitely the wall and ceiling areas to be covered. If ½ in., ¾ in. and 1 inch thicknesses are used, list separately and the respective locations or areas covered.*

(3) MATERIAL

Lath shall be Weatherwood **[Tongue and Groove and Beveled] [Metal Reinforced]** Insulating Lath as made by the United States Gypsum Company, 300 West Adams Street, Chicago. Units shall be full **[½ in.] [¾ in.] [1 in.]** thick **[as designated above]**, 18 in. wide by 48 in. long.

(4) APPLICATION

(4a) **GENERAL**—Do not moisten lath before application. Apply lath with bevel surface exposed and with the length at right angles to the framing **[or furring]** members. End joints shall center over framing members. Stagger end joints in successive courses on all walls and ceilings; likewise stagger end joints at juncture of walls and ceilings.

(4b) **SPACING**—Joints shall be brought tight in moderate contact. Units shall be spaced ¾ in. apart at ends.

(4c) **NAILS**—

(4c1) Use 1⅛ in., 7/16 in. head, blued lath nails, for ½ in. thickness.

(4c2) Use ¾ in., blued lath nails with 5/16 in. heads for ¾ in. and 1 in. thickness.

NOTE—*Large headed nails are unnecessary.*

(4d) **NAILING**—Space nails 5½ in. apart on centers set ½ in. from the edges. First nail to intermediate framing **[or furring]** members and then at ends. Secure long edges at angles of walls and ceilings, spacing nails 5½ in. o.c. and not more than ½ in. from the edge.

(4e) **METAL REINFORCEMENT**—Apply units with reinforcement at bottom. Slide metal reinforcement over joint after lath has been applied. Do not nail reinforcement.

(4f) **PREVENTION OF CONDENSATION**—In cold weather apply Weatherwood Insulation to exterior studs **[furring] [rafters]**, etc. before temporary heat is applied.

NOTE—*Because Weatherwood Lath does not permit passage of moisture, heating before lining the exterior cold walls, etc. results in a condensation of moisture from the warm, moist air on the inside of the sheathing and framing members. This originally forms as frost, which melts and must be absorbed gradually by the sheathing and frame, since it cannot pass the Weatherwood Lath barrier to be carried off by the air. Weatherwood Lath applied before heating insulates the warm, moist air from the cold exterior walls and eliminates this possibility of condensation.*

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WEATHERWOOD INSULATION as INTERIOR FINISH

NOTE—*Use an unplastered interior wall and ceiling finish, in its natural finish (unfinished), stained or painted. Unfinished or finished with stains, it has a decided value as an interior lining for sound absorption in halls, gymnasiums, churches, schools, etc. When used for acoustical correction, it should not be painted.*

NOTE—*Weatherwood Insulating Boards, Planks and other units when used for interior wall finish may be advantageously decorated by grooving, beading, etc., which may be accomplished on the job by any good mechanic with a Bevel-Devil or similar cutting or grooving tool.*

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words in bracketed bold face type are selective.*

(1) CORRELATIVE PROVISIONS

NOTE—*Provide for the following in other specification divisions.*

NOTE—*Weatherwood Insulation is not a nailing base.*

(1a) **CONSTRUCTION**—Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

(1b) **FURRING**—Fur **[all] [exterior masonry]** walls **[and ceilings]** to receive Weatherwood Insulating Tile with **[1 x 2] [specify]** furring strip, accurately shimmed to a true, level plane, set **[specify distance apart to fit the size used]** apart.

NOTE—*Use where tile are nailed. See (4e3) for Cementing to Masonry.*

(1c) **FINISH**—

NOTE—*Weatherwood Boards or Tile Board may be left natural, or finished with stain or paint.*

(1c1) **Cleaning**—Remove dirt or stains with art gum or dry wallpaper cleaner. Fill nail holes and abrasions with Red Top Nail-Hyde.

(1c2) **Stain**—Weatherwood Insulation takes water, alcohol or other types of stain admirably, either in single tones, panels or stencil design.

NOTE—*Where used as acoustical correction, use stain only. Paint fills the pores and materially reduces the acoustical efficiency.*

(1c3) **Paint**—Size with water, glue or oil size before applying oil paint. Water paints, such as Texolite (a USG product), require no sizing.

(2) WORK INCLUDED

NOTE—*Here list and locate definitely the wall and ceiling areas to be covered. If more than one thickness, color or surface texture is required, list separately and the respective locations or areas covered. If detail drawings are furnished, reference to them here is a convenience.*

(3) MATERIAL

(3a) Wall **[and ceiling]** finish shall be **[Weatherwood Insulation Boards] [and] [Weatherwood Insulating] [Tile Board] [and] [Plank] [Panel Strips] [Mouldings]** as made by the United States Gypsum Company, 300 West Adams Street, Chicago. Colors shall be **[specify]** and textures shall be **[specify] [as designated] [on the detail drawings] [in par. 2].**

NOTE—*Specify "Weatherwood Insulation Boards" where exposed with natural, stained or painted finish. Specify Weatherwood Insulating Tile Board where tile effect is desired.*

(3b) Size shall be **[½ in.] [¾ in.] [1 in.]** thick by 4 ft. by 4, 5, 6, 7, 8, 8½, 9, 9½, 10 or 12 ft. long or units cut in panels of symmetrically disposed sizes **[to conform with the detail drawings].**

NOTE—*Use clause above for natural, stained or painted finish. Select the thickness required for insulation value.*

(3c) Size shall be **[low density] [½ in.] [¾ in.] [1 in.]** thick Weatherwood Insulating Tile Board by **[specify sizes] [sizes indicated on detail drawings.]. [All four edges shall be tongue and grooved.]**

NOTE—*Specify low density where used particularly for acoustical sound absorption.*

(4) APPLICATION

(4a) **GENERAL**—

(4a1) **Weatherwood Boards**—Continuity of insulation is imperative. Apply boards with the length parallel with the framing members. Where possible, boards shall be of sufficent length to completely span between sills and plates or other structural members. Where end joints are necessary, these shall only be made centered over 2 x 4-in. headers cut in between framing members. Side joints shall center over framing members.

(4a2) **Weatherwood Tile Board (Tongue-and-Groove Type)**—Do not moisten Tile Board before application. Apply **[rough] [textured] [smooth]** side exposed and tongue up, with the length at right angles to the framing **[or furring]** members. End joints shall center over framing members. Stagger end joints in successive courses on all walls and ceilings.

NOTE—*The above application applies to the standard tongue-and-grooved, 32 and 48 in. long units nailed directly to the framing members.*

(4a3) **Weatherwood Tile Board (Square Edge Type)**—Tile board shall be applied **[over plaster surfaces] [by means of approved gum-like adhesive] [nailed to special furring strips spaced to accommodate tile sizes and pattern].** Tile shall be laid in the patterns designated **[on the detail drawings] [in par. 2].**

(4b) **SPACING**—

(4b1) **For Weatherwood Boards**—Boards shall be spaced ⅛ in. apart at all edges, if joints are covered—if not covered bring to moderate contact. Bring the boards in close contact with window and door frames and trim.

(4b2) For Weatherwood Tile Board (Tongue and Groove Type)—Tongue and groove joints shall be brought in moderate contact.

(4b3) Weatherwood Tile Board (Square Edge Type)—Tile shall be placed in moderate contact. Do not force tightly together.

(4c) FINISHING JOINTS OF WEATHERWOOD BOARDS—

(4c1) Panel Strips or Mouldings—Cover joints with Weatherwood Insulation **[Panel Strips] [Mouldings]** detailed. Fit neatly at all intersections or at points in contact with other trim. Secure with finishing nails as specified in (4e) or with approved adhesive.

(4d) NAILS—Use 1¼ in. or 1¾ in. finishing nails **[for immediate nailings on boards (not edges)] [on Tile Board].**

Use 4d or 6d box nails at edges of boards.

(4e) NAILING AND CEMENTING—

(4e1) For Weatherwood Boards or Multiple Planks—Finishing nails shall be driven at an angle with heads neatly set flush with the surface.

At all edges, space 4d or 6d box nails 12 in. apart on centers and ½ in. from the edge.

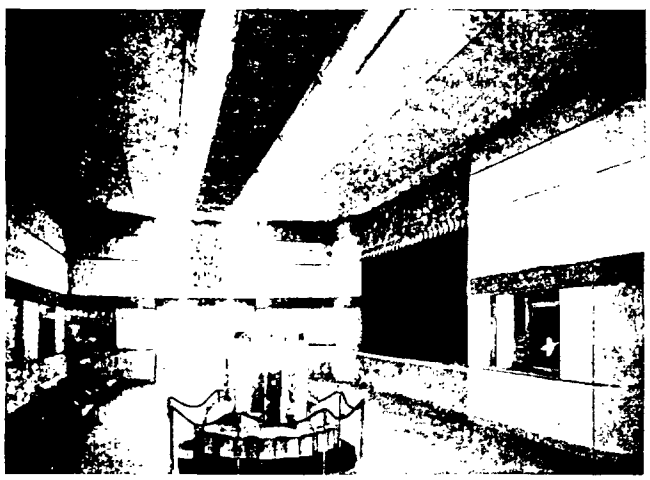
On intermediate framing members, space finishing nails 16 in. apart on centers. First nail the boards to intermediate studs and then nail the edges.

(4e2) For Weatherwood Tile Board or Individual Planks (Nailed)—Space finishing nails 12 in. apart o.c. set ½ in. from the edges.

First nail to intermediate framing **[or furring]** members and then at ends.

Secure long edges at angles of walls and ceilings, spacing nails 12 in. o.c. and not more than ½ in. from the edge. Nails shall be driven at an angle with heads neatly set flush with the surface.

(4e3) For Weatherwood Tile Board (Cemented to Masonry)—Apply Weatherwood Tile Board to masonry by means of an approved gum-like adhesive. Spot adhesive on back of tile at four corners and at center. Press tile firmly against surface.









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WEATHERWOOD INSULATION as EXTERIOR FINISH

NOTE—*While generally speaking of limited architectural adaptability, Weatherwood Insulation Board as exterior finish has many applications, especially when its moisture-proof insulation value is considered.*

It is particularly adapted to the lighter, less permanent construction where cost is a prime factor, and especially for buildings of but one story, such as small dwellings, garages, summer cottages, portable temporary schools, etc. It is an ideal exterior finish for such temporary construction buildings as offices and tool and material storehouses.

(1) CONSTRUCTION PROVISIONS

Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers' Association.

Studs and joists should be set on either 16-inch or 24-inch centers depending on height and length of spans. Framing should be braced as in standard frame construction.

(2) APPLICATION, ETC.

The specifications for Weatherwood Sheathing apply likewise to Weatherwood Exterior Finish.

(3) PAINTING

Size thoroughly with a dependable water, glue or oil size. Finish with two (2) coats of any good exterior house paint applied in accordance with the manufacturer's directions.

NOTE—*The painting of Weatherwood Insulation surfaces should be done before the application of the joint battens, trim, etc.*

(4) JOINT BATTENS, TRIM, ETC.

Cover all joints between the Weatherwood boards and all edges with wood batten strips or exterior wood trim, secured through the insulation to the framing members.

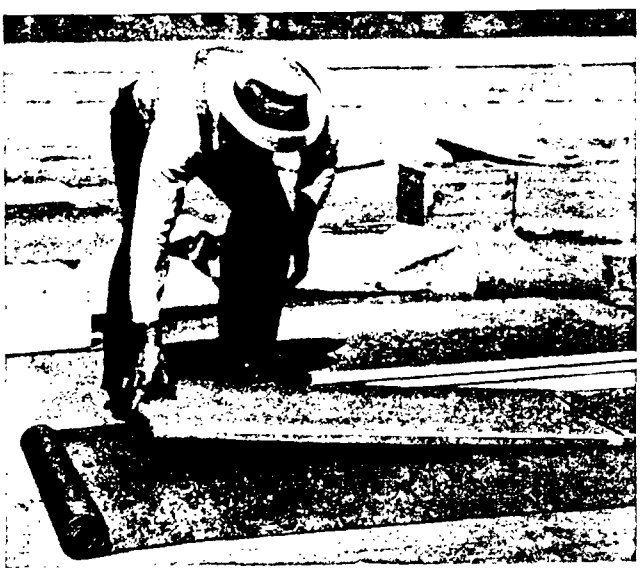
USG WEATHERWOOD INSULATION UNDER BUILT-UP ROOFING

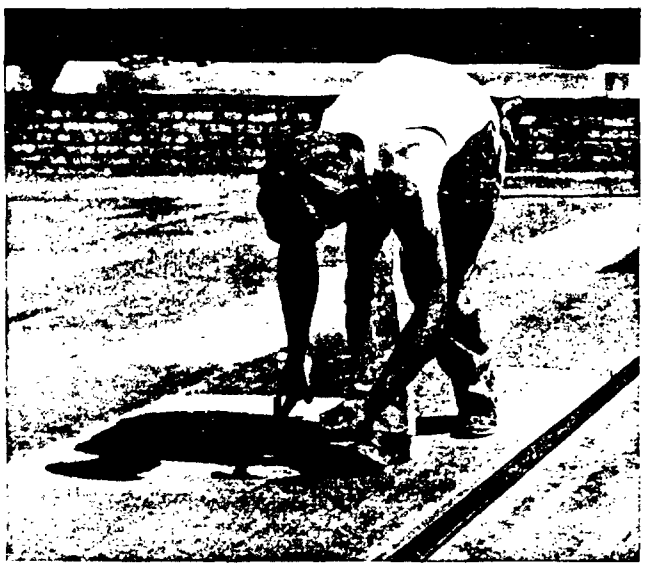
INTRODUCTION—A GUIDE TO GOOD PRACTICE

GENERAL—Roof Insulation applied under Built-up Roofing is customarily furnished and applied by the Roofing Contractor. Often the application of the insulation followed immediately by the application of the finished built-up roofing must be executed against time and frequently under unfavorable weather conditions.

Again, in the case of monolithic roof decks poured during the winter months, the evaporation of moisture from the slab is not completed before the insulation and roofing are installed.

To be permanently efficient, the insulation must be kept dry before, during, and, most important, after application. The provisions which follow, if clearly specified, will enable the Roofing Contractor to do better and more rapid work and at the same time assure the owner a long lived, effectively insulated roof.





SEAL COURSES—The seal course is a continuous layer of waterproofing laid over the roof deck beneath the insulation. Together with the finished roof covering applied over the insulation, the seal course sandwiches the insulation between two water and vapor proof layers.

Where high industrial humidities are maintained, seal courses are imperative over wood decks to prevent moisture absorption by the insulation. The same necessity may apply to monolithic and other incombustible deck constructions under certain conditions.

Buildings with concrete and similar decks present several major problems to the roofer. He is often forced to lay the roofing, including the insulation, before other trades have left the roof in order that plastering and other operations within the building may be completed on scheduled time. Again, he may be called upon to work during inclement weather or during weather which prevents the complete drying out of the deck. Damage under these conditions may be done to both insulation and roofing. To provide against such contingencies, it is recommended that the specifications provide for the application of a standard seal course which acts as a temporary waterproof covering for the entire roof area.

WATER CUT-OFFS—Water cut-offs installed through the body of the insulation prevent the spread of water beyond predetermined segregated areas in the event of leaks due to damage to the roofing, flashings, defective parapet walls, or copings.

They also provide against damage by sudden showers and over-night and week-end interruptions during application of the insulation and roofing.

Their importance is such that it is suggested that the Architect indicate their desired locations with faint lines on the roof plan. This will assist the Roofing Contractor in planning his work so that he may schedule the completion of each area and will serve as a permanent record of their location.

RECOMMENDED NUMBER OF LAYERS OF INSULATION—While Weatherwood Roof Insulation is made in various thicknesses from ½ inch to 4 inches in multiples of ½ inch, for the best results the insulation should be laid in two or more layers, the second breaking joints with the first layer.

BITUMENS AND FELTS—Specify the same bitumens and felts throughout. Where coal tar pitch is used, all felts should be saturated with the same material. Where asphalt is used, use asphalt saturated felts.

Master Specifications

CORRELATIVE PROVISIONS APPLYING TO ROOF INSULATION

NOTE—*The construction of roof decks and provision for satisfactory surfaces to receive the roof insulation and various miscellaneous provisions by other trades are not a part of the Roofing Contractor's work and are, therefore, not included in the Roof Insulation Specifications. The following provisions, however, should be included as they apply under the proper headings of the specifications to be executed by others.*

ROOF DECK PROVISIONS—All provisions for the construction and finished condition of the various types of roof decks established under the heading "Correlative Provisions," as set forth in the USG Built-up Roofing Manual, applying to "Built-up Roofing" shall apply likewise to "Roof Insulation."

Note particularly that steel decks must be insulated before the application of USG Bonded Built-up Roofing will be permitted.

WOOD NAILING STRIPS—The General Contractor will provide wood nailing strips to form a nailing base under all sheet metal flashing aprons and flanges of every nature. Strips shall be the full thickness of the insulation and at least 1 in. wider than the apron rigidly secured to the roof deck with nails, lag bolts, expansion bolts, or other means of attachment as best adapted to the particular construction.

CANT STRIPS—Allow for the full insulation thickness above the roof deck surface where cant strips are required. Cant strips on wood decks shall be set on top of the insulation secured by nailing through the insulation to deck proper. On incombustible decks where the cant is formed with gypsum mortar or concrete, provide a square shoulder the full insulation thickness at the toe of the cant above which the standard cant shall be formed.

FLASHING RAGGLES—In establishing the height of flashing raggles and nailing strips, add the thickness of the insulation to the heights required for uninsulated roofs.

ANCHORS AND GUYS—All anchors, guys, struts, and similar stays for the support or bracing of heavy ventilators, standpipes, louver enclosures, and similar equipment above the roof shall be rigidly secured to the roof deck proper and not to the insulation.

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GENERAL REQUIREMENTS

APPLYING to APPLICATION of INSULATION

The Roofing Contractor shall examine all surfaces upon or against which the insulation is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the insulation. He shall likewise check all nailing strips installed to form a nailing base under sheet metal flashing aprons and flanges and shall notify the Architect of any defects he considers detrimental to the installation of the insulation and shall make sure that all defects are corrected before he begins work. The application of insulation by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

MATERIALS AND APPLICATION

APPLYING to SPECIFICATIONS NOS. 100, 200, 300 and 400

NOTE—*Notes in bold face type are explanatory or advisory only and should not be included in the specification. Wherever words or phrases occur in the body of the specification paragraph printed in bold face type enclosed in parentheses, choose that word or phrase which applies to the particular work, omitting those that are irrelevant. Wherever the word "Specify" occurs in bold face type enclosed in parentheses, add the particular word or clause applicable.*

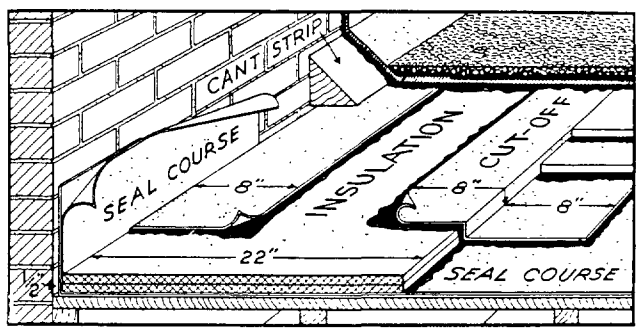
WORK INCLUDED—

NOTE—*List and locate the roof areas to be insulated. If more than one thickness of insulation is required on various roof areas, list and locate each separately.*

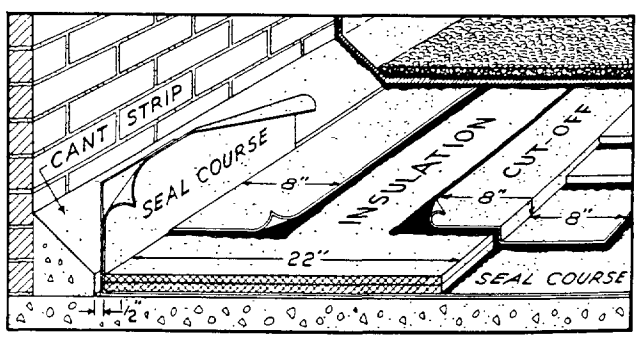
INSULATION MATERIAL—Insulation shall be USG Weatherwood Roof Insulation as made by United States Gypsum Company, Chicago. Insulation shall be **(specify)** thick, laid in **(one) (two)** layer(s) **(waterproof glue laminated) (staple laminated).** Units shall be not larger than 22x47 inches in area. Insulation shall be kept dry before, during, and after application. Units shall be free from surface abrasions, curled or broken edges and corners.

NAILS—Nails shall be Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs. Nails for paper and felt shall be ⅞ in. long for wood decks and 1¾ in. long for gypsum decks. Nails for insulation shall be of sufficient length to pass through the insulation and penetrate into but not through the deck construction.





DETAILS OF CANT STRIPS AND SEAL COURSES



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APPLICATION OF INSULATION—Only as much insulation shall be laid over the roof area as can be covered by the finished roofing in any one day.

Lay the insulation in **(one) (two)** layer**(s)** over the entire roof area. Adjoining edges of the insulation units shall be brought to a moderate contact but shall not be forced into place. Where the insulation meets vertical surfaces, such as parapets, penthouses, and curbs, the insulation units shall be cut in a neat, workmanlike manner allowing at least ½ in. clearance. Insulation units shall be laid with the length at right angles to the slope of the roof in parallel courses with end joints in each course breaking with those of adjoining courses.

Where insulation is laid in two (2) layers, the insulation units of the second layer shall be laid parallel with those of the first layer, and all joints of the second layer shall break with those of the first layer.

WATER CUT-OFFS—The insulation, whether laid in one (1) or two (2) layers, shall be cut to the line designated for the water cut-off.

Water cut-offs shall consist of strips of **(tar) (asphalt)** saturated roofing felt weighing 15 lbs. per 100 sq. ft. not less than 16 in. wide. One half (½) the width of the strip shall be thoroughly and firmly embedded in hot bitumen to the deck and the remaining one half (½) carried up and over the edge of the insulation and thoroughly and firmly embedded in hot bitumen to the top surface of the insulation.

Cut-offs shall be located approximately 22 in. from and parallel with all vertical walls, such as parapets, penthouses, curbs, and around all leader heads, down spouts, soil pipes, vents, and ventilators. The body or field of the roof insulation shall be divided into rectangular areas approximately 30 ft. on a side, each area isolated with a water cut-off. Insert a water cut-off surrounding each day's work if the stop is not made at the designated water cut-off.

The first layer of the finished roofing shall be mopped to the water cut-off each night.

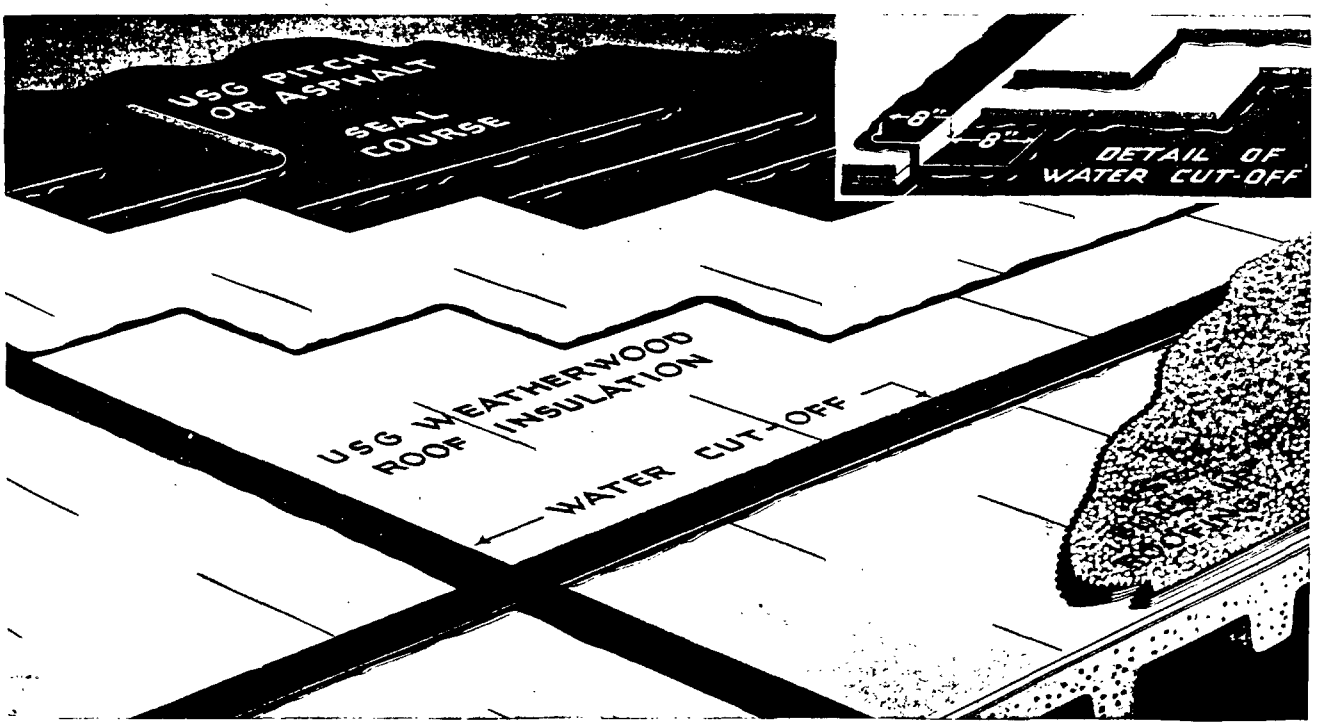
NOTE—*Water cut-offs are customarily omitted where insulation is laid over a wood deck not first covered by a seal course as in Specification No. 100.*

TEMPERATURE OF BITUMEN—Temperature of USG **(Coal Tar Pitch) (Asphalt)** shall never exceed 400° F. in the heating kettle.

APPLICATION OF USG BUILT-UP ROOFING OVER INSULATION

NOTE—*Any USG Built-up Roofing designed for application over Poured Gypsum, Poured Concrete, or Precast Concrete Slab Decks may be applied over the insulation. Apply USG Built-up Roofing, Specifications No. 2 and No. 4 (pages 7 and 11 respectively) exactly as written. In the case of USG Built-up Roofing Specifications Nos. 6, 8, 10, and 12, omit the First Operation — the surface of the insulation requires no primer. See pages 15, 19, 23 and 27 respectively.*

DETAILS OF WATER CUT-OFFS USED IN CONJUNCTION WITH INSULATION



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Specification No. 100

WEATHERWOOD INSULATION OVER WOOD ROOF DECKS UNDER USG BUILT-UP ROOFING WHERE HIGH HUMIDITIES ARE NOT A FACTOR

BUILDING PAPER—The roof deck shall be covered with a layer of Red Rosin Sized Sheathing Paper weighing not less than five (5) pounds per one hundred (100) square feet. Paper shall be lapped two (2) inches and secured to the deck by occasional nailing.

NOTE—*Building paper may be omitted when insulation is laid in two (2) layers.*

APPLICATION OF INSULATION—Each insulation unit shall be secured in place by nailing. Space nails approximately twelve (12) inches apart on centers not less than one (1) inch from each edge (each corner of each unit must be securely nailed). In addition, nail along the longitudinal center line.

Nailing of two (2) layer insulation shall be through the second or top layer only. Do not nail first layer.

Specification No. 200

WEATHERWOOD INSULATION OVER WOOD ROOF DECKS UNDER USG BUILT-UP ROOFING WHERE HIGH HUMIDITIES ARE MAINTAINED

BUILDING PAPER—The roof deck shall be covered with a layer of Red Rosin Sized Sheathing Paper weighing not less than five (5) pounds per one hundred (100) square feet. Paper shall be lapped two (2) inches and secured to the deck by occasional nailing.

NOTE—*Building Paper must be used under the Seal Course where a Gravel or Slag Surfaced Built-up Roofing laid over the insulation requires a low melting point bitumen, such as for USG Built-up Roofing, Specifications No. 2 and No. 4. Building Paper may be omitted where USG Built-up Roofing, Specifications Nos. 6, 8, 10, or 12 are laid over the insulation.*

SEAL COURSE—Apply two (2) plies of USG **(Tar) (Asphalt)** Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet over the preceding sheet seventeen (17) inches for thirty-two (32) inch felt or nineteen (19) inches for thirty-six (36) inch felt. Extend felt up on all vertical surfaces not less than eight (8) inches. Application of felts shall start at low points and be laid at right angles to the slope of the roof. All end laps shall be not less than six (6) inches. Felts shall be laid without wrinkles or buckles and shall be secured to the deck with occasional nailing. Apply a uniform coat of USG **(Coal Tar Pitch) (Asphalt)** to the full lap so that at no point shall felt touch felt.

After the insulation has been laid over the Seal Course, the turned up eight (8) inch extensions at all vertical surfaces shall be turned down over the exposed surface of the insulation thoroughly and firmly embedded in a uniform coat of hot bitumen.

NOTE—*Where tar saturated felts are used, use coal tar pitch. Where asphalt saturated felts are used, use asphalt. Felts and bitumens of the Seal Course should match those selected for the built-up roofing to be applied over the insulation.*

APPLICATION OF INSULATION—Mop the entire surface of the Seal Course with a uniform coating of USG **(Coal Tar Pitch) (Asphalt)** into which, while hot, the insulation units shall be firmly and completely embedded.

When insulation is laid in two (2) layers, mop the entire surface of the first layer with a uniform coating of bitumen into which, while hot, the second layer shall be firmly and completely embedded.

Only sufficient area to provide embedment for a single insulation unit shall be mopped at a time.

There shall be not less than twenty-five (25) pounds of bitumen used per one hundred (100) square feet in the individual moppings.

Each insulation unit shall be secured in place by nailing. Space nails approximately twelve (12) inches apart on centers not less than one (1) inch from each edge (each corner of each unit must be securely nailed). In addition nail along the longitudinal center line.

Nailing of two (2) layer insulation shall be through the second or top layer only. Do not nail first layer.

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Specification No. 300

WEATHERWOOD INSULATION OVER POURED GYPSUM or CONCRETE, PRECAST GYPSUM TILE, and PRECAST CONCRETE SLAB DECKS UNDER USG BUILT-UP ROOFING

PRIMER—Coat the entire roof surface with USG Asphalt Primer, using not less than one (1) gallon of primer to cover one hundred (100) square feet of roof surface. Allow sufficient time to dry.

NOTE—*Omit primer if low melting point bitumens, either Coal Tar Pitch or Asphalt, are used as required for Gravel or Slag Surfaced Built-up Roofing laid over the insulation (USG Built-up Roofing, Specifications No. 2 and No. 4). Felts and bitumens used in the Seal Course should match those used in the Built-up Roofing selected for application over the insulation.*

NOTE—*If asphalt saturated felt and high melting point asphalt are used over Precast Tile or Slabs in the Seal Course, strip prime each unit staying back (3) inches from all joints.*

SEAL COURSE—Mop the entire surface of the deck with USG **(Coal Tar Pitch) (Asphalt).** Into this mopping, while hot, shall be embedded two (2) plies of USG **(Tar) (Asphalt)** Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet over the preceding sheet seventeen (17) inches for thirty-two (32) inch felt or nineteen (19) inches for thirty-six (36) inch felt. Extend felt up on all vertical surfaces not less than eight (8) inches. Application of felts shall start at low point and be laid at right angles to the slope of the roof. Lay felts without wrinkles or buckles. All end laps shall be not less than six (6) inches. As each ply of felt is laid, apply a uniform coat of USG **(Coal Tar Pitch) (Asphalt)** to the full lap so that at no point shall felt touch felt.

NOTE—*If low melting point bitumens are used over Precast Tile or Slabs, strip mop each unit staying back three (3) inches from all joints. (USG Built-up Roofing, Specifications No. 2 and No. 4). Felts and bitumens of the Seal Course should match those selected for the built-up roofing to be applied over the insulation.*

After the insulation has been laid over the Seal Course, the turned up eight (8) inch extensions at all vertical surfaces shall be turned down over the exposed surface of the insulation, thoroughly and firmly embedded in a uniform coat of hot bitumen.

APPLICATION OF INSULATION—Mop the entire surface of the **(Seal Course) (deck)** with a uniform coating of USG **(Coal Tar Pitch) (Asphalt)** into which, while hot, the insulation units shall be firmly and completely embedded.

When insulation is laid in two (2) layers, mop the entire surface of the first layer with a uniform coating of bitumen into which, while hot, the second layer shall be firmly and completely embedded.

Only sufficient area to provide embedment for a single insulation unit shall be mopped at a time.

There shall be not less than twenty-five (25) pounds of bitumen used per one hundred (100) square feet in the individual moppings.

When the incline of the roof exceeds three (3) inches in twelve (12) inches and the character of the roof permits nailing (poured gypsum or precast gypsum tile), each insulation unit shall be secured in place by nailing. Space nails approximately twelve (12) inches apart on centers not less than one (1) inch from each edge (each corner of each unit must be securely nailed). In addition, nail along the longitudinal center line. Nailing of two layer insulation shall be through the second or top layer only. Do not nail first layer.

When the incline of the roof exceeds three (3) inches in twelve (12) inches and the character of the roof surface will not permit nailing (poured concrete or precast concrete slab decks) and nailing strips are provided parallel with the incline of the roof spaced four (4) feet apart on centers, insulation units shall be secured to each nailing strip with nails spaced approximately twelve (12) inches apart on centers. Nailing of two (2) layer insulation shall be through the second or top layer only. Do not not nail first layer of insulation.



Specification No. 400

WEATHERWOOD INSULATION OVER STEEL ROOF DECKS UNDER USG BUILT-UP ROOFING

NOTE—*Steel decks must be insulated before the application of USG Bonded Built-up Roofing will be permitted.*

NOTE—*Use only steep asphalt and asphalt saturated felts in constructing seal courses, applying insulation, and constructing built-up roofing over steel decks.*

NOTE—*Always include a Seal Course if high humidity is present beneath the steel roof deck.*

SEAL COURSE—Mop the entire surface of the deck with USG Asphalt. Into this mopping, while hot, shall be embedded two (2) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet over the preceding sheet seventeen (17) inches for thirty-two (32) inch felt or nineteen (19) inches for thirty-six (36) inch felt. Extend felt up on all vertical surfaces not less than eight (8) inches. Application of felts shall start at low point and be laid at right angles to the slope of the roof. All end laps shall be not less than six (6) inches. Felts shall be laid without wrinkles or buckles. Apply a uniform coat of USG Asphalt to the full lap so that at no point shall felt touch felt.

After the insulation has been laid over the Seal Course, the turned up eight (8) inch extensions at all vertical surfaces shall be turned down over the exposed surface of the insulation, thoroughly and firmly embedded in a uniform coat of asphalt.

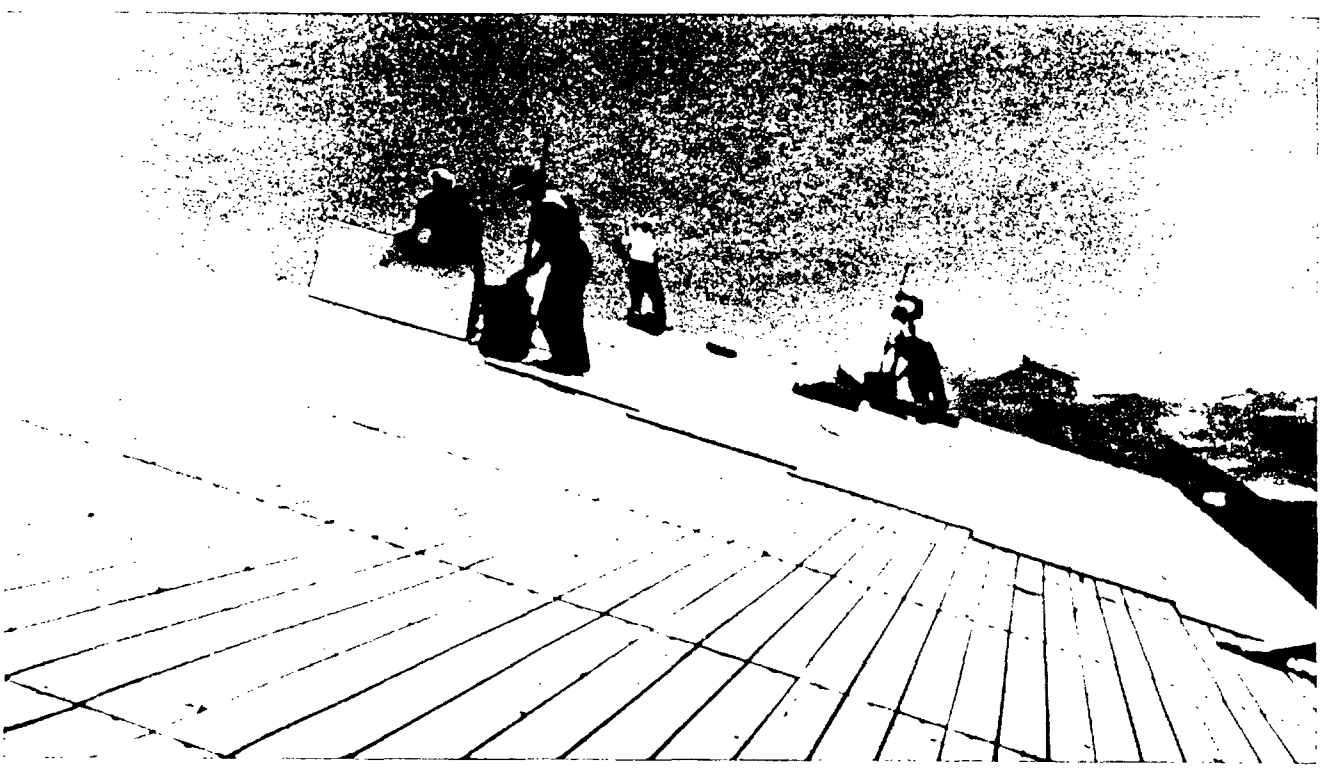
APPLICATION OF INSULATION—Mop the entire surface of the **(Seal Course) (deck)** with a uniform coating of USG Asphalt into which, while hot, the insulation units shall be firmly and completely embedded.

Where insulation is laid in two (2) layers, mop the entire surface of the first layer with a uniform coating of asphalt into which, while hot, the second layer shall be firmly and completely embedded.

Only sufficient area to provide embedment for a single insulation unit shall be mopped at a time.

There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings.

When the incline of the roof exceeds three (3) inches in twelve (12) inches, the insulation shall be substantially secured to the steel deck with proper devices provided by the steel deck manufacturer.



United States USG Gypsum Company

INSULATING SHEETROCK* ROCKLATH* and GYPLAP*

Aluminum Foil Types

2 IN 1 MATERIALS—Insulating Sheetrock, Insulating Rocklath (⅜ in. thick) and Insulating Gyplap (½ in. thick) are standard products, upon the back of which is mounted a thin, smooth, bright sheet of aluminum. They are applied to the interior or exterior face of exterior walls, rafters, or top story ceilings with the bright aluminum side next the framing members. Thus installed, their heat insulating value is equal to or better than that of standard ½ in. thick Fiber Insulating Board—at the same time Insulating Sheetrock is an excellent interior wall finish, Insulating Rocklath an excellent plaster base, and Insulating Gyplap an excellent sheathing.

ADVANTAGES—In addition to their insulating value, they have all the advantages of Sheetrock (The Fireproof Wallboard), of Rocklath (The Fireproof Plaster Base) and Gyplap (Fireproof Sheathing) described in detail in The General Commodities Section. They are fireproof, permanent, do not expand or contract, and are easy to install.

The fireproof character of Sheetrock, Rocklath and Gyplap is of outstanding importance. Because of the addition of the metal surface, they provide greater fire protection. All being hydrated materials, they resist fire until their hydrated character is destroyed. With metal applied to one side of the board, the escape of moisture from the burning area is further retarded and the circulation of air, and the passage of hot gases, necessary for combustion, is reduced.

A NEW INSULATING PRINCIPLE—Heat travels in three (3) ways as follows:

(1) Conduction—Hold a poker in a hot fire and the heat travels from the fire to the hand along the poker by conduction.

(2) Convection—Stand over an open register; the hot air flows up the pipe. This heat travel is by convection.

(3) Radiation — Heat travels from a fireplace and warms the hand without warming the air between. This is radiant heat.

Heat passing through the walls or roof of a frame building (from inside out or from outside in) must pass across the air space between the studs and rafters. Approximately 75% of such heat travel is by radiation.

Insulating Sheetrock, Rocklath and Gyplap prevent radiant heat passage. Heat flow toward the metal face is reflected back as a mirror reflects light.

When the direction of the heat flow is away from the metal face, Insulating Sheetrock, Rocklath and Gyplap do not insulate by reflection—they insulate by reducing the flow of heat by radiation.

Bright surfaces that are efficient in reflecting light and radiant heat are also efficient in refusing to emit or give off heat by radiation (Kirchoff's Law of Physics).

Insulating Sheetrock, Rocklath and Gyplap reflect or refuse to emit approximately 90% of the radiant heat coming in contact with them, whereas other materials, such as wood, brick, and fiber reflect but 10% and absorb 90%.

The bright aluminum surface does not dull appreciably. The slight ultimate oxidation reduces but little its reflecting and non-radiating quality.

AUTHENTIC TESTS—Tests on actual wall constructions conducted by Professor F. B. Rowley of the University of Minnesota showed Insulating Sheetrock to be as effective as half-inch fiber board insulation in the same construction.

With an outside temperature of 125° F. and an inside temperature of 80° F. simulating summer conditions, the coefficients of heat transmission were 0.205 for the Insulating Sheetrock construction and 0.227 for the fiber board.

With temperatures outside of 0° F. and inside of 80° F. simulating winter conditions, the coefficients of heat transmission were 0.168 for the Insulating Sheetrock construction, and 0.181 for the fiber board.

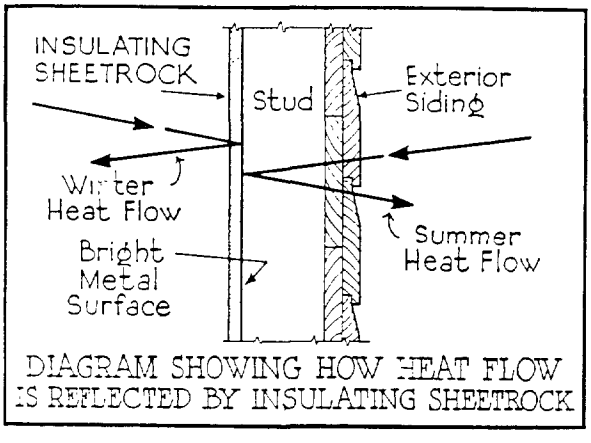


DIAGRAM SHOWING HOW HEAT FLOW IS REFLECTED BY INSULATING SHEETROCK

APPLICATION—Insulating Sheetrock, Insulating Rocklath and Insulating Gyplap are applied as specified for standard Sheetrock, Rocklath and Gyplap, with the metal side placed against the framing members. For application specifications, see "General Commodities" section.

The metal must not be placed in direct contact with another surface.

*Trade Mark

United States U.S. Gypsum Company

RED TOP* INSULATING WOOL

Fill and Blanket Type • Wall Thick • Fireproof

DESCRIPTION—Red Top Insulating Wool is an extremely light, fluffy wool insulation made of silica—a fireproof material.

The nature of the raw material used, particularly as to purity, permits accurate manufacturing control—the product is absolutely uniform and consists of snowy white, long-fibre wool. It contains no "shot" or other non-insulating materials that add weight.

TYPES—There are five (5) distinct types of Red Top Insulating Wool, each designed to fill a specific application need.

Junior Bat Wool—Red Top Insulating Junior Bat Wool is shipped in paper bags, each containing 20 sq. ft. when applied 4 in. thick. The face is identified and crossed by a double red stripe.

Bats—Red Top Insulating Wool Bats are 4 in. thick, 15 in. wide by 18 in. long and 23 in. wide by 15 in. long, shipped in cartons containing 37½ sq. ft. and 28¾ sq. ft. respectively. The 15 in. width has 20 bats and the 23 in. width has 12 bats to the carton. A heavy waterproof paper is cemented to the back of each bat. This paper backing extends 2 inches on each side forming nailing flanges which are folded back during shipment and unfolded when needed to hold the wool in place. The face is crossed by a double red stripe. The stripe is the architect's and owner's assurance that the material is the full 4 inch thickness of Red Top Insulating Wool Bat and that the bat has not been split into a lesser thickness or an inferior material substituted. Red Top Insulating Wool Bats are also furnished in a paper backed 2 inch thickness (40 bats to the carton) identified on the face by a single red stripe on each bat.

Strip Wool—Red Top Insulating Strip Wool, a newly developed type, is a continuous 4 in. thick, 15 in. and 23 in. wide by 9 ft. long blanket, shipped in cartons containing 33¾ sq. ft. of the 15 in. and 51¾ sq. ft. of the 23 in. consisting of 3 strips, each folded into thirds for easy removal and application. A heavy waterproof paper is cemented to the back of each strip. This paper backing extends 2 inches on each side forming nailing flanges which are folded back during shipment and unfolded when needed to hold the wool in place. The face is identified by a continuous double red stripe. Red Top Insulating Strip Wool is also furnished in a paper backed 2 inch thickness (6 strips to the carton) identified on the face by a continuous single red stripe.

Nodulated—Red Top Nodulated Insulating Wool is designed for pouring into open spaces, such as between open attic joists or similar areas. It is shipped in paper bags, each containing 6⅔ cubic feet.

Granulated—Red Top Granulated Insulating Wool is especially developed for the "blown-in" method of installation. It is shipped in paper bags, each containing 8⅓ cubic feet.

RESILIENCE—AN OUTSTANDING CHARACTERISTIC—Unlike other fireproof wool insulating materials, Red Top Insulating Wool is springy and resilient—it will not mat. If compressed, it recovers virtually all



Note Full Thickness Over Keys



Red Top Junior Bat Wool—Ideal for Existing Homes

*Trade-Mark

of its original volume when the pressure is released and is easily fluffed up to its original volume.

LOW THERMAL CONDUCTIVITY—The heat conductivity of Red Top Insulating Wool (standard density) is .266 B.t.u.'s per inch thickness, per square foot, per hour, per degree F. difference in inside and outside temperatures. (Tests by Armour Institute of Technology.)

Unusually high in insulating efficiency, it is outstanding when, as customarily used, it is wall thick (4 in.). So used its rating is .066.

LIGHT WEIGHT (DENSITY)—In its standard density, Red Top Insulating Wool weighs but 1½ pounds per cubic foot—the lightest of this class of materials.

CLEAN • VERMINPROOF • PERMANENT—Red Top Insulating Wool is clean and odorless. There is nothing in its composition which will attract or furnish sustenance to rodents or other vermin. Once placed, it will not disintegrate, mat or settle. The fibers are tough, thoroughly interlaced, and resilient, and remain permanently efficient.

EASY TO INSTALL • LOW COST—An economical form in which to use Red Top Insulating Wool is Junior Bat Wool. Its dimensions fit snugly into building framework spaced 16 inches on centers. One bag has an actual area of 20 square feet 4 in. thick and when placed between studs, joists or rafters insulates an area of 21½ square feet. Where desired the paper backed bats or strip wool can likewise be used full wall thick. Insulating efficiency considered, Red Top Insulating Wool is one of the most economical insulating materials on the market. Any intelligent workman can install it in any of its forms (except that which must be blown in by machine) with a minimum of cost.

ADDED FIRE PROTECTION—In frame construction this insulation fills completely and permanently the usual void between the wall studs with fireproof material thus eliminating these fire carrying flues. Top floor ceilings and roofs blanketed with 4 in. of the material act as fire stops.

CONVENIENT PACKAGES—The manner in which Red Top Insulating Wool is packaged adds to its convenience in shipping and handling. Strip Wool is shipped three strips to a convenient carton. Bats are shipped in cartons. The extreme resiliency of Red Top Insulating Wool makes it possible to compress the strips and bats in relatively small volumes. Junior Bat Wool is shipped in bags slightly compressed but easily fluffed up to its original density of 1½ lbs. per cu. ft., so fluffed, the bag contains 6⅔ cu. ft. of material.

COVERAGE OF RED TOP INSULATING WOOL

Type of wool	Volume per package at standard density	Coverage per package at standard density	
		4-in. thick including 2x4's	4-in. thick excluding 2x4's
Strip wool in cartons	11¼ cu. ft.	36 sq. ft.	33¾ sq. ft.
Bat wool in cartons	12½ cu. ft. (20 bats)	40 sq. ft.	37½ sq. ft.
Junior Bat wool in paper bags	6⅔ cu. ft.	21½ sq. ft.	20 sq. ft.



Any House Can Be Insulated with Red Top Wool



Complete Insulation—Walls and Ceilings

BB024 0907

Master Specifications

RED TOP INSULATING WOOL

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*Select and include only those clauses which apply to the particular work. Words in bracketed bold face type are selective.*

(1) WORK INCLUDED

NOTE—*Here list and locate definitely the wall, ceiling, and roof areas to be insulated.*

(2) MATERIALS

Insulation shall be Red Top Insulating Wool as made by the United States Gypsum Company, 300 West Adams Street, Chicago.

(2a) **JUNIOR BAT WOOL**—Insulation shall be Junior Bat wool type.

NOTE—*Recommended where framing requirements, thickness, or particular location make this type more practical to install on new work than the strip or bat type.*

(2b) **BATS**—Insulation shall be flanged paper backed bats, 4 in. thick, 15 in. wide x 48 in. long or 23 in. wide by 15 in. long, with identifying double red face stripe.

NOTE—*Recommended for new work where this type is more convenient to handle and install than Strip Wool.*

(2c) **STRIP WOOL**—Insulation shall be flanged paper backed strips, 4 in. thick, 15 in. or 23 in. wide x 9 ft. long, with identifying double red face stripe.

NOTE—*Due to ease of handling and rapidity of installation, this type is recommended for new work.*

(2d) **NODULATED**—Insulation shall be Nodulated type.

NOTE—*Specify for hand poured installations.*

(2e) **GRANULATED**—Insulation shall be granulated type.

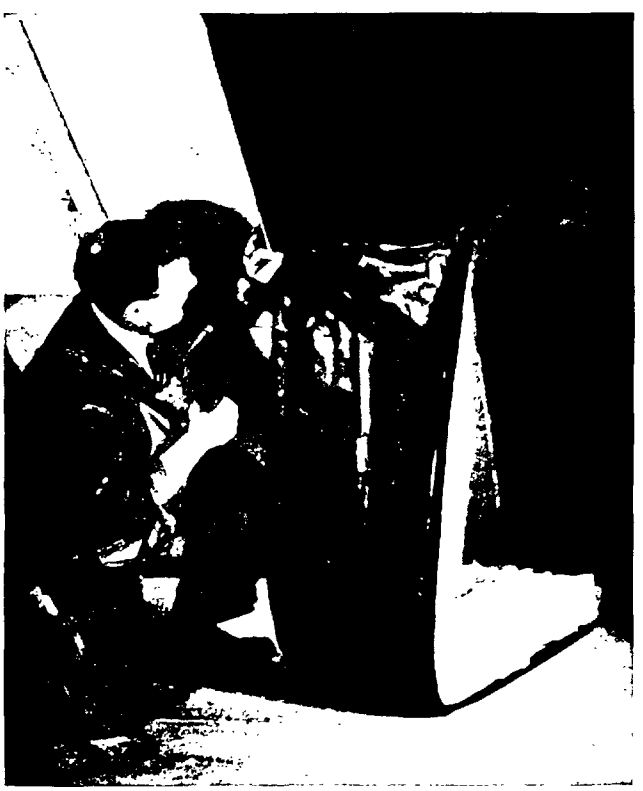
NOTE—*Specify for machine "blown in" installations, particularly suited to existing work.*

(3) INSTALLATION—NEW WORK

Maintain a continuous uniformly thick blanket of insulation over all areas to be insulated.

(3a) **WALLS**—

(3a1) **Strip Wool**—Apply the insulation with the paper backing next to the back of interior finish. Holding the material in the strip form as it comes from the carton, place the exposed end of the material tight against the top framing member with the paper exposed with flanges overlapping the face of the studs and open the strip downward forcing the continuous wool strip between the studs with continuous contact at edges. Tack or staple the paper flanges to studs. Where the height requires it, start a second strip at the bottom



Red Top Strip Wool Installed with Paper Back Out



Red Top Strip Wool Used in Attic

BB024 0908

of first roll with ends in close contact and proceed as above. Fill all irregular interstices and particularly those around the window and door frames with material cut to fit.

(3a2) Bat Type—Apply the insulation with the paper backing next to the back of interior finish. Install the bats end to end between the framing members with the paper flanges overlapping the face of the studs. Force the bats firmly against the studs and together at ends. Tack or staple the paper flanges to studs. Fill all irregular interstices and particularly those around window and door frames with bats cut to fit.

(3a3) Junior Bat Wool—Pack the Junior Bat wool, fluffed to a density of 1½ lbs. per cu. ft., between the framing members back of the plaster base as this is being applied. Fill all irregular interstices and around window and door frames.

(3b) CEILINGS—Permanent attic floors shall not be installed until insulation is in place.

(3b1) Strip Wool—Holding the material in the strip form as it comes from the carton, place the exposed end of the material against a wall with the paper backing down next the ceiling finish with the wool face exposed between the joists. Lay toward the opposite wall or plate, forcing the continuous wool strip between the joists with continuous contact at edges. Butt adjoining strip ends together in close contact.

(3b2) Bat Type—Lay the bats end to end over the finished ceiling with the paper backing down next the ceiling finish and the wool face exposed. Force the bats firmly between the joists, and together at ends.

(3b3) Junior Bat Wool—Lay a continuous layer **[specify]** thick over the finisned ceiling between the ceiling joists.

(3c) SLOPING ROOFS—

(3c1) Strip Wool—Apply the insulation with the paper backing next to the back of interior finish. Holding the material in the strip form as it comes from the carton, place the exposed end of the material tight against the **[ridge] [collar beams]** with the paper exposed with flanges overlapping the face of the rafters and open the strip downward forcing the continuous wool strip between the rafters with continuous contact at edges. Tack or staple the paper flanges to rafters.

(3c2) Bat Type—Apply the insulation with the paper backing next to the back of interior finish. Install the bats end to end between the rafters with the paper exposed with flanges overlapping the face of the rafters. Force the bats firmly in place and together at ends. Tack or staple the paper flanges to the rafters.

(3c3) Junior Bat Wool—Pack the Junior Bat wool between the rafters to their full depth. Follow the insulation installation with the application of plaster base as the work progresses.

If attic is not to be finished, place tacks at 6 inch intervals in rafters and lace wire in a lattice back and forth to hold the insulation in place or apply open mesh wire cloth over the face of the rafters.

(4) INSTALLATION—EXISTING WORK

Maintain a continuous uniformly thick banket of insulation over all areas to be insulated. For open areas in attics, etc., use strip, bat or Junior Bat wool.

For enclosed sections, fill all interstices between the framing members with "blown in" granular type insulation.

All access holes for the introduction of blower hose shall be neatly and accurately made. After installation repair all such holes and leave the building in as good condition as found.



Safe Insulation Around Electric Wiring



Red Top Wool Fits Snugly in Corners

BB024 0909

United States U.S. Gypsum Company

THERMOFILL*

The Dry Fill Insulation

DESCRIPTION—Thermofill is a flaky gypsum material which gives a high degree of heat, cold and sound insulation when employed in the walls, ceilings, floors and roofs of residences, apartments and commercial buildings.

The material is light in weight; clean and easy to handle; and is packed in 50-lb. paper sacks.

METHOD OF INSTALLATION—Ease of installation is one of the many desirable features of Thermofill, the Dry Fill Insulation, and a feature that makes the use of the material practical in buildings already built, as well as in new construction.

Thermofill is installed simply by pouring (dry) into the space that is to be insulated. The economy of this application is at once apparent.

In residences already built, or in new residences, a large reduction of heat loss in winter and a more comfortable interior in summer can be secured by pouring Thermofill (dry) between the floor joists in the attic, directly upon the ceilings of the top floor rooms.

Complete details for Thermofill insulation in other locations will be sent upon request.

ADVANTAGES—Thermofill provides an extremely high degree of heat and cold insulation because of the form and composition of the material. Gypsum is an excellent natural insulator, and this quality is increased many fold due to the myriads of confined air cells assured by the fluffy nature of the material and the method of installation. When installed in the walls and between floors and ceilings, Thermofill prevents air circulation and the resulting passage of heat and sound.

Because it is made of gypsum, Thermofill does not burn and it thus provides valuable protection to inflammable wood framework.

Thermofill, because of its mineral nature, cannot decompose and it will not harbor vermin.

Because of its low initial cost and the saving in labor due to simplicity of application, Thermofill offers the builder a most economical as well as a most effective insulator.

THERMAL CONDUCTIVITY OF THERMOFILL

Density per cu. ft., lb.	B.t.u. per sq. ft. per hour per 1° F. per in. thick	Authority
12.8	.35	Bureau of Standards

Conductivity slightly higher when used in walls.

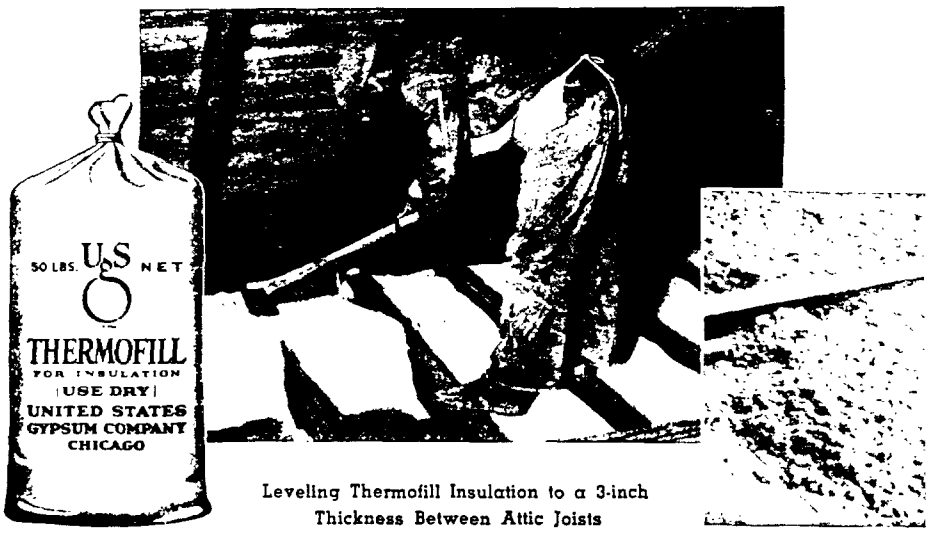
EFFICIENCY OF TYPICAL CONSTRUCTION UNINSULATED AND INSULATED

Walls	Uninsulated	Insulated with 3½-in. Thermofill
Clapboard, paper, sheathing, stud, lath and plaster	0.25	0.093
Brick veneer, paper, sheathing, stud, lath and plaster	0.27	0.096
Stucco, paper, sheathing, stud, lath and plaster	0.30	0.10
Ceilings		
Lath and plaster—no floor	0.62	
Lath and plaster—single floor	0.28	...
Lath and plaster—no floor—(insulated with 2 in. of Thermofill)	....	0.137
Lath and plaster—no floor—(insulated with 3 in. of Thermofill)	....	0.098
Lath and plaster—no floor—(insulated with 4 in. of Thermofill)	....	0.077

COVERING CAPACITY

Position of use	Per 50-lb. bag		Per ton	
	Sq. ft. 1-in. thick	Cu. ft.	Sq. ft. 1-in. thick	Cu. ft.
Walls	25	2	1000	83
Ceilings and floors	30	2½	1200	100

Packed in 50-lb. paper bags with directions printed on back.



Leveling Thermofill Insulation to a 3-inch Thickness Between Attic Joists

*Trade-Mark

BB024 0910

RED BOOK · SECTION D

Miscellaneous USG Products

• • •

Lime and Gypsum

MASON'S LIME

USE

As a mortar for setting brick, stone, etc., and for mixing with Portland cement, concrete, and stucco.

BRANDS

Mason's Hydrate—

Red Top* Mason's Hydrate (High Calcium and Dolomitic)
Snowdrift* Mason's Hydrate (High Calcium)
Marble Rock* Mason's Hydrate (High Calcium)

Mason's Quicklime—

USG Superfine Mason's Quicklime (High Calcium)
USG Pulverized Mason's Quicklime (High Calcium and Dolomitic)
USG Fine Grain Mason's Quicklime (High Calcium)
USG Pebble Mason's Quicklime (Dolomitic)
USG Crushed Mason's Quicklime (Dolomitic)
Peerless Pulverized Mason's Quicklime (High Calcium)
Peerless* Crushed Mason's Quicklime (High Calcium)
Marble Rock Pulverized Mason's Quicklime (High Calcium)
Marble Rock Pebble Quicklime (High Calcium)
USG Lump Lime (High Calcium and Dolomitic)

DESCRIPTION

The advantages of lime mortar for use in brick, tile, or stone masonry are economy, strength, plasticity, and waterproofing. Either a high calcium or dolomitic lime can be used for masonry.

USG Mason's Hydrated Limes are scientifically slaked by the manufacturer and are ready for mixing and use after soaking.

USG Mason's Quicklimes are thoroughly burned from carefully selected rock and produce a mortar with high plasticity and excellent workability with high sand carrying capacity. Quicklime must be slaked and aged before using in mortar.

DIRECTIONS—HYDRATED LIME

Hydrating—First pour water into box, then add Hydrated Finishing Lime to the water, distributing it uniformly. The water must cover the lime. Use sufficient water—about 6-8 gallons to 50 pounds of hydrate, an amount sufficient for a soft, wet paste.

Soaking—Allow to remain undisturbed for at least 6 hours, preferably over night. Protect from frost and drying up until used. Soaking develops plasticity, and putty should not be allowed to dry after it has reached the correct buttery consistency.

Mixing—Mix putty with sand or with sand and cement, adding sufficient water to bring mix to a hodable consistency.

DIRECTIONS—QUICKLIME

Slaking—Add water and lime gradually while mixing, constantly agitating mixture to prevent burning of unslaked portion. Mix to a thin consistency and screen through a quarter-inch mesh screen.

If dolomitic lime is used, the lime must not be hoed or stirred except to level out any hot, dry areas which do not receive water.

Aging—After screening, run mixture into aging box. Lime must be aged until it is cool and the putty is hodable. Lime putty produced from quicklime should never be used until aged at least one week, and a longer time is preferable to assure complete slaking.

Mixing—Mix putty with sand or with sand and cement, adding sufficient water to bring mix to a hodable consistency.

*Trade-Mark

PACKAGE

Red Top Mason's Hydrate.....50-lb. paper bags
Snowdrift Mason's Hydrate.....40-lb. paper bags
Marble Rock Mason's Hydrate.....50-lb. paper bags
USG Superfine Mason's Quicklime.....80-lb. paper bags
USG Pulverized Mason's Quicklime..50-lb. and 80-lb. paper bags
USG Fine Grain Mason's Quicklime.....80-lb. paper bags
USG Pebble Mason's Quicklime.....180-lb. net wood barrels or steel drums
USG Crushed Mason's Quicklime.....180-lb. net wood barrels or steel drums
Peerless Pulverized Mason's Quicklime.....100-lb. paper bags and 180-lb. net wood barrels or steel drums
Peerless Crushed Mason's Quicklime.....100-lb. paper bags and 180-lb. net wood barrels or steel drums
Marble Rock Pulverized Mason's Quicklime...60-lb. paper bags, 60-lb. and 90-lb. steel drums
Marble Rock Pebble Mason's Quicklime—90-lb. paper or Calsax bags, 60-lb. and 90-lb. steel drums, 180-lb. net wood barrels
USG Lump Lime is shipped in bulk.
All above brands may be shipped in bulk.

MORTAR MIXES FOR VARIOUS TYPES OF MASONRY

Masonry Type	Type of Construction	Loading	Mortar Proportions (Volume) Lime : Cement : Sand	Remarks
Common and face clay, shale or sand-lime brick	Dwellings, garages and similar construction	Any condition of loading for such types of construction	1 : 0 : 3	
Clay or shale brick	Walls and piers below grade continuously exposed to wet or damp conditions	Ordinary distributed Heavy concentrated Earthquake tremors	1 : 1 : 6* 1 : 1 : 6* 1 : 1 : 6*	
Common and face clay, shale or sand-lime brick	Exterior walls and piers above grade	Ordinary distributed Heavy concentrated Earthquake tremors	2 : 1 : 9* 2 : 1 : 9* 2 : 1 : 9*	2:1:5 Mortar domestic and power plant chimneys
Granite, limestone, marble, sandstone, terra cotta facing and trim	Exterior walls and piers above grade	Ordinary distributed Heavy concentrated Earthquake tremors	2 : 1 : 9* 2 : 1 : 9* 2 : 1 : 9*	Use non-staining portland cement and washed sand
Common and face clay, shale or sand-lime brick, concrete brick	Interior walls and piers above and below grade	Ordinary distributed Heavy concentrated Earthquake tremors	2 : 1 : 9* 2 : 1 : 9* 2 : 1 : 9*	
Hollow clay tile, concrete block, concrete tile, cinder block, gypsum block	Exterior walls above grade and interior partition walls	Non-bearing partitions, exterior and bearing walls and partitions	2 : 1 : 9* 2 : 1 : 9* 2 : 1 : 9*	

Notes: Materials to conform to current "A.S.T.M. Standard Specifications."
Mortar containing portland cement to be used within one hour after mixing.
* One volume of cement is the maximum quantity which should be used. The sand content is to be varied in accordance with its quality in the particular market involved and its proportion may be reduced if greater mortar strength is desired.
From "Masonry Mortar, Bulletin 321" published by National Lime Association.

USG AGRICULTURAL HYDRATED LIME

DESCRIPTION—USG Agricultural Hydrated Lime is of high quality. When desired, it can be shipped in mixed cars with other USG lime and plaster products.

PACKAGE—Shipped in 50-lb. paper bags.

BEN FRANKLIN* AGRICULTURAL GYPSUM

DESCRIPTION—This is uncalcined gypsum, specially ground for agricultural purposes. It is used as a soil amendment, supplying sulphate. It conserves the nitrogen in manure. It is particularly effective on leguminous crops. It can be shipped in mixed cars with plaster products.

PACKAGE—Shipped in 100-lb. paper or jute bags.

USG INDUSTRIAL PRODUCTS

The company manufactures many industrial products, detailed information about which will be gladly furnished on request. Among these products are:

Hydrocal*, a super-strong casting material
Dental and Orthopedic Plasters
Pottery and Casting Plasters
Terra Alba and Other Industrial Fillers
Lime for Water Softening and Industrial Purposes
Kemidol* (dolomitic) Chemical Lime
Kemikal* (high calcium) Chemical Lime
Other technical plaster products

*Trade-Mark

BB024 0912

United States U.S. Gypsum Company

Windows · Coal Doors

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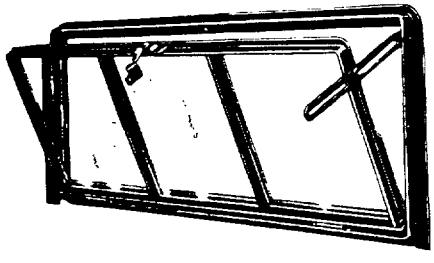
RED TOP STEEL BASEMENT SASH

DESCRIPTION—Red Top Basement Sash are made in five practical sizes (see table below), all easy to install in any type of masonry. They are furnished complete with hardware attached, painted and ready for immediate installation and glazing (glass not furnished). They are available in either top or bottom ventilating types, both opening toward the interior of the room and can be obtained with a puttyless device for quick and easy glazing or in the putty glazing type. The top ventilating sash is provided with automatic support arms which fold completely out of sight when closed. The design of the Ventilator and Frame assures full weather protection. There is nothing to interfere with their easy operating and secure locking features.

CONSTRUCTION—The Red Top Basement Sash is formed from a single piece of solid rolled (not cast) stock to which are welded same angles to assure secure, weathertight installations.

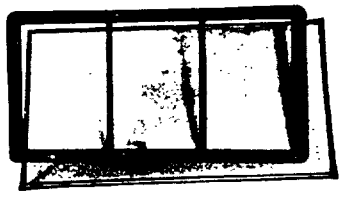
Muntin bars are narrow T-sections riveted to ventilator frame. The simple cam action lock holds the ventilator securely and provides positive protection from intruders. Top ventilating sash are furnished with loose pin butts. Bottom ventilating sash are furnished with sturdy hinges consisting of oval shaped steel rods formed into hooks solidly welded into the frame. In both types the sash are easily detached from the frames from inside.

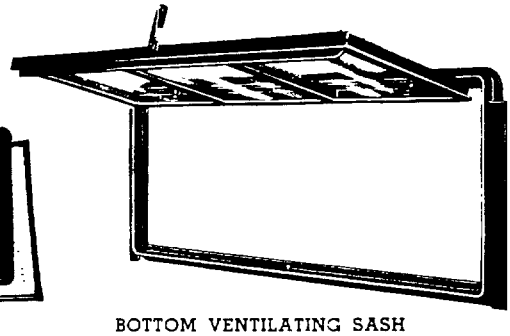
SCREENS—Since all basement windows should be screened during the summer months, the United States Gypsum Co. furnish, at slight added cost, screens to fit Red Top Basement Sash. Screen frames are of metal, finished in black enamel, wired with standard galvanized steel wire screen cloth. They are attached to the steel frames with two brass bolts permitting quick installation and removal.



TOP VENTILATING SASH

SCREENS





BOTTOM VENTILATING SASH

PUTTY GLAZING

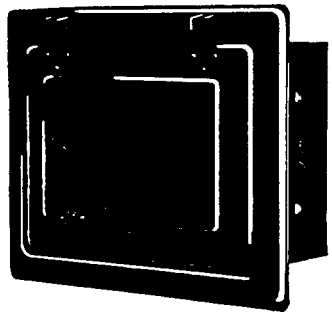
Style		Type	Masonry opening	Weight, lbs.
Bottom ventilating	Top ventilating			
701	721	3 lt. 10x12 in.	32¾x15¼ in.	18
702	722	3 lt. 12x18 in.	38¾x21¼ in.	23
703	723	3 lt. 10x20 in.	32¾x23¼ in.	22
704	724	2 lt. 14x20 in.	30⅜x23¼ in.	20
705	725	3 lt. 10x14 in.	32¾x17¼ in.	20

PUTTYLESS GLAZING

Style		Type	Masonry opening	Weight, lbs.
Bottom ventilating	Top ventilating			
711	731	3 lt. 10x12 in.	32¾x15¼ in.	18
712	732	3 lt. 12x18 in.	38¾x21¼ in.	23
713	733	3 lt. 10x20 in.	32¾x23¼ in.	22
714	734	2 lt. 14x20 in.	30⅜x23¼ in.	20
715	735	3 lt. 10x14 in.	32¾x17¼ in.	20

RED TOP PRESSED STEEL COAL DOORS

INTRODUCTORY—Steel Coal Doors are now standard equipment in American dwellings. Home owners demand them for the protection of foundation walls and as a guard against intruders. The Red Top Coal Door is weather proof and meets every practical requirement. Once installed, it will continue to serve as long as the building lasts.



DESCRIPTION—The sturdy, attractive appearance of Red Top Coal Doors reflects careful study and deep appreciation of the builder's needs. Their design, simplicity and trim lines clearly indicate their unusual strength, and lend to the attractiveness of any building. The frames come from the factory painted black and are ready to go into the construction with the least effort. All fittings are attached.

CONSTRUCTION—Red Top Pressed Steel Coal Doors are of enduring construction and are practically indestructible. The frame is made from a single piece of deep drawn steel plate. The same unbreakable material is used throughout the door's construction. The apron is made heavy to withstand the severe impacts of coal delivery.

Hinges are unbreakable and so constructed that they automatically hold the door open against the building—giving protection to the wall when coal is being put in. The self-closing lock is positive and assures locking when the door is closed.

SIZE—18 x 24 in.; wall thickness, 8 in.; masonry opening, 22¼ in. wide by 16½ in. high; weight, 35 lbs.

United States U.S. Gypsum Company

Red Top Expanded Metal

[Econo Mesh*]

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CONCRETE REINFORCEMENT

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INDUSTRIAL USES

Open Partitions • Door and Window Guards
Machine Guards

INTRODUCTORY—Red Top Expanded Metal (Econo Mesh) is a fabricated diamond mesh steel material of high elasticity manufactured by the United States Gypsum Company at its Warren, Ohio, Steel Products Plant. Its diamond shaped meshes range from 3 x 8 in. down to ½ x 1 3/16 in. Engineer and contractor alike find definite advantages in using expanded metal as a reinforcement for the many forms of concrete slab work of moderate span and load, since the correct amount of reinforcing can be predetermined.

The smaller meshes present an ideal open mesh material for the construction of open partitions, window and door guards, elevator enclosures, machine guards, etc., and similar items that require a rigid open mesh material.

FOR CONCRETE WORK—Red Top Expanded Metal offers marked advantages over reinforcing systems composed of tied or interlaced units. Some of its many advantages are: (1) Ease and rapidity with which it can be properly placed by unskilled workmen and with less supervision. (2) Lightens the designer's responsibility, because the correct amount of steel is determined at the time of manufacture, and cannot be altered by careless or ignorant workmen. (3) Provides a perfect bond, minimizing shocks, concentrated loading, etc., as stresses are evenly distributed over entire area. (4) Large, convenient size sheets, which lie flat without stretching.

The more popular reinforcing uses are for floor and roof slabs of moderate span and load, retaining walls, loading platforms, porch floors, culverts, sea walls, reservoirs, small bridges, tanks, foundations, columns, vaults, fireproofing, beam wrapping, etc.

FOR OPEN PARTITIONS, INDUSTRIAL USES, ETC.—Because it permits good visibility and has great rigidity, Red Top Expanded Metal is used extensively in many industries. It is particularly adaptable for the making of Open Partitions, Window and Door Guards, Machine Guards, etc. Its moderate cost, efficiency, durability and the ease with which it can be formed and framed commend it for this wide range of service. Red Top Expanded Metal can be framed with angle iron, U-edging, Red Top Frame Bar, or Red Top Partition Bar. These and other accessories are also furnished.

Some of its present uses in various industries are: Skylight guards, conveyor enclosures, elevator shaft and cage enclosures, fire door guards, mill trucks, trays and baskets, open shelving, ventilating fan enclosures, refuse burners, live stock pens, filter screens, truck body enclosures, stairway enclosures, brake shoe binder.

The United States Gypsum Company does not manufacture partitions, guards, etc. Its interest is confined to the distribution of the necessary materials for their construction, together with any advisory service that can be rendered. Names of reliable fabricators will also be furnished to those who prefer to have their safety and industrial devices built for them. Interesting descriptive literature on the many industrial uses for Red Top Expanded Metal is also available.

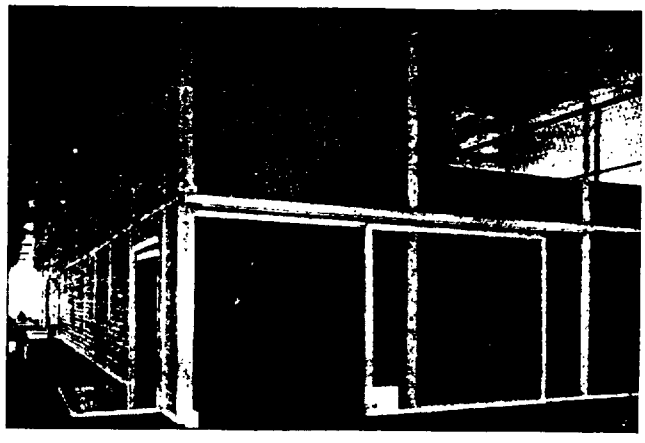
SHELF-X*—FLATTENED EXPANDED METAL—Except for the fact that it has the advantage of a flat surface, Shelf-X has the strength, rigidity, workability, and economy features of Red Top Expanded Metal. It is widely used for shelving purposes and many other uses requiring a rigid open mesh material. Some Shelf-X uses are: refrigerator shelves, cabinet shelves, stove grilles, ventilating grilles, drying trays, display panels. Can be had in ½, ¾, and 1½ inch meshes cut from 13, 16, and 18 gauge steel.

*Trade-Mark

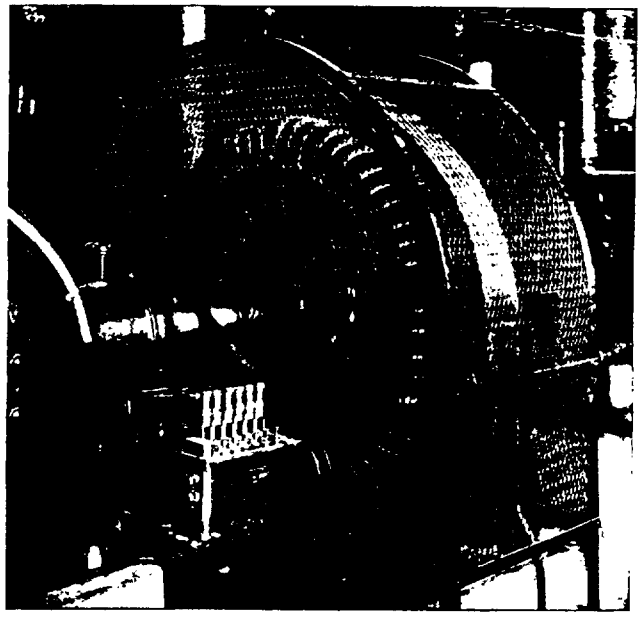
BB024 0914

RED TOP EXPANDED METAL STOCK SIZES and WEIGHTS

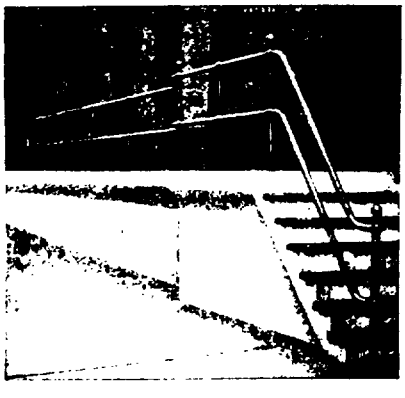
Style	Size of mesh, in.	U. S. std. gauge number	Sq. inch sect. area per foot of width	Weight lbs. per sq. ft.	Width short way of mesh	Length long way of mesh feet
Meshes for Concrete Reinforcement						
3-13-075	3 x8	13	.075	.25	6' 4"	8, 10, 12, 16
3-13- 10	3 x8	13	.10	.34	7' 0"	8, 10, 12, 16
3-13-125	3 x8	13	.125	.42	5' 8"	8, 10, 12, 16
3- 9- 15	3 x8	9	.15	.51	7' 0"	8, 10, 12, 16
3- 9-175	3 x8	9	.175	.60	6' 0"	8, 10, 12, 16
3- 9- 20	3 x8	9	.20	.68	5' 3"	8, 10, 12, 16
3- 9- 25	3 x8	9	.25	.85	4' 2½"	8, 10, 12, 16
3- 9- 30	3 x8	9	.30	1.02	7' 0"	8, 10, 12, 16
3- 9- 35	3 x8	9	.35	1.19	6' 0"	8, 10, 12, 16
3- 4- 40	3 x5	4	.40	1.36	4' 7"	8, 12, 16
3- 4- 45	3 x8	4	.45	1.53	4' 1"	8, 12, 16
3- 4- 50	3 x8	4	.50	1.70	7' 4"	8, 12, 16
3- 4- 55	3 x8	4	.55	1.87	6' 8"	8, 12, 16
3- 4- 60	3 x8	4	.60	2.04	6' 1½"	8, 12, 16
2¼-13-10	2¼x6	13	.10	.34	7' 0"	8, 10, 12
2¼-13-15	2¼x6	13	.15	.51	4' 8"	8
Special Meshes for Partitions, Guards, Etc.						
1½" No. 18	1½x3	18	.06	.20	3' 3¼"	8' 3"
1½" No. 16	1½x3	16	.12	.40	4' 0"	8' 3"
1½" No. 13	1½x3	13	.18	.60	4'0" and 6'0"	8' 0"
1½"– 68 lb.	1½x3	13	.20	.68	4'0" and 6'0"	8' 0"
1½" No. 10	1½x3	13	.24	.79	4'0" and 6'0"	8' 0"
1½" No. 9	1½x3	9	.375	1.19	6'0"	8' 0"
¾" No. 16	¾x2⅜	16	.15	.51	6'6"	8' 0"
¾" No. 13	¾x2⅜	13	.24	.60	4'0" and 6'0"	8' 0"
¾" No. 10	¾x2⅜	13	.35	1.19	4'0"	8' 0"
¾" No. 9	¾x2⅜	9	.53	1.80	4'0"	8' 0"
½" No. 18	½x1 5/16	18	.21	.72	4'0" and 6'0"	8' 0"
½" No. 16	½x1 5/16	16	.29	.97	4'0" and 6'0"	8' 0"



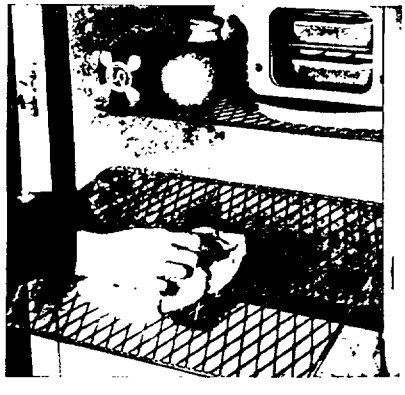
This stockroom, centrally located, has ample light and air due to the use of 1½ in. Expanded Metal.



Expanded Metal can be shaped to required forms. On this motor it affords protection from particles which are apt to fall or be sucked in by the motor when in operation.



This loading platform is representative of the many special uses for expanded metal as reinforcement.



Shelf-X—Flattened Expanded Metal, smooth and easily cleaned, is here used for refrigerator shelving.



A five million gallon "Gunite" concrete reservoir reinforced with Red Top Expanded Metal.

United States USG Gypsum Company

Roofing Products

INTRODUCTORY

The United States Gypsum Company, during 1936, acquired the plant and business of the National Asbestos Manufacturing Co., Jersey City, N. J. This new roofing plant, in addition to those at North Tonawanda, N.Y., South Bend, Ind., St. Paul, Minn., and South Gate, Calif., gives the Company strategic distribution points in the United States. USG operates its own felt mills at Skaneateles Falls, N. Y. and Jersey City, N. J. for the supply of base felts used in the manufacture of roofing.

The line of products has been standardized at the various plants. Existing standards of quality have been maintained and improved. Careful control and research methods assure the uniformity and quality typical of all USG products. Attention has been given to the improvement of colors on the shingle products, particularly with respect to variegated blends. Packaging has been improved to insure the products reaching the job in prime condition.

A built-up roofing service has been made available with detailed specifications, surety bond, inspection service, and a complete line of products for smooth and mineral surfaced, asphalt or tar saturated rag and asbestos felt roofs. Specifications and other data concerning built-up roofing are available on request from district sales offices.

The broadening of the roofing line itself and the increased manufacturing facilities result in a better roofing service for the Company's customers.

USG* SHINGLE TYPES

NOTE—*The six types of shingles described here all carry the Class C Label of the Underwriters' Laboratories, Inc.*

TAPERED STRIP SHINGLES

The Tapered Strip Shingle, thick at the butt end and thin at the top, has the greater portion of the protective asphalt coating at the butt end where the wear comes. The dimensions of the tabs in relation to their thickness give the shingles a rugged utility and create a heavy shadow line. The Tapered Shingle is available in a number of solid colors and a variety of attractive warm and cool blends, a range adapted to the correct color treatment of any slope-roof dwelling.

THICK BUTT SHINGLES

USG Thick Butt Shingles, like USG Tapered Shingles, have additional protective asphalt coating at the butt or exposed portion. The weight of these shingles is further distributed by using a fine mineral surfacing on the top part and standard size granules on the butt end. By this special manufacturing process, USG Thick Butt Shingles provide lasting weather protection, color and beauty of exceptional character.

SQUARE BUTT SHINGLES

In addition to the Tapered Strip Shingles and the Quad Shingles, both of which are in the square butt pattern, other three and four tab square butt shingles are produced in a variety of pleasing colors and color combinations. Due to the thoroughly conservative design, square butt strip shingles have always been popular and genuinely appealing to home owners.

HEXAGON STRIP SHINGLES

A pleasing variation in design and surfacing is available in USG Hexagon Strip Shingles. A thoroughly asphalt saturated base coated on both sides and covered with attractive colored surfacings combine to form this popular shingle. USG Hexagon Strip Shingles are produced in a full range of colors and sizes for various purposes.

THATCH* SHINGLES

USG Thatch Shingles offer a pleasing variation in design from the more standard square butt and hexagonal roof patterns. Thatch Shingles have pleasing roof lines when viewed from any angle and are particularly suited to small homes. Their design is such that they offer unusual resistance to high winds. They come in two sizes—10 and 12 in. in width—and in a wide range of colors. The larger type provides full double coverage.

ARRO-LOCK* SHINGLES

A most successful lock shingle which requires only two nails per shingle yet the method of nailing secures each shingle at four points. All exposed edges are angular, eliminating the possibility of water following straight line edges over head-lap. The locking device, which holds each shingle securely, permits natural expansion or contraction without buckling. This shingle, particularly adapted to re-roofing, is manufactured in a number of colors and color combinations.

OTHER SHINGLE TYPES

The USG shingle line includes, in addition to the above types, Quad* Shingles, Standard and Giant Individual Shingles, Dutch Lap Individual Shingles, Tritab* Strip Shingles, Grip-Lock* Shingles, Super-Tite* Shingles, and Brick Siding Strips. Each type of shingle is available in a variety of plain colors and blends.

USG ROLL ROOFING

USG ADAMANT* (Mineral Surfaced Roofing)

Adamant is a high quality mineral surfaced roll roofing for use on structures where appearance is important but roofing at lower cost than shingles is desired. Its low initial material and application cost ideally suit it to industrial properties. It weighs ninety pounds per roll of 108 square feet, 36 in. wide, packed complete with nails, lap cement, and direction sheet for application, and carries the Class C Underwriters' label. It is furnished in a range of colors.

*Trade-Mark

BB0024 0916

USG ZEEN-X* (Corrugated Surfaced Roll Roofing)

A corrugated talc surfaced roll roofing of superior quality offering economical protection where long service is paramount. Produced in rolls 36 in. wide, containing 108 square feet. Directions for laying and sufficient nails and lap cement for proper application are contained in each roll. Each of the four weights—45, 55, 65, and 75 pounds—carries the Underwriters' Class C label.

USG IMPERIAL* MICA (Surfaced Roll Roofing)

A substantial roll roofing, mica surfaced on both sides, combining the best materials into roll roofing, moderate in cost and of proven endurance. Necessary nails, cement, and directions for laying are packed in each roll. Manufactured in 35, 45, 55, 65, and 75 pound weights, rolls 36 in. wide, containing 108 square feet each. The 55, 65, and 75 lb. weights carry the Class C label of the Underwriters' Laboratories, Inc.

USG DIXIE* and PARACO* (Talc Surfaced Roofing)

A smooth surfaced talc finished roll roofing of great durability at low cost. Produced in three weights—35, 45, and 55 lbs.—in rolls 36 in. wide, containing 108 square feet. Directions for laying and sufficient nails and lap cement for proper application are contained in each roll.

OTHER MISCELLANEOUS USG ROOFING PRODUCTS

Our line contains various other types of serrated edge roll roofings, building and sheathing papers, asphalt and tar saturated rag and asbestos felts, built-up roofing cap sheets, asphalt, pitch, plastic and liquid roof cements and coatings.



*Trade-Mark

United States U.S. Gypsum Company

Paint Products

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TEXOLITE* CASEIN WALL PAINT—DESCRIPTION

Texolite is a casein wall paint for the painting of all types of interior walls and ceilings. The vehicle in Texolite is casein, a water-clear material, which allows all the light which strikes a Texolite painted wall to be reflected from the wall in the true, clear color of the pigment.

The pigment in Texolite is specially processed lithophone with exceptionally high hiding power.

The quality of these two principal constituents of Texolite—casein vehicle and lithophone pigment—is of the highest obtainable.

COMES IN PASTE FORM—Texolite comes as a paste and is thinned on the job. Water is used as thinner.

HIDING—One coat of Texolite hides average surfaces completely. Saves both time and material.

APPLICATION—Texolite is applied with either brush or spray gun. It flows easily under the brush. The use of 6- or 8-inch Baby Dutch brushes is recommended, although a good quality calcimine brush can also be used.

NON-INFLAMMABLE—Texolite contains no ingredients which can create fire hazards. It can be applied even where there are open flames. There is no fire hazard from Texolite soaked rags.

CLEANING OF TOOLS—Water is used to clean tools, brushes, utensils. Maintenance costs are cut; equipment has longer life.

HIGH LIGHT REFLECTION—White Texolite reflects over 90 per cent of the light which strikes it. It provides higher light levels in homes, offices, factories, etc.; saves eyesight; increases worker efficiency; cuts lighting costs.

WIDE COLOR RANGE—Texolite comes in ten pastel shades and white. Intermixes of colors provide many additional shades. Can be tinted with Texolite Deep Colors (see heading following on Texolite Deep Colors) to provide unlimited range of tints, shades, or blends.

STABILITY—Texolite does not yellow or fade. Colors remain bright and true indefinitely.

QUICK DRYING—Texolite dries under average conditions in one hour or less. Decorating time is reduced to a minimum. Occupancy of interiors can be resumed within an hour after painting is completed.

USED OVER ANY SOLID SURFACE—Texolite can be applied over new or old plastered walls, fiber, gypsum or insulating wallboards, brick, tile, concrete, cement, primed or painted wood or metal surfaces, and others.

SANITARY—Because Texolite dries quickly to a hard, dry film without tackiness, dust does not accumulate as quickly as upon surfaces painted with ordinary paint.

NO PAINT ODOR—Permits occupation of interiors in less time after painting is completed.

HIGH COVERAGE—Following are the approximate coverages per gallon of Texolite paste over various surfaces:

Smooth primed or painted surfaces	600 to 800 sq. ft.
Smooth finished plaster surfaces	500 to 700 sq. ft.
Textured surfaces	400 to 600 sq. ft.
Insulating Board, fiber wallboard	350 to 500 sq. ft.
Cinder blocks, concrete	300 to 450 sq. ft.

PACKAGING—Texolite comes in quart, gallon, and 5-gallon cans and in 30-gallon drums.

TEXOLITE DEEP COLORS

Texolite Deep Colors are made to the same formula as Texolite Casein Wall Paint. Deep Colors have the same characteristics and the same advantages as Texolite Casein Wall Paint.

Texolite Deep Colors come in eight deep brilliant colors and black. They are used either full strength as deep, brilliant paint or as tinting colors for tinting white Texolite or varying the color tones of the standard Texolite pastel shades.

K-CEMO* (LIME-LOCKING) PRIMER

K-Cemo Primer is particularly useful for priming porous surfaces over which Texolite Casein Wall Paint is to be applied. It effectively seals porous surfaces, keeping the paint vehicle from striking into the pores of the surface.

The use of K-Cemo as a prime coat is recommended when Texolite is to be applied over extremely porous surfaces or surfaces of greatly varying suctions. Its use is also recommended as a primer when Texolite Deep Colors are applied over porous surfaces.

A coat of K-Cemo Primer over high gloss surfaces prevents brushing through or sagging of the paint finish. Such gloss surfaces should be washed thoroughly before applying K-Cemo.

*Trade-Mark

BB024 0918

United States USG Gypsum Company

Texolite Specifications

(1) WORK INCLUDED

NOTE—*Here list in detail the surfaces to be painted with Texolite.*

(2) CONDITION OF SURFACES

(2a) GENERAL—All surfaces to be finished with Texolite Casein Wall Paint shall be clean and dry.

Any surfaces not in suitable condition to receive the finish shall be reported to the architect or his authorized agent for correction before work is commenced.

(2b) PLASTER WORK—

(2b1) New Work—Remove all dust and sand particles adhering to the surface by scraping, sandpapering, and dusting.

(2b2) Old Work—Remove dust, loose dirt, or scaling material adhering to the surface.

(2b3) All calcimine must be removed by thorough washing.

(2b4) Remove existing finish **[specify kind].**

(2b5) Both New and Old Work—Cut out all cracks, holes, and indentations in plaster surface and scrape clean. Cracks, holes, and indentations shall then be wet down and patched with **[USG Red Top Patching Plaster] [specify other suitable patching plaster].** After patching plaster has aged thoroughly, patches shall be sanded level with the rest of the surface.

(2b6) Caution—Do not fill cracks, nail holes, etc. with regular oil putty. To do so will cause oil spots to appear in finished paint job.

(2c) SHEETROCK GYPSUM WALLBOARD—Remove dust and dirt adhering to the surface.

Finish all joints with **[Perf-A-Tape Reinforced Joint System] [USG Sheetrock Metal "A" Joint System] [USG Reinforced Joint System] [USG Sheetrock Finisher] [specify other suitable joint cement].** Sand joints smooth when dry.

Spot all intermediate nailheads and abrasions in the surface with **[USG Sheetrock Metal "A" Joint System Cement] [USG Reinforced Joint System Cement] [USG Sheetrock Finisher] [specify other suitable cement].** Sand smooth when dry.

(2d) INSULATING BOARD, FIBER WALLBOARD—Remove all loose dust and dirt adhering to the surface.

(2e) CONCRETE AND CEMENT—Remove all loose and scaly material, rust spots, etc.

Remove grease, oil, etc., from surface by washing with gasoline or a dilute muriatic acid solution.

(2f) BRICK, TILE, AND STONE—Remove all loose dirt, scaling material adhering to the surface.

(2g) WOOD SURFACES—Wood surfaces are presumed to be clean and sanded smooth, free from surface defects, and in suitable condition for painting.

Remove all loose dust and dirt adhering to the surface.

Coat all knots or pitch streaks with white shellac to which has been added a little pumice or whiting.

(2h) METAL SURFACES—

NOTE—*Metal surfaces must be primed before applying Texolite, see paragraph (5g).*

(2h1) New—Remove all dirt, grease, and rust spots with benzine. Use sandpaper or a wire brush if necessary.

Galvanized work shall be thoroughly washed with acetic acid (vinegar).

(2h2) Old—Remove dirt and grease by washing thoroughly with benzine.

(3) MATERIALS

(3a) GENERAL—Where specific brands are not mentioned, materials shall be the best of their respective kinds.

All materials shall be delivered to the building in the original containers with seals unbroken and labels attached.

Materials shall be reduced only in accordance with the manufacturer's directions.

All paint shall be of the color selected by the architect. Only where specifically so instructed by the architect shall materials be purchased in the white for subsequent tinting or coloring.

(3b) PRIMER—Primer shall be K-Cemo (Lime-Locking) Primer as made by the United States Gypsum Company.

(3c) WALL PAINT—Wall paint shall be Texolite Casein (Paste) Wall Paint as made by the United States Gypsum Company.

Tinting colors shall be Texolite Deep Colors used in accordance with the manufacturer's directions.

Texolite shall be stored in rooms of moderate temperature, protected from freezing.

(3d) BRUSHES—All brushes shall be new and of the best grade, of sizes and types best adapted for the particular work.

For wall and ceiling work, brushes shall be **[six or eight-inch Baby Dutch Brush] [first quality calcimine brush].**

NOTE—*Baby Dutch type of brush is recommended.*

(3e) SPRAYING EQUIPMENT—Spraying equipment shall be of the type and capacity best adapted to the work, subject to the architect's approval.

Compressors shall be motor-driven set in the location designated by the architect with temporary rigid piping installed so as not to conflict with the work of other trades.

All paint-carrying flexible hose, nozzles, and equipment shall be thoroughly cleaned after each day's work and maintained in first class working condition.

(4) MIXING

(4a) K-CEMO PRIMER—Reduce K-Cemo Primer in accordance with the directions given on the original container.

(4b) TEXOLITE—Reduce Texolite in accordance with the directions given on the original container.

(4b1) To obtain shades other than standard, follow complete directions given on the original container.

(4b2) Addition of Linseed Oil—

NOTE—*A slight sheen or gloss finish can be given to Texolite by adding one-half pint of boiled linseed oil to each gallon of Texolite.*

Add oil in the following manner: First thin Texolite paste to even consistency by adding one pint of water to each gallon of Texolite. Then add one-half pint of boiled linseed oil for each gallon of Texolite paste. After stirring thoroughly, add sufficient water to reduce the paste to proper painting consistency.

(5) APPLICATION

(5a) NEW OR OLD PLASTER SURFACES—

(5a1) Priming—

NOTE—*Select the type of priming best suited to the particular work. They are listed on page 10 in the order of their preference.*

NOTE—*If plaster surface is smooth and hard and has little porosity, pastel shades of Texolite can be applied without priming surface. If plaster surface is extremely porous or a deep shade of Texolite or Texolite Deep Colors is to be applied, specify priming as in clauses on page 10.*

NOTE—*On badly water-stained surfaces, more satisfactory paint job will be obtained by priming surfaces with K-Cemo Primer. Specify as in paragraph (1), page 10.*

NOTE—*Extreme suction in porous surfaces can also be reduced by painting the surface with plain water immediately before applying Texolite. Increased coverage and easier application are afforded. Use paragraph (4), page 10 to specify water priming.*

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(1) Prime surface with one coat of K-Cemo Primer. Use a Baby Dutch or a calcimine type brush. Apply primer freely and uniformly to the surface. Over rough surfaces, stipple the primer to assure a complete coverage over pits and rough spots

(2) Prime surface with one coat of Texolite thinned to more than painting consistency (of sauce to be used in painting).

(3) Prime surface with one coat of **[specify brand]** pigmented oil primer.

(4) Prime surface with plain water immediately before applying paint.

(5a2) Texolite—Apply **[one] [two]** coat **[s]** of Texolite with **[brush] [spray].**

(5b) GYPSUM WALLBOARD—

(5b1) Priming—Specify clause (1) or (3) of (5a1) above (clause (1) preferred).

(5b2) Texolite—Apply **[one] [two]** coat **[s]** of Texolite with **[brush] [spray].**

(5c) INSULATING WALLBOARD—

(5c1) Priming—

NOTE—*Ordinarily no prime coat is necessary before applying Texolite. However, insulating board made of cooked pine fiber sometimes will cause bleeding into the first coat of paint, and in such case, specify clause (3) of (5a1) above.*

(5c2) Texolite—Apply **[one] [two]** coat **[s]** of Texolite with **[brush] [spray].**

(5d) FIBER WALLBOARD—

(5d1) Priming—Specify priming as in clause (3) of (5a1) above.

NOTE—*Ordinarily no prime coat is necessary before applying Texolite. However, when fiber wallboard is used for finished panel work, specify priming as in (5d1) above.*

(5d2) Texolite—Apply **[one] [two]** coat **[s]** of Texolite with **[brush] [spray].**

(5e) CONCRETE, CEMENT, BRICK, TILE, OR STONE—

(5e1) Priming—

NOTE—*Over smooth concrete and cement surfaces, no prime coat in necessary before applying Texolite. If surface is extremely porous, specify priming as in clause (1) of (5a1) above.*

(5e2) Texolite—Apply **[one] [two]** coat **[s]** of Texolite with **[brush] [spray].**

(5f) WOOD SURFACES—

(5f1) Priming—

NOTE—*Over wood finish, such as doors or trim, specify priming as in (5a1) above using clause (3).*

NOTE—*For mill or factory painting, spot all knots and pitch streaks with pigmented white shellac. Ordinarily in such interiors no further priming is needed.*

(5f2) Texolite—Apply **[one] [two]** coat **[s]** of Texolite with **[brush] [spray].**

(5g) METAL SURFACES—

(5g1) Priming—

NOTE—*Factory prime coat on metal is often scratched or chipped in shipment and erection allowing rust spots to develop. For this reason, specify a priming coat as in clause (3) of (5a1) above.*

(5g2) Texolite—Apply **[one] [two]** coat **[s]** of Texolite with **[brush] [spray].**

(5h) FLAT PAINT SURFACES—

(5h1) Texolite—Apply one coat of Texolite with **[brush] [spray].**

(5i) ENAMEL AND GLOSS SURFACES—

(5i1) Priming or Preparation—Dull the gloss of enamel or gloss paint surfaces by thoroughly washing the surface with a solution of washing soda and hot water followed by a clean water rinse.

NOTE—*If such surfaces are free from dirt and grease, they may be dulled by the application of one coat of K-Cemo Primer which produces tooth to prevent brushing through or sagging. Specify priming as in clause (1) of (5a1) above.*

(5i2) Texolite—Apply **[one] [two]** coat **[s]** of Texolite with **[brush] [spray].**

OTHER USG FLAT PAINTS and WALL COATINGS

DURACAL*

A washable calcimine that is composed of highest quality calcimine pigments well formulated and bound with casein instead of glue. Can be applied over fresh or untreated plaster. Mixes easily and spreads well. Mix five pounds of Duracal with four pints of lukewarm water, stir thoroughly, let stand for 30 minutes, and thin by the addition of ½ to 1 pint of water. Five pounds of Duracal will cover one coat of from 200 to 300 sq. ft. over primed or painted surfaces—over porous surfaces, slightly less.

Made in white and 8 standard colors. Packed in 5 and 25-lb. packages, 100-lb. drums, and 325-lb. (net weight) barrels.

USG CALCIMINE

USG Calcimine is of the cold water type which eliminates the need of boiling water and the necessary time required to prepare hot water materials.

Made in white and 10 standard colors. Packed in 5-lb. packages, 25-lb. bags and 325-lb. barrels.

KAL*

A high grade hot water calcimine.

Made in white and 10 standard colors. Packed in 5-lb. packages, 25-lb. bags and 325-lb. barrels.

USG INTERIOR COLD WATER PAINT

A material giving better results than ordinary whitewash but affording equal economy. It is ideal for factories, warehouses, farm buildings, and other structures requiring periodic cleaning and reconditioning. Made in white only. Packed in 25-lb. bags and 350-lb. barrels.

USG EXTERIOR COLD WATER PAINT

An economical reconditioning paint for general outside utility work applied over practically any type of clean, firm surface. Forms an unusually smooth, tight film which remains much cleaner for this reason than the rough surface of the usual exterior wall coating. Made in white only. Packed in 25-lb. bags and 325-lb. barrels.

*Trade-Mark

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USG MASONRY PAINT

CEMENTICO*

Cementico is a cold-water, weatherproof, insoluble, hydraulic cement paint for use over such surfaces as unpainted stucco, porous concrete, brick, tile, and stone. It is not intended for use on floors, wood or non-porous surfaces such as smooth plaster, terra cotta, and enameled brick, or on greasy surfaces.

It is in the form of a powder to be mixed with water.

An outstanding and almost exclusive advantage is the readiness with which Cementico mixes with water. Because of the absence of "sludge" in the mixture, the usual tedious straining operation is materially lessened. Due to its smoothness and uniform consistency, Cementico is admirably adapted to application by spray gun as well as by brush.

Again and quite important, the tendency to "bloom" inherent in most cement-and-lime mixtures, in Cementico has been practically eliminated.

When white Cementico is to be tinted, the most lasting results are obtained by the use of USG Limeproof Colors.

One (1) pound of Cementico, applied in one (1) coat, will cover 16 to 25 sq. ft. depending upon the texture of the surface to be covered and heaviness of the application required.

Made in white and 10 standard colors. Packed in 5, 25, and 100-lb. packages and 325-lb. barrels.

USG PLASTIC PAINTS

TEXTONE*

Textone is a quality texture paint for application over walls and ceilings to produce beautiful and enduring texture effects. It comes in white powder form, is easily mixed with water to prepare it for application. Textures are obtained with tools employed in everyday use—whiskbroom, stippling brush, sponge, wadded paper, crumpled cloth, or the palm of the hand.

With these various tools, and others, many types of textures can be easily worked out to suit almost any architectural design. Attractive coenstone and travertine effects can be achieved.

A new method of low cost texture decoration employing Textone and Texolite which cuts materially the cost of texture work has been developed by the United States Gypsum Co. Briefly, the new method is this—One extremely thin coat of Textone in its natural white color is applied to the wall. As soon as the Textone is dry, one coat of Texolite Casein Wall Paint in the desired shade is applied. The result is a colorful, durable, textured finish of outstanding beauty. It's a job that has been done more simply, in less time, and at lower material cost than was ever before possible.

Heavier texture effects can be obtained by working with Textone at a heavier consistency and applying it to a greater thickness. Coloring can be applied by painting the textured surface with Texolite Casein Wall Paint; or dry pigment colors may be mixed with the prepared Textone before application. Other methods of coloring include blowing in colored sands after the Textone is on the wall by water glazing with tinted Textone Sealer or by applying a coat of Textone Glaze which has been tinted with colors ground in oil. Wiping the glaze coat brings out the high-lights and produces two-toned effects.

One pound of Textone should cover approximately from one to three square yards of surface for a medium texture; slightly more with finer textures.

Made in white only but is easily tinted with USG lime proof colors. Packed in 25 and 100-lb. moisture-proof fiber boxes and 325-lb. (300-lb. net) barrels.

USG TEXTURE PAINT

USG Texture Paint is a dry, white, powdered plastic paint, very similar to Textone in working qualities and in texturing possibilities. It is priced less than Textone, and although it necessarily lacks some of the quality of the latter, particularly the long-storing feature, yet it is far superior to most plastic paints on the market.

One pound will cover about one square yard. Packed in 25 and 100-lb. packages and 300-lb. (net) barrels.

EM-BEL-LO*

Em-Bel-Lo is a dry, white powder, texture-yielding paint, economical to buy and apply. The addition of water makes it ready for application. It is particularly adaptable to the production of water-floated textures. Colors are added and the textures produced as with other plastic paints. Application is with a brush. It is not self-sizing.

Any surface can be prepared to receive Em-Bel-Lo. Map cracks do not appear in it; neither does it shrink. It is free from lumps, has no alkaline action and does not damage woodwork or paint with which it may come in contact.

Ordinarily it is ready to be worked over within 24 hours. Within from 48 to 72 hours it attains rocklike hardness.

One pound of Em-Bel-Lo covers from ¾ to 1 sq. yd., medium texture.

Em-Bel-Lo can be satisfactorily tinted, before application, to any desired shade through the introduction of dry limeproof color.

Made in white and 7 standard colors. Packed in 25 and 100-lb. packages and 325-lb. barrels.

USG PAINTING ACCESSORIES

TEXTONE SEALER

A casein water clear sealer for application to textured surfaces before glazing; also gives excellent results when used with dry limeproof colors as an economical glazing vehicle.

TEXTONE GLAZE

Textone Glaze is used as a carrier in applying color glazing over textured surfaces. It dries flat to a soft sheen and produces a durable, waterproof finish.

RED TOP PATCHING PLASTER

Red Top Patching Plaster contains no lime. It is non-shrinking, very white, and specially formulated to assure easy workability.

RED TOP PAINTERS' PLASTER

A general purpose painters' material. Red Top Painters' Plaster is produced from selected white gypsum rock especially treated to afford easy mixing. When set, it is unusually dense and strong.

USG COLD WATER PUTTY

USG Cold Water Putty is indispensable to painters and unexcelled for general household utility repairs. It is excellent for spackling and as a base for Swedish putty. It adheres firmly to any firm, clean surface—even to glass and steel. Dries stone hard without shrinking or cracking, thus furnishing a perfect surface for redecorating.

USG LIMEPROOF COLORS

The same concentrated limeproof colors that USG uses in all quality paint products, so many of which are in actual combination with formulas containing lime. These colors have been USG's standard for years. Their strength and stability have been proven. There may be less expensive limeproof colors, but none better than these are available at any price.

Colors are packed in air-tight containers of convenient size, thus reaching the job as fresh and strong as when they were manufactured. Standard colors include raw sienna, burnt sienna, yellow, raw umber, burnt umber, green, blue, red, and black. They are used for tinting, texture paints, Texolite (Powder), Calcimines, Cement Paints, and other interior water-mixed products.

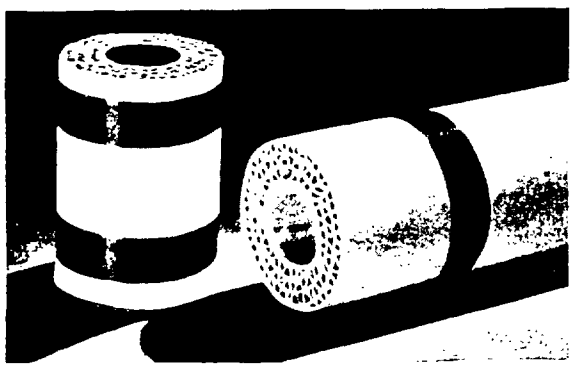
*Trade-Mark

United States USG Gypsum Company

Pipe Covering

National Asbestos Division

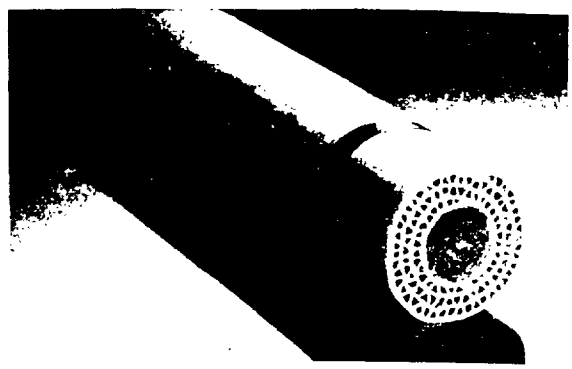
JACKETLESS ASBESTOS PIPE COVERING
For Steam and Hot Water Insulation



A well made, sturdy insulation for low pressure steam and hot water pipes that costs no more than canvas jacketed covering and can be applied in two-thirds less time. It has a clean, white smooth appearance, is shrinkproof and crackproof, and its finish is washable.

This round, air cell insulation is clean and easy to handle. There is no paste to be prepared and applied to canvas flaps. You simply open the sections, put them on the pipe, insert the staple, and apply the bands. An advancement in pipe covering manufacture that provides greater efficiency and economy and a much neater appearance.

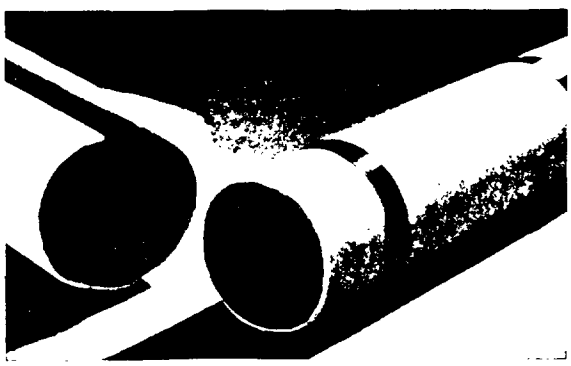
SUPER AIR CELL ASBESTOS PIPE COVERING
For Steam and Hot Water Insulation



National Super Air Cell is used for hot water and low pressure steam pipe insulation. It is made with full quarter-inch corrugations from strong asbestos paper, firmly bonded together, and has an additional wrapping of asbestos paper, covered with a canvas jacket.

Super Air Cell is light in weight, strong, and uniformly round. It can be sawed without separating the corrugations, and it can be removed and used again on other pipes. Has a white, smooth appearance and does not shrink. Four-ply or 1" thick Super Air Cell covering can be used effectively for temperatures up to 350° F.

WOOL FELT PIPE COVERING
For Hot or Cold Water Supply Lines

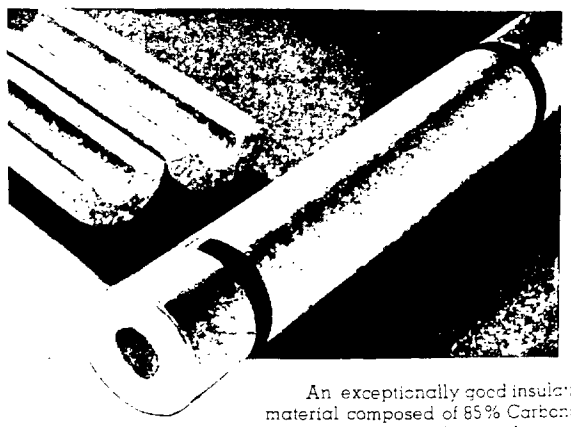


National Wool Felt Pipe Covering is made with layers of creped wool felt, having an inner liner of asphalt saturated asbestos paper, permitting its use on either hot or cold water lines.

Wool Felt Sectional Covering used on hot water service lines prevents water from cooling on its way from heater to faucet and retards loss of heat from water standing in the lines. Cold water lines covered with Wool Felt Sectional Covering are not affected by warm air surrounding them. National Wool Felt Pipe Covering may also be used to prevent sweating under mild conditions.

An asbestos paper lining under the canvas jacket provides a smooth, white appearance. All joints are finished with brass lacquered bands.

85% MAGNESIA PIPE COVERING
A High Pressure Insulation



An exceptionally good insulating material composed of 85% Carbonate of Magnesia and long asbestos fibers. It contains a great number of microscopic dead air cells. Used on pipe lines having a temperature up to 600° F.

This pipe insulation is furnished in three-foot lengths, split horizontally and joined with heavy, securely pasted canvas jackets, forming hinge and lap, and with necessary bands for proper application.

85% Magnesia Insulation is also furnished in block form for insulating flat, curved and irregular surfaces, and in cement or powdered form, both materials providing highly efficient insulation.

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NEVER-FREEZE PIPE COVERING

For Cold Water and Drainage Piping

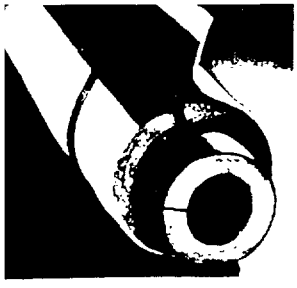


National Never-Freeze Pipe Covering is made in three-foot sections 1¼" thick and is used to prevent cold water and drain pipes from freezing in unheated rooms.

It is made of alternate layers of pure cattle hair felt and wool felt paper, with a saturated asbestos felt liner and lacquered brass banded canvas jacket.

ANTI-SWEAT PIPE COVERING

For Cold Water Supply Piping



National Anti-Sweat Pipe Covering is made of creped wool felt paper, having five waterproof asphalt impregnated asbestos paper liners. It is made in two sections, one inside the other, breaking joints longitudinally and transversely. A three-inch lap seals longitudinal cut. Generally used on lines carrying liquid from 32° to 50° F.

LAMINATED ASBESTOS-SPONGE INSULATION

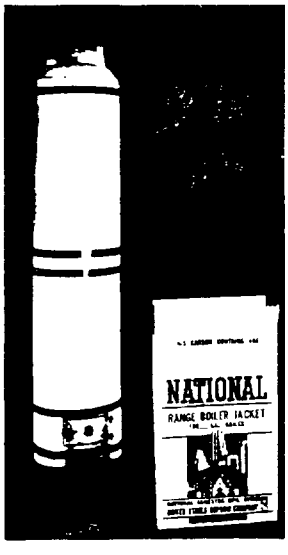
A High Pressure Insulation



Laminated Asbestos and Sponge Insulation is constructed of special asbestos paper impregnated with finely ground sponge. It is built up like a book in laminated form and provides practically indestructible insulation. It not only will withstand severe pipe vibration and rough usage but it will retain its original high efficiency when wet.

RANGE BOILER JACKET

Easy to Apply—Saves Fuel



National Range Boiler Jacket, made of 3-ply white flexible quarter-inch corrugated asbestos paper, is furnished in two sections, one for upper part of tank and one for lower part, with five bands.

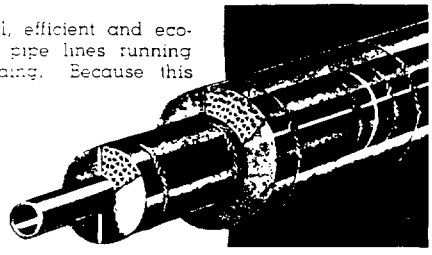
The two sections are wrapped around the tank and the shiny black metal bands put into place. Plaster Asbestos, which comes with each jacket, is then spread over the top.

Water in the tank heats more quickly with less fuel, and remains hot much longer. The jacket provides a saving in fuel cost of from 40% to 60%.

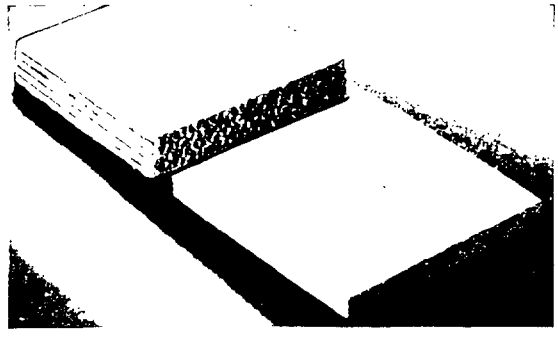
PYRO-BESTOS* PIPE COVERING

Waterproof Pipe and Stack Insulation

A strong, practical, efficient and economical insulation for pipe lines running from building to building. Because this insulation is waterproof it may be buried in a trench, or tunnel, or exposed to the weather and still retain its insulating value.



ASBESTOS AIR CELL AND MILL BOARDS



AIR CELL BOARDS—A splendid type of insulation for medium or low pressure boilers, heaters, dry rooms, hot water tanks, and similar surfaces not having extreme temperatures. Standard sizes of the boards are 36" x 36" and 6" x 36". Thicknesses run from ¼" up to 4" and all corrugations are a full quarter inch. Asbestos Air Cell Board is also used as an insulation on air conditioning ducts.

MILL BOARDS—A low priced, light weight sheet used to insulate radiator enclosures, ovens, ranges and as a fire retardant to line ceilings, walls, and metal doors. Standard size, 42" x 48". Thicknesses, from 1/16" up to ¼".

FIRE RETARDANT ASBESTOS PAPER

National Asbestos Paper is used principally as a fire retardant but is also used for insulating purposes requiring a minimum thickness. It is used between walls, floors, and ceilings, for wrapping furnace or heater pipes, and for general fireproofing work. In rolls 16", 24", and 36" wide. Weighs 25, 50 and 100 lbs. Thicknesses, from .018" up to ¼".

INSULATING CORRUGATED ASBESTOS PAPER

Recommended for insulating hot air heater casings, pipes and ducts. The paper is usually wrapped around the pipe or duct twice and held in place with silicate of soda and wired around the outside. It is made with full, uniform ¼" corrugations and is furnished in rolls 36" wide containing 250 sq. ft. Weight per roll approximately 50 lbs.

ASBESTOS CEMENT

An efficient insulating cement, light in weight, having an above average covering capacity and finish. Composed of selected asbestos fibers and high grade insulating materials. Easy to apply. Dries white and smooth. Available in a variety of grades for every insulating purpose where the use of sheet or block insulation would be impractical, or for finishing over air cell blocks. Furnished in 100 lb. burlap bags or cartons of lesser weight.

COVERING CAPACITY—ONE INCH THICK			
No. 7	20 Sq. Ft.	No. 3	25 Sq. Ft.
No. 5	18 Sq. Ft.	No. 2	29 Sq. Ft.
	No. 1	40 Sq. Ft.	

*Trade-Mark

RED BOOK · SECTION E

Gypsum Constructions

Engineering Sales Division

The Company maintains a complete erection organization. When this service is employed, the manufacturer is responsible for both material and workmanship.

• • •

WHY GYPSUM · GENERAL TECHNICAL DATA

FIREPROOF—Gypsum Tile alone have successfully passed the Underwriters' requirements for Fireproof Partitions.

FIRE PROTECTION—Steel loses strength rapidly at temperatures above 1000° F. and, unless properly protected, will fail at the temperatures of 1700° to 2300° F. frequently reached in a building fire.

The ideal fire protection material must:

(1) Be incombustible
(2) Protect the steel against high temperature
(3) Not expand sufficiently to spall off and expose the steel

AND ABOVE ALL MUST:

(4) Maintain these qualities for the duration of the fire.

GYPSUM COMPLIES WITH THE FOREGOING ESSENTIALS OF THE IDEAL FIREPROOFING BETTER THAN ANY OTHER COMMONLY USED MATERIAL.

PROOF—(1) Tests show that Gypsum will not support combustion at any known temperature.

(2) Tests show that it is impossible for gypsum-protected steel to reach higher temperatures than 212° F. until the gypsum has completely calcined; just as impossible as it would be to feel the heat of a blow torch through a piece of ice until after the ice had melted.

(3) Tests show that gypsum, possessing no strength after it has passed 212° in temperature, can only expand through 142° (room temperature to 212°) even when exposed to higher temperatures.

In a 10 ft. length of column fireproofing the total expansion

for gypsum is..... .156 inches
for clay tile is..... .59 inches
for concrete is.....1.18 inches

(4) Maintaining these qualities when gypsum is used is simply a matter of thickness of the gypsum protection.

The Bureau of Standards' report (Technological Paper No. 130) says: "This table shows that the length of time required for a temperature of 600° C. (1112 F.) to be attained at a depth of 1½ in. does not vary greatly in the clay and concrete specimens. The gypsums are seen to be distinctly better than clay and concrete in this respect, only one of them (out of 28 total specimens) reaching a temperature of 600° C. at a depth of 1½ in. in the three and one-half hour test. Obviously, the gypsum specimens indicate distinctly superior thermal protection for embedded steel." During a test on 3-in. hollow partition tile at the Underwriters' Laboratories, a two-hour exposure to 1900° F. failed to raise the temperature of the unexposed side of the wall over 90° above room temperature.

OTHER DESIRABLE QUALITIES—In addition to these purely fire protection qualities, fireproofing materials must possess other desirable qualities such as:

(1) Light weight—to save steel

(2) Easy to cut and fit—to meet the wide variety of conditions which construction imposes

(3) Good plaster base—as fireproofing is usually plastered

GYPSUM COMPLIES WITH THESE DESIRABLE QUALITIES AS NO OTHER MATERIAL DOES

LIGHT WEIGHT—The weight of gypsum constructions is materially less than other commonly used materials:

3 in. Hollow Pyrobar* Partition Tile weighs..10 lbs. per square foot while
3 in. Hollow clay partition tile weighs.....15 lbs. per square foot
3 in. Solid Pyrobar Roof Tile weighs.....17 lbs. per square foot while
3 in. Solid concrete weighs.....38 lbs. per square foot.

In a typical structural steel frame building the substitution of gypsum fire protection for clay tile fire protection will show an average of 20 lbs. reduction

*Registered Trade-Mark

BB024 0924

in the dead load per square foot of floor throughout the structure. If, in addition, gypsum floor construction is substituted for concrete or clay tile arch construction, an additional saving of approximately 30 lbs. per square foot of floor in dead load can be obtained, making a total saving of 50 lbs. per square foot.

ADAPTABLE—The many types of gypsum poured-in place and precast tile constructions for roofs and floors and the many special shapes and sizes of partition tile, shoe tile, angle tile, soffit tile, curb tile, gutter tile provide a type, size, and shape for all conditions.

Where cutting and fitting is necessary, Pyrobar Gypsum Tile may be cut almost as readily as wood.

PLASTER BASE—Gypsum bonds with gypsum. Therefore, gypsum is the ideal base for gypsum plaster which is universally used.

THERMAL INSULATION VALUE—Low heat conductivity is a fundamental characteristic of gypsum. The table in the opposite column contrasts the B.t.u. loss per hour, per square foot, per degree difference in temperature of several commonly used roof deck materials with the low loss through the equally common types of poured and precast gypsum constructions.

Corrugated sheet iron	1.50
4 in. stone concrete	.72
2½ in. Sheetrock Pyrofill Deck	.38
3 in. Sheetrock Pyrofill Deck	.35
2½ in. Weatherwood Pyrofill Deck (½ in. Weatherwood)	.26
3 in. Weatherwood Pyrofill Deck (1 in. Weatherwood)	.19
3 in. Solid Short Span Pyrobar	.43
4 in. Hollow Short Span Pyrobar	.35
5¼ in. Long Span Hollow Pyrobar	.29

SUMMARY OF GYPSUM ADVANTAGES—

(1) Absolutely incombustible
(2) Holds steel temperature to 212° F.
(3) Does not expand sufficiently to spall
(4) Maintains these qualities for hours
(5) Very light weight
(6) Easily cut and fitted
(7) Good plaster base
(8) Precast units machine moulded
(9) Poured constructions set in 15 to 20 minutes
(10) Easily and cheaply erected
(11) Special shapes to fit all conditions
(12) Meets all the essentials of the ideal fireproofing material whether poured or precast in units.

SHEETROCK* • PYROFILL* WEATHERWOOD* • PYROFILL ROOF CONSTRUCTIONS

• • •

DESCRIPTION

SHEETROCK-PYROFILL ROOF CONSTRUCTION—Consists of Sheetrock undersurface in lengths equal to the main purlin spacing supported on the flanges of light rail sub-purlins, spaced 32½ inches on centers and clipped to the main purlins.

Over which is poured a slab of gypsum fiber concrete (Pyrofill) reinforced with an electrically welded galvanized steel fabric.

SHEETROCK UNDERSURFACE—Consists of ⅜ in. Sheetrock, 32 in. wide, and in lengths equal to the main spacing so all joints occur over the main purlins.

WEATHERWOOD-PYROFILL ROOF CONSTRUCTION—Consists of Weatherwood Insulating Board undersurface (either ½ or 1 in. thick) in lengths equal to the main purlin spacing supported on the flange of light rail sub-purlins. Spaced 32½ in. on centers and clipped to the main purlins.

Over which is poured a slab of gypsum fibre concrete (Pyrofill) reinforced with an electrically welded galvanized steel fabric.

WEATHERWOOD UNDERSURFACE—Consists of either ½ or 1 in. thick Weatherwood Insulating Board, 32 in. wide, and in lengths equal to the main purlin spacing so all joints occur over the main purlins.

SUB-PURLINS—Light rails (or tees) laid at right angles to the main purlins, spaced approximately 32½ in. on centers and clipped to the main purlins.

REINFORCEMENT—Consists of a continuous electrically welded galvanized steel fabric (specially made to USG specifications) with No. 12 longitudinal wires 4 in. on centers and No. 14 transverse wire 8 in. on centers.

PYROFILL (GYPSUM FIBER CONCRETE)—Consists of gypsum stucco, water, and not to exceed 12½ lbs. of fiber to 87½ lbs. of calcined gypsum. It weighs only 55 lbs. per cubic foot.

CURBS, END WALLS, ETC.—Curbs, end and similar walls may be constructed of Precast Gypsum Tile. Curbs may also be constructed of Sheetrock-Pyrofill or Weatherwood-Pyrofill construction.

*Registered Trade-Mark

OUTSTANDING ADVANTAGES SHEETROCK • PYROFILL and WEATHERWOOD • PYROFILL ROOF CONSTRUCTIONS

ADAPTABILITY—Whenever steel framing is used (whether the roof be flat, 45° pitched, monitor, sawtooth, Pond, Aiken, etc.), the inherent value of either Sheetrock-Pyrofill or Weatherwood-Pyrofill construction may be advantageously employed.

FIREPROOF—The inherent advantages of gypsum for fireproofing are universally recognized.

LIGHT WEIGHT—The Standard 2½ in. slab weighs only 12 lbs. as against 37 lbs. for 3 in. stone concrete. This saving is reflected throughout the structure, including columns and footings.

APPEARANCE—The flat undersurface with uniform paneled effect is singularly pleasing to the eye.

> **NOTE**—*If the underside of the slab is to be painted or otherwise decorated, such work should not be done until the waterproof roof covering has been applied and the slab is thoroughly dry.*

ECONOMICAL—The simplicity of the construction plus the light weight and the speed with which it is installed makes either Sheetrock-Pyrofill or Weatherwood-Pyrofill Roof Construction extremely economical.

NO MAINTENANCE—Calcined gypsum is chemically inert. Examinations of steel rods embedded for fifteen years in gypsum have shown no evidence of progressive corrosion. The maintenance cost is practically nothing.

HIGH INSULATION—Gypsum has the highest insulating value of any fireproof structural building material. It is effective in protecting the building from extremes of outside temperature, both in summer and in winter.

The following table gives the heat loss through various types of roof construction expressed in B.t.u.'s per hour, per sq. ft., per degree difference in temperature. All values are figured with a 5-ply roof covering:

2½ in. Sheetrock-Pyrofill	.38 B.t.u.'s
3 in. Sheetrock-Pyrofill	.35 B.t.u.'s
2½ in. Weatherwood-Pyrofill (½ in. board)	.26 B.t.u.'s
3 in. Weatherwood-Pyrofill (1 in. board)	.19 B.t.u.'s

SPECIAL ADVANTAGE OF WEATHERWOOD-PYROFILL ROOF CONSTRUCTION—Weatherwood-Pyrofill Roof Construction has the special, additional, and unique advantage of providing a high degree of acoustical absorption. This is particularly important in auditoriums, gymnasiums, and similar buildings but is also of considerable importance in many types of factories and industrial buildings.

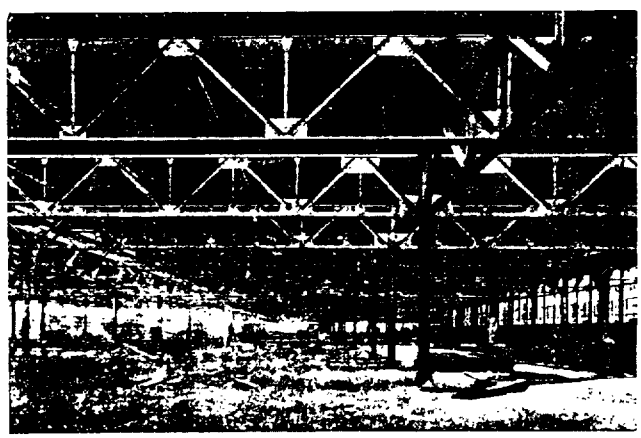
The approximate acoustical absorption provided is given in the following table:

½ in. Weatherwood	30%
1 in. Weatherwood	45%

OTHER POURED • IN • PLACE GYPSUM CONSTRUCTIONS

USG TEE SYSTEM* PYROFILL ROOF CONSTRUCTION—This construction which was formerly called "The Mark's 'T' System" is quite similar to Sheetrock-Pyrofill and Weatherwood-Pyrofill constructions. The principal difference is that standard 32 x 36 in. plaster board or Weatherwood is used with 1 x 1 x ⅛ in. tee irons laid across the main tees to support the ends of the board. The construction details are identical.

USG IMBEDDED RAIL CONSTRUCTION — This construction is also similar to Sheetrock-Pyrofill construction in that the sub-purlins and mat reinforcing are the same. The big difference is that removable wood forms are used, hung three-quarters of an inch below the bottom flange of the sub-purlins. This provides a uniform gypsum undersurface unbroken by exposed sub-purlins. This construction also permits the fireproofing of the main purlins with Pyrofill at low cost.



Sheetrock-Pyrofill Ceiling—Note Good Interior Appearance

PYROFILL MONOLITHIC CONSTRUCTION—This is the oldest type of gypsum roof and floor construction in general use and for some buildings it is still the best. In this construction, twisted wire cables are stretched over the main purlins and then deflected in the center of each span and Pyrofill (gypsum fiber concrete) is poured on removable wood forms to desired thickness. In this construction the cables (figured by suspension formula) take the entire load and the gypsum acts merely as a filler.

On a large, flat roof when no exposed steel is allowed, this construction will be found very economical and satisfactory.

*Trade-Mark

BB024 0926

Master Specifications

SHEETROCK • PYROFILL and WEATHERWOOD • PYROFILL ROOF CONSTRUCTIONS

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

NOTE—*Here list the various roof areas to be constructed of Sheetrock-Pyrofill or Weatherwood-Pyrofill and specify the prescribed live load. If live loads vary, designate the live load applying to the various areas.*

(2) SUPPORTING STRUCTURAL STEEL WORK

All steel work for the support of the Sheetrock-Pyrofill Roof Construction has been designed not only to carry the prescribed live and dead loads, but to accommodate the most economical installation in accordance with the standard detail of the United States Gypsum Company.

(3) MATERIALS

(3a) GENERAL—All Gypsum products shall be as manufactured by the United States Gypsum Company, 300 West Adams Street, Chicago, Ill.

(3b) SUB-PURLINS—Sub-purlins shall be steel **[tees] [rails]** of sizes and spacings required or indicated on the structural plans, furnished with a shop coat of paint. Provide all necessary clips **[of types best suited to conditions]** for rigidly securing sub-purlins to main purlins, etc.

(3c) SHEETROCK FORMS—Sheetrock (⅜ in. thick x 32 in. wide) shall be mill-made to exact lengths (maximum 10 ft.) to match the main purlin centering.

(3d) WEATHERWOOD FORMS—Weatherwood **[½ in.] [1 in.]** thick x 32 in. wide shall be mill-made to exact lengths (maximum 10 ft.) to match the main purlin centering.

(3e) REINFORCEMENT—Steel reinforcement shall be galvanized electrically-welded steel fabric made to USG specifications consisting of No. 12 main longitudinal wires 4 in. on centers and No. 14 transverse wires 8 in. on centers having an effective sectional area of .026 sq. in. per foot width of slab.

(3f) PYROFILL—Pyrofill shall consist of calcined gypsum and not to exceed 12½ lb. of clean soft wood fiber to every 87½ lb. of gypsum. The gypsum and wood fiber shall be mill mixed. Water for proper consistency shall be added at the job.

(3g) PRECAST CURB TILE—Where so indicated on plans and details furnish 3-in. thick precast gypsum curb tile (reinforced when carrying a roof load or retaining drainage fill). For end wall construction where so indicated furnish Pyrobar Curb Tile (3-in. x 15-in. x 30-in. non-reinforced).

(3h) GYPSUM MORTAR—Gypsum mortar shall consist of one part of unfibered gypsum cement plaster and not to exceed two parts of clean sharp sand.

(4) ERECTION

(4a) GENERAL — All **[Sheetrock-Pyrofill] [Weatherwood-Pyrofill]** Roof Construction including all sub-purlins **[curbs] [end walls] [saddles] [drainage fill]** etc., shall be completely erected by the Engineering Sales Division of the United States Gypsum Company.

Roof construction shall be of thickness required on plans and details.

All joints in sub-purlins shall be staggered or rigidly tied together. Reinforcement shall be continuous. All roof surfaces shall be screeded smooth and true ready to receive the finished waterproof roof covering.

(4b) POURED CURBS—All curbs so indicated on plans and details shall be constructed of Sheetrock-Pyrofill.

(4c) TILE CURBS—All curbs so indicated on plans and details shall be constructed of precast gypsum curb tile (reinforced when carrying roof load or retaining drainage fill) set in gypsum mortar.

(4d) END WALLS, ETC.—Construct all **[end walls]** of **[monitors] [sawtooth skylights]** **["A" frames] [specify]** of Pyrobar Curb Tile set in gypsum mortar.

(4e) DRAINAGE FILL—Provide Pyrofill saddles and drainage pitches to direct roof drainage to **[gutters] [drainage outlets].**

(5) WATERPROOF ROOF COVERING

NOTE—*Provide in the Roofing and Sheet Metal division of the specifications that the waterproof roof covering shall be applied as soon as possible after the Sheetrock-Pyrofill slab is erected (preferably within twenty days). See USG Built-up Roofing Section.*

RAIL SIZES AND WEIGHTS OF SLABS

Rails Spaced 32½ In.—45 Lb. per Sq. Ft. Total Load B.M.=1/10 WL; Fiber Stress, 18,000 Lb. Per Sq. In.

Span of main purlins	Size of rail, lb.	Weight of rail per sq. ft. of roof, lb.	*Minimum thickness of slab, in.	Weight of Slab including rail, lb.
Up to 6'4"	8	1.00	2½	11.50
6'-4" to 8'-11"	12	1.50	2½	12.00
8'-11" to 11'-3"	16	2.00	2½	12.50
11'-3" to 13'-2"	20	2.50	3	15.00

*Includes thickness of Sheetrock or Weatherwood. For other spacing of sub-purlins, or other loads, allowable span will vary inversely as the square root of the spacing or the load. Spans can be increased over those shown by considering the effect of the rail imbedment in the slab. Tests have shown that an 8-lb. rail may be used for spans up to 7 ft.

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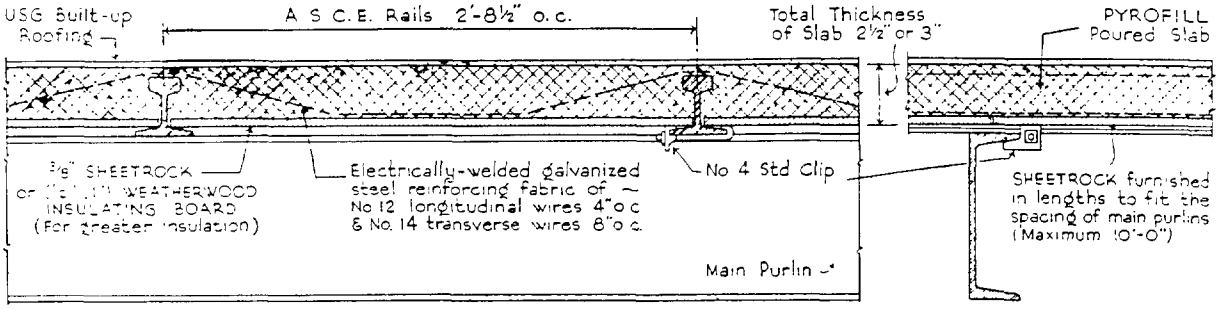
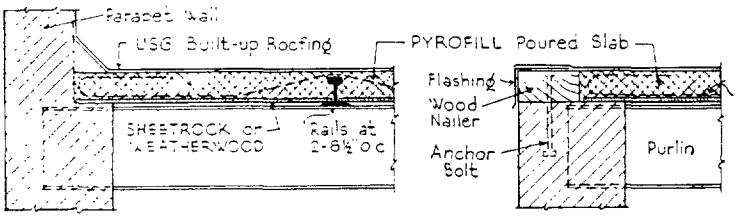
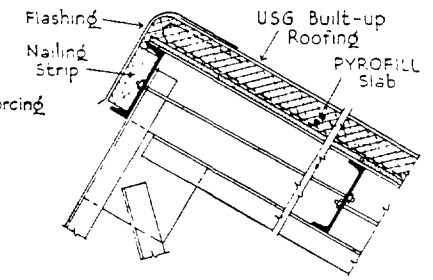
DETAILS OF SHEETROCK-PYROFILL SYSTEM



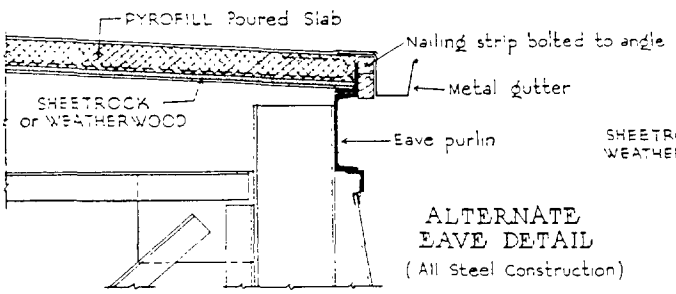
TYPICAL SHEETROCK – PYROFILL ROOF CONSTRUCTION



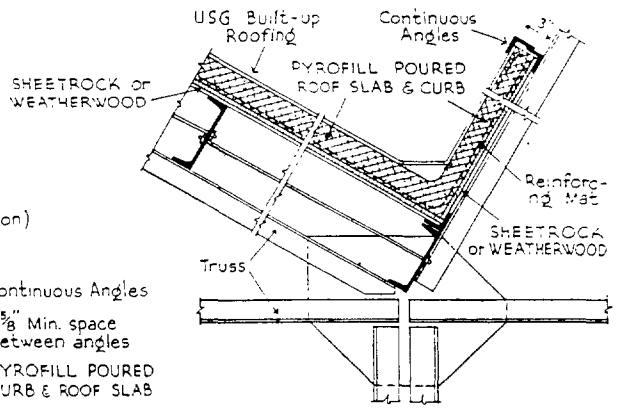
ALTERNATE DETAILS FOR ENDS OF BUILDING



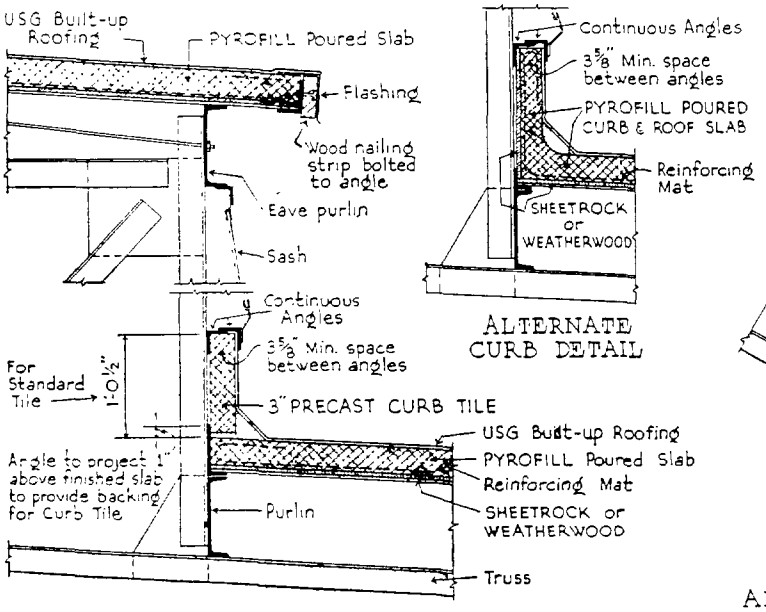
SAWTOOTH PEAK CONSTN.



ALTERNATE EAVE DETAIL
(All Steel Construction)

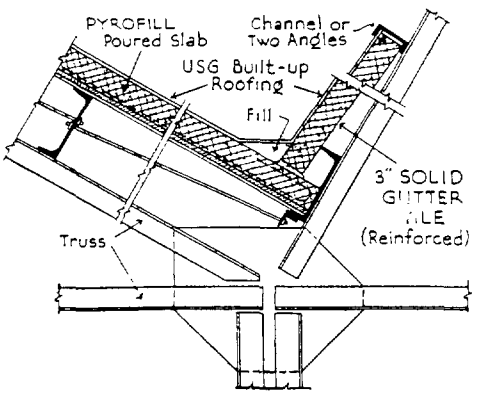


SAWTOOTH GUTTER CONSTN



CURB & EAVE CONSTRUCTION FOR MONITOR

ALTERNATE CURB DETAIL



ALTERNATE SAWTOOTH GUTTER CONSTRUCTION

BB024 0928

PYROBAR SHORT SPAN ROOF TILE

• • •

DESCRIPTION

PYROBAR SHORT SPAN ROOF TILE—Pyrobar Short Span Roof Tile are cast in steel moulds using a dense mix of specially processed gypsum and are reinforced with electrically welded galvanized steel fabric. They are furnished in three sizes: 3 x 12 x 30 in. solid, 3 x 18 x 36 in. solid, and 4 x 12 x 30 in. hollow, all weighing 17 lbs. per square foot.

The tile are laid directly on steel supports without mortar and with sides tight together with full bearing on the sub-purlins. The grouting grooves are then filled with gypsum mortar and the roof is immediately ready for the application of the roof covering.

SPECIAL UNITED STATES GYPSUM BULB TEE SUB-PURLINS—This section has been developed primarily for use with Short Span Pyrobar Roof Tile as a more economical sub-purlin than standard tees. The wide flange provides ample bearing for the tile, and, being designed particularly for this purpose, it has considerably greater load carrying capacity than a standard tee of equal sectional area. The United States Gypsum Company is prepared to furnish the bulb tees, erected in place in connection with its installation of Short Span Pyrobar Roof Tile, or in connection with the installation of Pyrobar by others, bulb tees can be furnished fabricated ready for erection.

GUTTER AND CURB TILE • DRAINAGE FILL—

Gutter Tile—Curbs under sawtooth sash, etc. restraining drainage fill or subject to roof loads, are constructed of 3-in. solid reinforced Pyrobar Gutter Tile, 12 in. wide and made in lengths to fit the structural steel work.

Curb Tile—Curbs, above and below monitor and sawtooth sash, end walls, etc., which do not sustain a roof load or restrain drainage fill are constructed of 3-in. solid non-reinforced Pyrobar Curb Tile, 15 x 30 in.

Drainage Fill—The use of Pyrofill for drainage fill is ideal on account of its light weight and the quick setting qualities of gypsum. Where deep fill is required, the Pyrofill is laid over dry cinders tamped in place. The Pyrofill provides a smooth surface for the roof covering and is an excellent material for constructing fillets and leveling off uneven and broken surfaces in connection with difficult roof framing.

OUTSTANDING ADVANTAGES

ADAPTABILITY—Pyrobar Short Span Roof Tile supported on tee sub-purlins is by far the most flexible precast roof construction. It is easily cut and fitted at hips, valleys, dormers, and openings which is very important for many roofs. It can be used with economy on any type of factory or industrial building, power plant, school, etc. The solid tile is a nailing base.

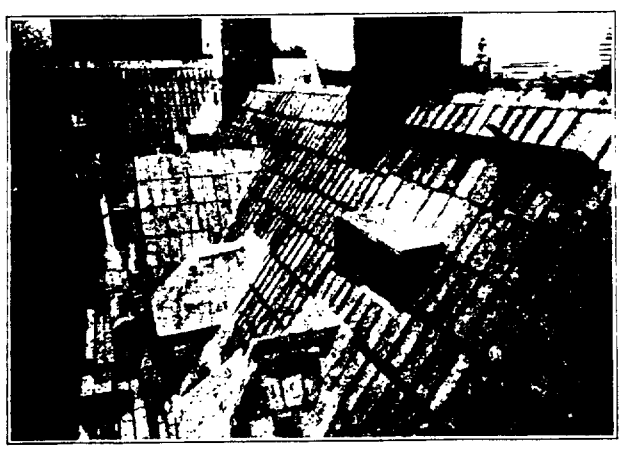
FIREPROOF—Gypsum is absolutely incombustible and the inherent advantages of gypsum for fireproofing are universally recognized. For proof of the fireproof qualities of gypsum, see page 1.

LIGHT WEIGHT—The weight of the tile plus the USG Bulb Tee is only about 18 lbs. per square foot (less than half the weight of 3 inches of stone concrete).

APPEARANCE—The interior appearance is neat and the unplastered surface is an excellent light reflector.

ECONOMICAL—Pyrobar Roof Tile are low in cost and permanent. The large light weight units are easily and speedily erected in any weather in which it is possible to work.

The Pyrobar tile are laid directly on the supporting steel work and require only the grouting of joints to make the roof ready for the waterproof covering. This can follow immediately, materially shortening the construction period and making possible earlier occupancy.



Bingham Hall, Yale University, New Haven, Conn.
W. B. Chambers, Architect
11,755 sq. ft. Short Span Pyrobar

NO MAINTENANCE—Gypsum Tile is chemically inert. Examinations of steel rods embedded for fifteen years in gypsum have shown no evidence of progressive corrosion. The maintenance cost is practically nothing.

HIGH HEAT INSULATION—Gypsum has the highest insulating value of any fireproof structural building material. It is effective in protecting the building from extremes of outside temperature, both in summer and winter.

HEAT TRANSMISSION VALUES—In the following the transmission is expressed in B.t.u.'s per hour, per square foot, per degree difference in temperature. All roof decks are figured with 5-ply roof covering.

3 in. Solid Pyrobar Roof Tile..... .43 B.t.u.'s
4 in. Hollow Pyrobar Roof Tile.... .35 B.t.u.'s

NAILING BASE—The 3 in. solid is recommended particularly for nailing purposes because it assures maximum penetration and thus the greatest nail-holding ability.

Application of ordinary slate or ornamental tile to roofs up to 60° slope should be made with nails having not less than 2 in. penetration. When the slope of the roof is greater than 60° or extra heavy slate or tile is to be used, refer the problem to the Company's Engineers for special study and recommendations.

The roof deck should be thoroughly dry or as nearly so as can be reasonably obtained. Square cut cement coated Naval bronze nails have proven their superiority after a large number of tests on all types.

Application of sheet metal (tin or copper) requires thoroughly rigid fastening, due to the strain put upon the cleat nails by the expansion and contraction of the sheets. There should be sufficient cleats to securely anchor the sheets to the roof construction. Standard practice indicates that the spacing of cleats should be approximately 8 in. on centers, each secured with two nails having not less than 2 in. penetration.

It is standard practice to use a sheet of roofing felt between the gypsum roof deck and the ornamental covering, whether of slate, tile, or metal.

Master Specifications

PYROBAR SHORT SPAN ROOF TILE

(1) WORK INCLUDED

NOTE—*Here list the various roof areas to be constructed of Pyrobar Precast Roof Tile and specify the prescribed live load. If more than one type of tile is used, list separately the areas constructed of each.*

(2) MATERIALS

(2a) SHORT SPAN TILE—Where so designated, the roof slab shall be constructed of Pyrobar Short Span Roof Tile **[3 x 12 x 30 in. Solid] [3 x 18 x 36 in. Solid] [4 x 12 x 30 in. Hollow]** accurately laid, without mortar, upon the supporting steel with full bearing and with tile units laid tight. All joints on top surface shall be filled with gypsum mortar and the roof left smooth and true, ready for the application of the waterproof roof covering.

(2b) SPECIAL UNITED STATES GYPSUM BULB TEE SUB-PURLINS—All sub-purlins shall be special United States Gypsum Bulb Tees.

(2c) CURB TILE, END WALLS, ETC.—Where so indicated on the plans, curbs and end walls shall be constructed with 3 in. Solid Pyrobar Curb Tile set in gypsum mortar.

(2d) GYPSUM MORTAR—Gypsum mortar shall consist of one part of unfibered gypsum cement plaster and not to exceed two parts of clean, sharp sand. Mix to the proper consistency in a clean mortar box with clean water.

(2e) SADDLES AND DRAINAGE FILL—Saddles and Drainage Fill shall be constructed of Pyrofill (Gypsum Fiber Concrete) consisting of calcined gypsum and not to exceed 12½ lbs. of clean soft wood fiber to 87½ lbs. of gypsum and sufficient clean water for proper consistency.

(3) ERECTION

(3a) BY UNITED STATES GYPSUM COMPANY—All Pyrobar Precast Roof Tile Construction shall be completely erected by the Engineering Sales Division of the United States Gypsum Company or one of its authorized erectors.

(4) WATERPROOF ROOF COVERING

NOTE—*Provide in the Roofing and Sheet Metal division of the specifications that the waterproof roof covering shall be applied as soon as possible after the gypsum roof slab is erected (preferably within twenty days).*

NOTE—*For application of ornamental roofing, such as slate, tile, and metal, see recommendations given above under "Nailing Base".*

SUB-PURLIN SIZES FOR PURLIN SPANS UP TO 8 FT. 5 IN.

Used with Short Span Tile, Solid and Hollow—18,000-lb. Stress

Spaced 30¾ In. on Centers—50 Lb. per Sq. Ft. Total Load—BM = 1/10 WL

Span	6' 1"	6' 11"	7' 9"	8' 5"
Size of tee	2¼ x 2¼—4.1 lb.	2¼ x 2¼—4.9 lb.	2½ x 2½—5.5 lb.	2½ x 2½—6.4 lb.
USG Bulb Tee—2.7 lb.—1.05 lb. Steel per sq. ft. of roof—Span to 7'-2" (6'-7" for 36¾" O.C.)				
For other spacing of sub-purlins, or other loads, allowable span will vary inversely as the square root of the spacing or the load.				

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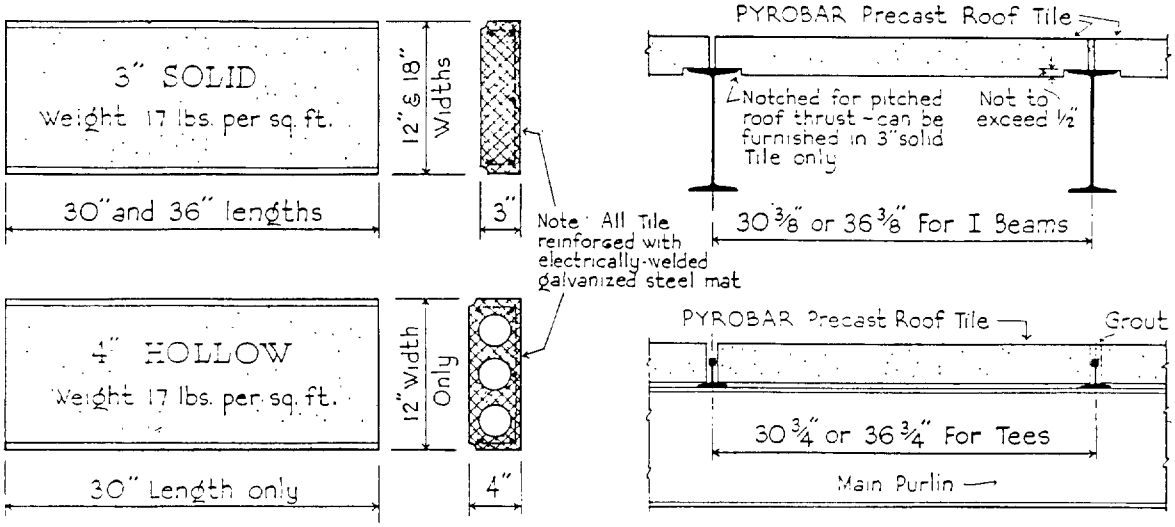
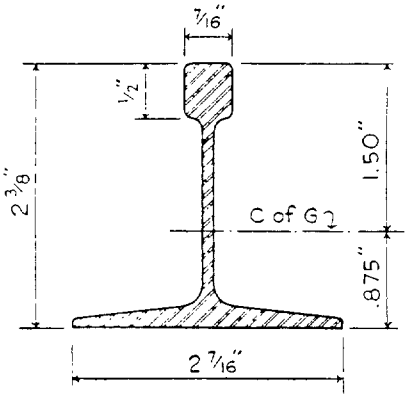
DETAILS OF PYROBAR SHORT SPAN ROOF TILE



U. S. G. BULB TEE SUB-PURLIN

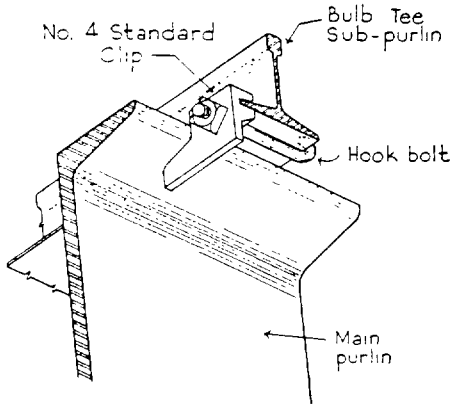
For Short Span Roof Tile



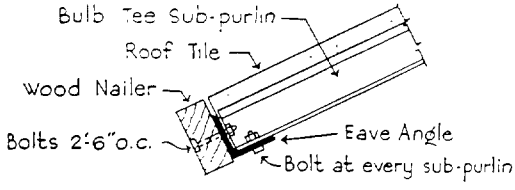
Weight Per Yard	8.10 lbs.
Section Modulus	.440 in³
Moment of Inertia	.660

Based on 2'-6 3/4" spacing of Tees
Total Roof Load of 50 lbs. per sq. ft.

Maximum Span (fs = 16000, $M = \frac{WL}{10}$)	6'-9"
Deflection	.25
Maximum Span (fs = 18000, $M = \frac{WL}{10}$)	7'-2"
Deflection	.31



METHOD OF CLIPPING SUB-PURLINS TO MAIN PURLINS - SLOPED ROOF



METHOD OF BOLTING ANGLE TO TEE AT OVERHANG EAVES

TYPICAL SECTION AT WALL

BB024 0931

PYROBAR LONG SPAN HOLLOW ROOF TILE

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DESCRIPTION

GENERAL—Pyrobar Long Span Hollow Precast Roof Tile are cast in steel moulds using specially processed gypsum and are reinforced with electrically welded galvanized steel fabric. They are made 5¼ in. thick, 18 in. wide, and any length from 4 to 6½ feet to fit the purlin spacing on the job. They are made in either butt end or lap joint end for I-beam or channel purlins respectively, and can be furnished notched if required for roof thrust. The weight of this tile is 23 pounds per square foot.

Curb and Gutter Tile and Drainage Fill are the same as described on page 6.

OUTSTANDING ADVANTAGES—

(1) **Fireproof**—See page 1.

(2) **Light Weight**—See pages 1 and 2.

(3) **Appearance**—The flat, even surface is extremely pleasing in appearance and provides a high light reflection coefficient.

ECONOMICAL—Pyrobar Roof Tile are low in cost and permanent. The large light-weight units are easily and speedily erected in any weather in which it is possible to work. The tile are laid directly on the supporting steel work and require only the grouting of joints to make the roof ready for the waterproof covering. This can follow immediately, materially shortening the construction period and making possible earlier occupancy. Maintenance cost is practically nothing.

HEAT INSULATION—Gypsum has the highest insulating value of any fireproof structural material. It is equally effective in protecting the building from extremes of outside temperature, both in summer and in winter. Pyrobar Long Span Hollow Roof Tile has the very low transmission of .29 B.t.u.'s. For complete list, see page 2.

ADAPTABILITY—Long Span Hollow Pyrobar Roof Tile are primarily designed to provide a flat uniform ceiling with maximum light reflection and insulation. They are manufactured in lengths 4 ft. to 6 ft. 6 in. to suit the steel framing, and 5¼ in. deep. The tile can be notched to fit over the purlin flanges if desired and can be furnished either with or without lap joint, depending on the bearing afforded. Lap joint tile should be used whenever channel purlins are provided. Long Span Tile are not recommended for roofs with difficult framing requiring considerable cutting nor where a nailing deck is required.

PURLIN REQUIREMENTS—The tile are made to span from purlin to purlin (either steel or wood). No tees or other type of sub-purlins are required. The most economical purlin spacing is approximately 6 feet.

INSTALLATION—The tile are laid directly on the steel purlins or wood framing with sides tight together. The grouting joints on the top surface are then filled with gypsum mortar and the roof is immediately ready for the application of the roof covering.

SPECIFICATIONS — The specifications for Pyrobar Short Span Roof Tile given on page 7 may be used by substituting "Long Span Hollow" for "Short Span."

METAL BOUND GYPSUM FLOOR and ROOF TILE

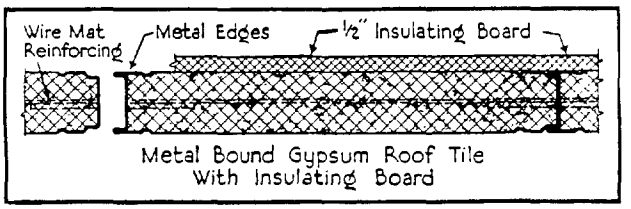
• • •

DESCRIPTION

GENERAL—This is a gypsum tile that uses a metal edging to overcome the reduction in strength resulting from its reduction in thickness (as compared with other USG decks). This metal edging is also depended upon to serve as a cantilever for ends of tile projecting beyond supporting joists. Its success depends upon the maintenance of a perfect bond between the metal edging and the gypsum. The units are 2 in. thick, 15 in. wide, and 10 ft. long.

LOADING — 75 lbs. total safe load for floors, with a clear span of 4 ft. between beams, and 50 lbs. total load on roofs, with a 6 ft. spacing of purlins.

ADVANTAGES—The construction is light weight (12 lbs. per square foot). No special sizes are required since the end joints need not fall over supports.



Metal Bound Gypsum Roof Tile With Insulating Board

INSULATION—Since the metal edge extends through the tile tending to conduct heat, we recommend that ½ in. insulation board be used over the tile for roof construction.

BB024 0932

PYROBAR PRECAST 2½ INCH THICK TONGUE and GROOVE FLOOR and ROOF TILE

• • •

DESCRIPTION

PURPOSE—To provide a precast, light weight, incombustible construction for floors or roofs in connection with Junior Beams, Bar Joists, and other Metal Joists.

GENERAL—2½-in. Tongue and Groove Tile are factory made in units 2½ in. x 10 in. x 6 ft. 0 in. with tongue and groove joints. They are made without any metal edge or any other exposed steel, being reinforced by an electrically welded mat embedded in the gypsum mass where it is protected from corrosion and other damage. This tile weighs 14 lbs. per square foot.

LOADING—For floor construction with supports spaced not over 30 in. O.C., 2½ Inch Tongue and Groove Tile will safely support a load of 150 lbs. per square foot. For roof construction with supports spaced not over 4 ft. 0 in. OC., 2½ Inch Tongue and Groove Tile will safely support a load of 50 lbs. per square foot.

ADVANTAGES—Light weight (14 lbs. per square foot), easy and speedy erection, embedded reinforcing, low heat conductivity without additional insulation, standard size (no special sizes), and all the advantages of precast units over poured in place construction from the standpoint of cleanliness and independence from freezing weather conditions.

This is our recommended type of Tongue and Groove Tile construction.

PYROBAR PRECAST CEILING TILE

• • •

DESCRIPTION

PURPOSE—To provide fire protection and a plaster base under any type of steel floor or roof construction.

GENERAL—Precast reinforced gypsum tile, 2 x 18 x 36 in. with fractional sizes as required for starting tile, closures, etc. All four edges have lapped joints. A $\frac{3}{16}$-in. galvanized rod is embedded in each tile so that they may readily be attached to a supporting system of hot rolled plasterer's channels. The tile may be attached directly to the steel or suspended from it. Girders may be fireproofed with Pyrobar beam and girder fireproofing.

ADVANTAGES—Especially indicated for the protection of light steel floor systems, they provide full fire protection and an economical plaster base in one material. Space for pipes and conduits is provided without resorting to heavy floor fills.

HYDROCAL* MASTIC FLOOR FINISH

• • •

DESCRIPTION

GENERAL—Hydrocal (Patented), a new specially processed gypsum cement of great strength, is utilized in place of Portland cement in this many purpose mastic floor mixture. Hydrocal is mixed with sand and emulsified asphalt in various proportions, depending upon the nature of the work to be done. For heavy traffic, crushed stone or gravel is added to the aggregate.

The mastic composition is poured like concrete and leveled off and finished in thicknesses from ½ in. to ¾ in. over the base. It may be used over gypsum, concrete, wood, or metal floor constructions.

ADVANTAGES — Hydrocal requires less emulsified asphalt than does Portland cement in mixtures of this character, resulting in a lower cost.

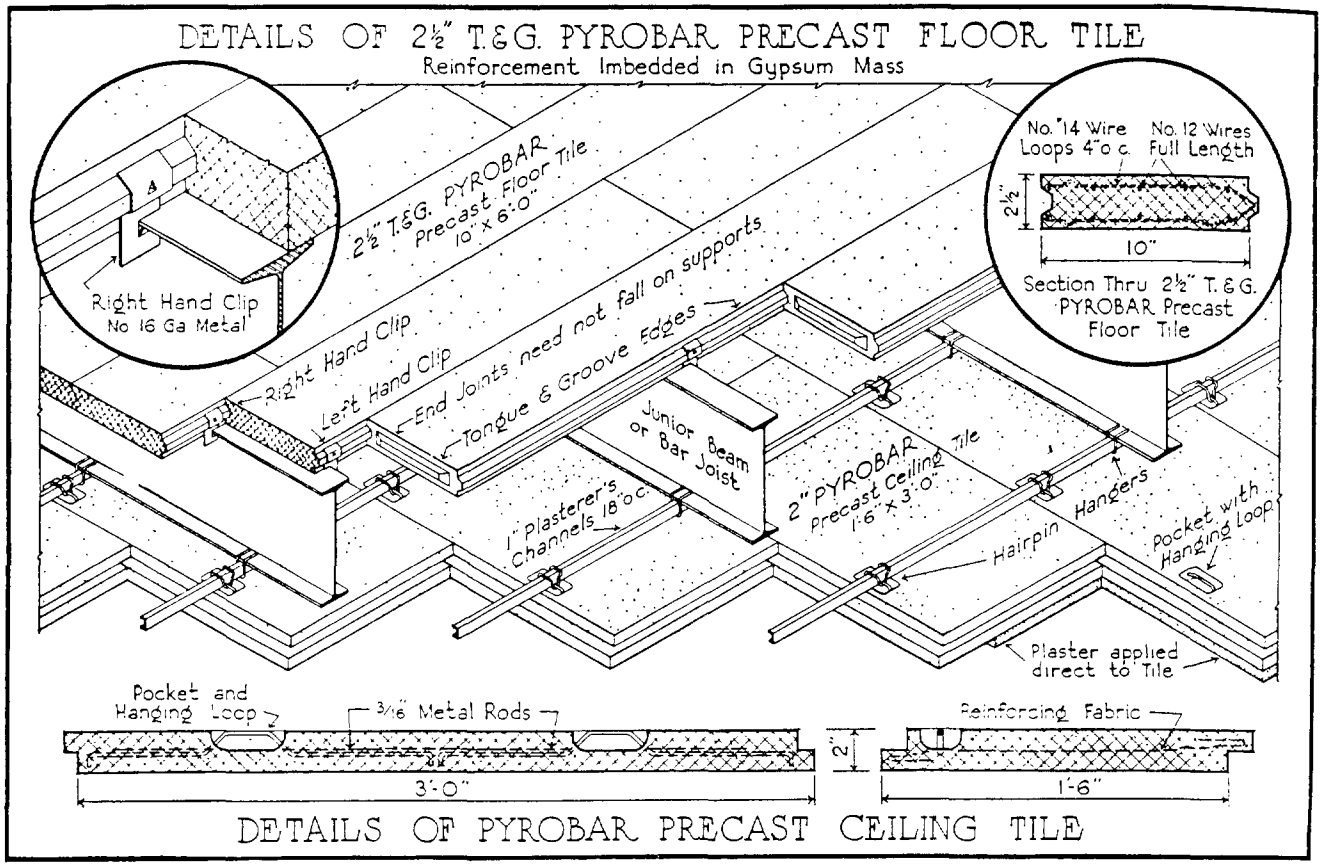
It is quick setting and durable, providing a surface resistant to dusting, cracking, and wear, even under factory trucking. It may be used as a low cost leveling mixture for underlayment, under composition, carpets, etc. It is not recommended under extreme acid, oil, or moisture conditions.

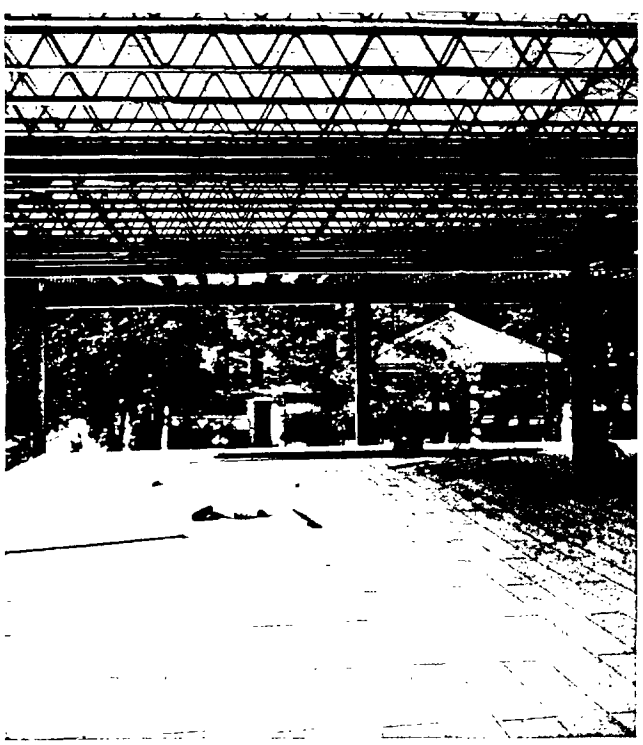
The materials may be purchased or the floor finish will be installed complete by the company.

*Registered Trade-Mark

BB024 0933

DETAILS of PYROBAR PRECAST 2½ INCH T and G FLOOR and ROOF TILE and PYROBAR PRECAST CEILING TILE







BB024 0934

United States U.S. Gypsum Company

RED TOP* RIB FLOORS

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DESCRIPTION

GENERAL—Electrically welded bar trusses (see below), prefireproofed with gypsum at the producing mills are laid directly on the top flanges of the supporting steel, to which they are field welded.

Sheetrock is then laid on the shoulders of the Red Top Ribs and a Sheetrock Pyrofill slab poured in place. The ribs are generally placed 25 in. on center for floors and 33 in. on center for roofs. For floor loads exceeding 150 lbs., the spacing is proportionately reduced.

ADVANTAGES—It will be noted that each rib forms the stem of a Tee Beam in which the Sheetrock Pyrofill slab is the cross member. The loads are based on the strength of the steel truss members alone so that the Tee construction represents additional strength and stiffness, not considered in the calculations.

It also serves to prevent any lateral sway or tendency of the rib to rotate. The enclosing gypsum makes the slab a rigid whole, effectively tying the entire structure together.

FIREPROOF—This construction is generally acceptable any place where concrete is accepted in building codes and insurance classifications.

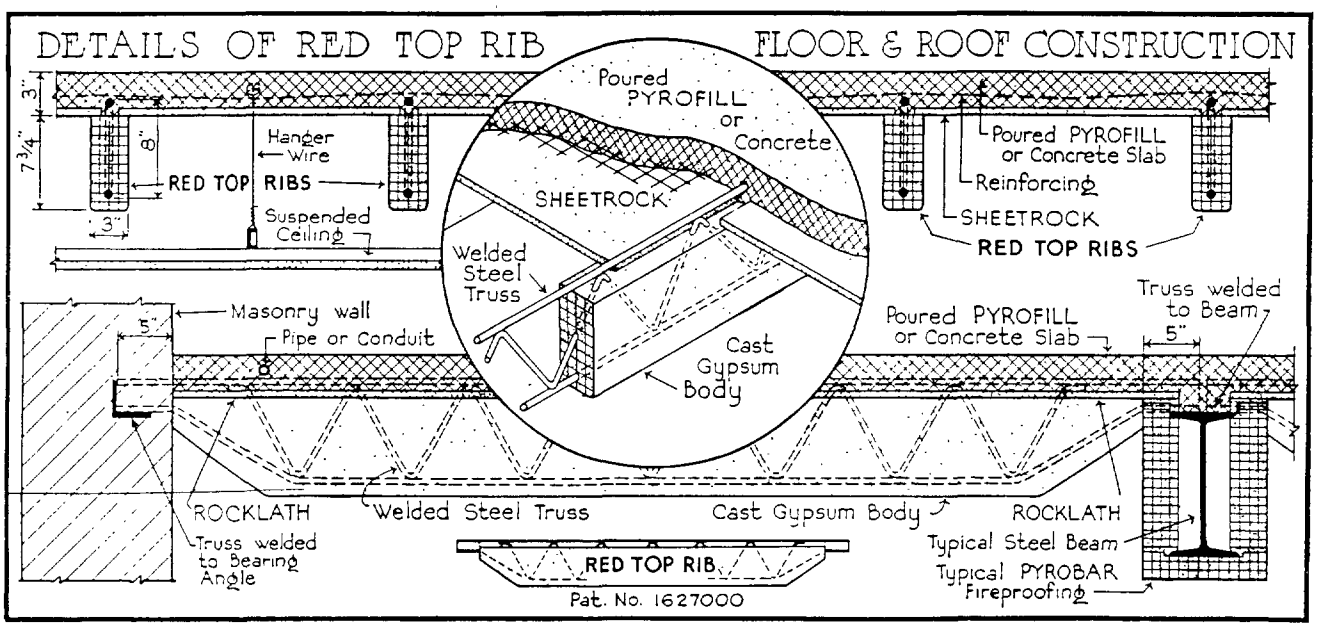
It is unnecessary to use concrete for fireproofing as both the supporting steel beams and girders may be fireproofed with Pyrobar beam fireproofing after the slab is poured, as may the columns, saving additional weight and steel costs.

ECONOMIES—The elimination of all temporary centering, the fireproofing of the ribs, and the construction largely factory built, makes for speedy erection and immediate use of the slabs.

The light weight (less than 20 lbs. per square foot) provides economies in supporting steel from roof to foundation that will generally make this floor construction more economical for any type of fireproof steel building. In tall buildings, useful reductions in footing sizes and costs are possible.

CEILINGS—Where a beam ceiling is desirable, the cast rib and Sheetrock panels are attractive in appearance. Metal lath and plaster ceilings may be attached or suspended in the usual way, in which event the space between the ceiling and the Sheetrock Pyrofill slab may be used for conduits. It is also perfectly possible to embed conduits in the slab itself as they may be readily laid over the ribs and Sheetrock before the Pyrofill is poured, making cinder-fill unnecessary, reducing the total height of the building and making substantial savings in the dead load carried by the supporting steel.

Where this construction has been used, surprising savings in supporting steel and actual slab costs were secured over other structural designs of equal merit in fire protection and strength.



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*Trade-Mark

United States USG Gypsum Company

USG STEEL ROOF DECK

• • •

DESCRIPTION

GENERAL—

Deck Plates—USG deck plates are rolled from copper-bearing steel. Mill painted in gray. Other materials on special order. USG Deck Plates are 18 in. wide with 1½ in. deep reinforcing ribs, 6 in. on centers. Stiffening beads are formed midway between the ribs. Deck plates are interlocking and end-lapping type, clipped together when erected, forming an integral surface for the application of insulation and roofing materials.

Clips—Two standard types. One for fastening the deck plates to the purlins and the other for locking the plates together between the purlins.

ADAPTABILITY—USG Steel Roof Decks are adaptable for all steel frame structures, fitting any purlin spacing.

ADVANTAGES—

Long Life—The use of copper-bearing steel and insulation assures long life and low maintenance.

Economy—Cost is lowest of any incombustible roof deck.

(1) Structural Steel Savings result from light weight of roof unit.

(2) Fuel Costs are reduced through the use of insulation.

(3) Erection is rapid, due to simplicity of design and method of clipping. Saddles are made from deck plates and are easily placed. These features speed completion of the building and effect economies in construction.

Results — Clean, sanitary and pleasing interior. Year-round comfort for occupants. No condensation to harm material or machinery.

ENGINEERING DATA—The allowable safe loads given in the table below are based on actual tests on bare plates. Application of insulation gives additional rigidity to the deck.

ALLOWABLE SAFE LIVE LOADS—POUNDS PER SQ. FT.

U.S.S. Ga.	Clear Span									
	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"
22	83	66	53	44	37					
20			81	67	56	48	41			
18					71	60	52	45	39	33

Factor of safety for 22 and 20 Gauge—4.
Factor of safety for 18 Gauge—3.5.

Weight of 20 gauge deck is 2.4 lbs. per sq. ft.; 18 gauge weighs 3.2 lbs. Total dead load, including insulation and roofing material, is approximately 5 lbs. per sq. ft.

INSULATION—The accompanying table gives the heat transmission expressed in B.t.u. per hour per sq. ft. per degree difference in temperature. Five-ply roofing is included.

Deck without insulation ..... .95 B.t.u.'s
Deck with ½-in. insulation..... .39 B.t.u.'s
Deck with 1 -in. insulation..... .25 B.t.u.'s
Deck with 1½-in. insulation..... .18 B.t.u.'s

Master Specifications

USG STEEL ROOF DECK

(1) WORK INCLUDED

NOTE—*Here list the various roof areas to be constructed of USG Steel Roof Deck*

(2) MATERIALS

The steel deck shall be manufactured by the United States Gypsum Company from copper-bearing steel and painted light gray after fabrication.

Deck plates shall have reinforcing ribs not more than 6 in. O.C., 1½ in. deep, ½ in. wide at base. Plates shall have stiffening beads formed into the plates midway between the reinforcing ribs. Deck plates shall be U.S.S. No. **[specify]** gauge.

Clips shall be furnished for securely fastening the deck plates to the purlins, and for interlocking adjoining deck plates together at the ends and midway between the purlins.

(3) ERECTION

Erection shall be done by an experienced erector, subject to the architect's approval.

All end laps shall be not less than 2 in. in length and shall be made directly over the purlins.

Each plate shall be securely fastened to the purlin by **[steel clips engaging the deck rib] [welding].**

Each plate shall be securely fastened to the adjoining plate by at least three intermediate clips.

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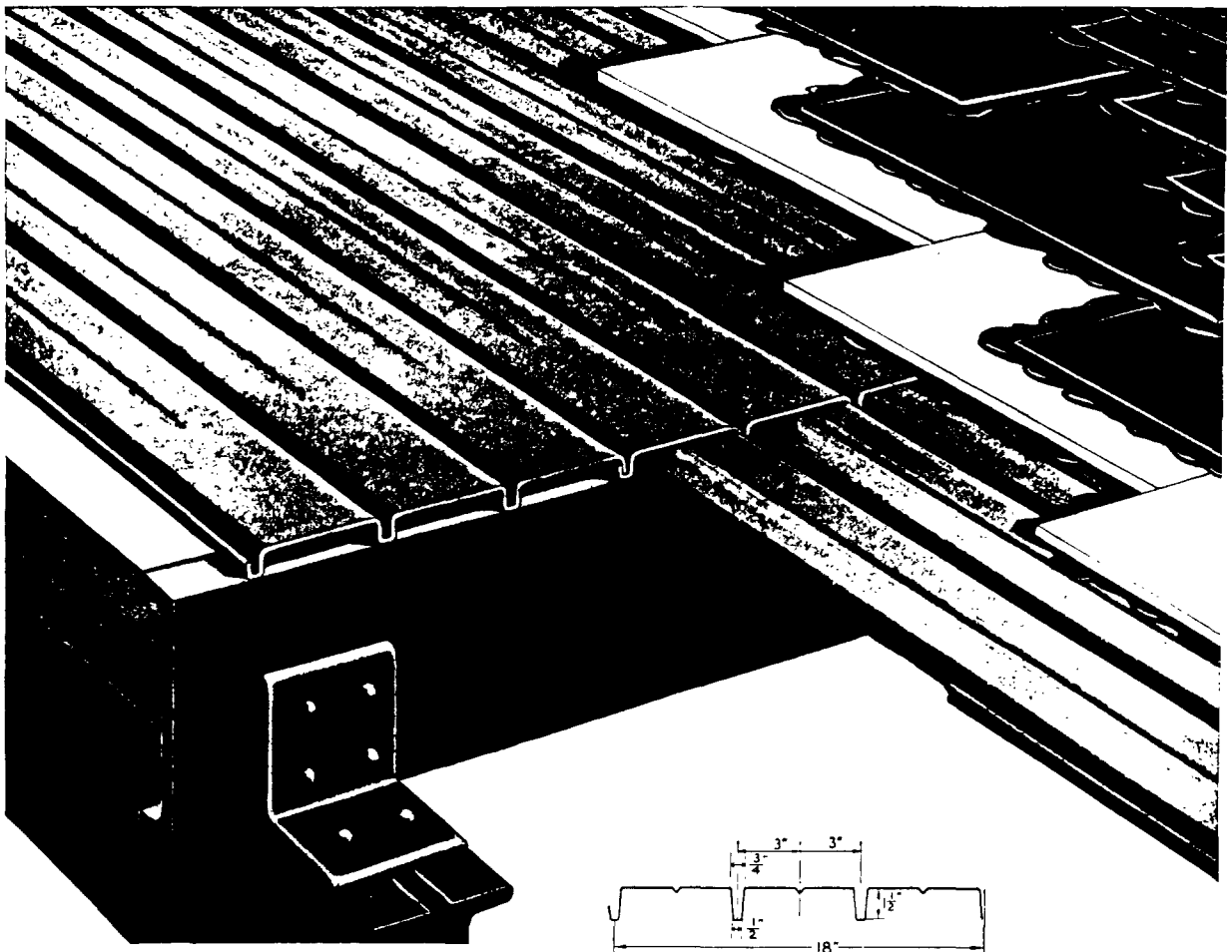
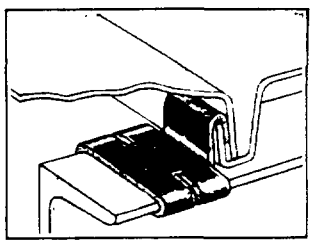
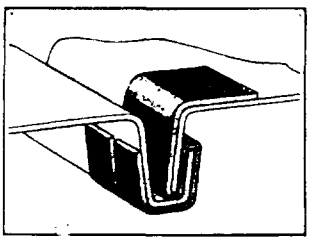
DETAILS of USG STEEL ROOF DECK



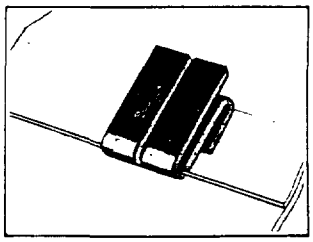
CROSS-SECTION AT OVERLAPPING END



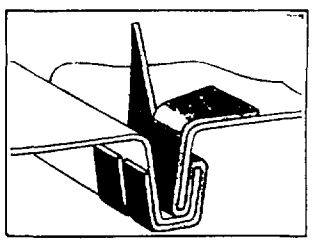
RD-1 PURLIN CLIP for securing deck plates to purlins. Made in two types. On I-Beam purlins, use type "B" clips. On channel purlins and bar joists, use type "C" clips. Made from No. 16 ga. electro galvanized steel.



RD-2 INTERMEDIATE CLIP for interlocking deck plates on flat roofs. Clips are installed at each purlin support and between them on wide spans, and bent to fit as shown above. Made from No. 20 ga. electro galvanized steel.



RD-3 END CLIP. Used on USG Steel Roof Deck plate ends to prevent any possible slippage when installed on pitched roofs. Sufficiently long to permit full two-inch end lap. Made from No. 20 ga. electro galvanized steel.



RD-4 INTERMEDIATE CLIP for use on steep, pitched steel deck roofs. The prong provides a method for securely attaching the insulation. Except for this feature, the clip is identical with RD-2, and is similarly used.

BB024 0937

PYROBAR PARTITION and FURRING TILE, COLUMN, BEAM and GIRDER FIREPROOFING

• • •

DESCRIPTION

GENERAL—Pyrobar Gypsum Tile consist of 97% gypsum and 3% special wood fiber. They are moulded in steel moulds by continuous automatic machine process, which insures accurate proportions and an even distribution of gypsum, fiber and water, resulting in tile of uniform size, weight, strength and density.

PARTITION AND FURRING TILE—A Pyrobar tile is 30 in. long, 12 in. high and of various thicknesses from 1½ to 6 in. For complete sizes and weights, see table on page 16.

Smooth face tile are made for warehouse and similar use where the furring and partitions are to remain unplastered.

Pyrobar tile meets fully the standard specifications for Gypsum Partition tile or block of the American Society for Testing Materials.

All Pyrobar Gypsum Tile are trade-marked for the protection of owners, architects, engineers and contractors.

COLUMN COVERING—Column fireproofing is accomplished either with 2 in. solid or 3 in. hollow Pyrobar Partition Tile. When desired, or required by a building code, the space between the covering and the steel may be solidly backfilled with pieces of Pyrobar Tile and gypsum mortar.

BEAM AND GIRDER FIREPROOFING—Beam and Girder Fireproofing employs shoe tile, angle tile, soffit tile, and standard Pyrobar partition tile. (See page 17.)

Pyrobar Shoe Tile, which fit over the lower flanges of the steel, in combination with Pyrobar Partition Tile for side protection are used as beam fireproofing for sections with a flange width not over 9 in. They are moulded in a double unit, 18 in. long, sufficient for 18 in. of beam. They are light in weight, easily split, and placed with a minimum quantity of mortar and labor. The double unit reduces breakage during shipment and handling.

For rolled sections and built-up members with flange widths of 3 in. to 17 in. Pyrobar soffit tile may be used in combination with Pyrobar partition tile for a side covering. The soffit tile are channel shaped to protect the bottom and also the edges of the lower flange. They are specially moulded at the mill in 13 standard widths and in standard 36 in. lengths. For jobs of appreciable size, special soffit tile of the same type will be manufactured to fit any built-up member.

These constructions provide a full two inches of protection to all parts of the steel, and fulfill the requirements of the National Board of Fire Underwriters.

SET FAST* CEMENT—This is a specially prepared gypsum cement used with water and sand as a mortar for setting gypsum partition tile, and gypsum fireproofing and column covering. It is also extensively used as a mortar for interior clay tile partitions and fireproofing. Its easy working qualities together with the early strength of the gypsum makes Set Fast Cement Mortar ideal for economical rigid mortar joints in all interior tile work.

APPROVED USES—In the following classes of fireproof construction, Pyrobar Precast Gypsum Tile are approved by the Underwriters' Laboratories, Inc., and most city building codes.

Non-bearing corridor walls, partitions, wall furring and false columns and pilasters. Partitions and corridors in merchandise storage warehouses.

Fire division walls.

Elevator, stairway, dumbwaiter and corridor enclosures.

Light wells, pipe chases, heat and vent ducts.

As covering for columns, beams, girders, trusses and other steel members requiring fireproofing.

Floor fill, instead of cinder concrete fill.

Fireproof insulation on concrete roofs.

RECOMMENDED THICKNESS—PARTITION AND FURRING TILE—Pyrobar Gypsum Tile for furring and partitions are made in standard face dimensions (12 x 30 in.) in both solid and hollow types, and various thicknesses to meet Underwriters' standards and the building codes of the various cities. For table of sizes and weights, see page 16.

The thickness of the partition should be determined primarily by the ceiling height and by its location. As a rule 3 or 4-in. tile is the thickness used for the average building where partitions do not exceed 15 ft. in height. Corridor partitions are generally thicker than transverse partitions.

Two-inch solid Pyrobar Tile are used for partitions not exceeding 10 ft. in height and for covering columns, constructing pipe chases, vent ducts, dumbwaiter shafts, etc.

Split and hollow Pyrobar Furring are laid up against exterior walls and securely spiked every square yard. Joints should be broken the same as for partition work. Furring may also be fastened to the building wall by means of wall ties built into the masonry. The hollow portion of the tile should be placed against the walls, thus minimizing the contact area with the outside walls.

*Trade-Mark

BB024 0938

Where furring stands free from the wall, allowing space for pipes, vents, etc., it is customary to use 2-in. solid or 3 or 4-in. hollow Pyrobar Tile to assure necessary rigidity.

Free standing furring should be anchored to the exterior wall either by dwarf walls between the furring and exterior wall, or by building into the exterior wall corrugated metal wall ties of sufficient length to span the space and be embedded in the furring tile joints.

ERECTION SERVICE—Where desired, Pyrobar Tile are completely erected by the USG Engineering Sales Division.

ADVANTAGES

NOTE—*See "Why Gypsum - General Technical Data," page 1, and particularly the "Summary of Gypsum Advantages," page 2.*

FIREPROOF—Gypsum Tile alone have successfully passed the Underwriters' requirements for fireproof partitions.

LIGHT WEIGHT—See pages 1 and 2.

IDEAL PLASTER BASE—See page 2.

EASILY AND CHEAPLY ERECTED—The large, uniform units are much easier and therefore cheaper to erect than other masonry partition units.

PLASTER SAVINGS—Pyrobar Tile are cast in steel moulds assuring a product with straight edges and true faces. This insures a perfectly even, true wall which takes a minimum amount of plaster.

Experience shows that plastering over Pyrobar Tile requires only 80% as much plaster as over clay tile.

ECONOMICAL—Breakage is almost negligible. Cutting around openings and pipes does not cause waste as all the pieces can be used, whereas with clay tile a full tile is usually wasted in cutting even a small piece.

Ordinarily from 5 to 7% less Pyrobar Tile is required for a job than clay tile.

ALTERATIONS—Alterations in the partitions after completion of the building are easily made. Additional openings in Pyrobar walls may be cut with a saw, thus saving replastering, patching debris, and time.

GROUNDS—Grounds for plastering are nailed directly to the tile. Nailing blocks may be spiked to the tile ends for the support of wood trim, blackboards, etc. Heavy fixtures may be supported by bolting through the walls using large metal washers on the bolts.

SPECIAL SHAPES—Pyrobar Tile are made in special shapes and sizes to fit all conditions.

WEIGHT OF FIREPROOFING PER LIN. FT. OF BEAM IN LB.

Size member	Precast Gypsum	Clay Tile	Concrete
6 in. I	19	33	63
7 in. I	21	36	71
8 in. I	23	39	93
9 in. I	25	43	95
10 in. I	27	47	118
12 in. I	30	51	131
15 in. I	35	60	168
18 in. I	42	68	208
20 in. I	44	73	234
21 in. I	48	79	293
24 in. I	52	85	297

SIZES AND WEIGHTS OF PYROBAR PARTITION AND FURRING TILE

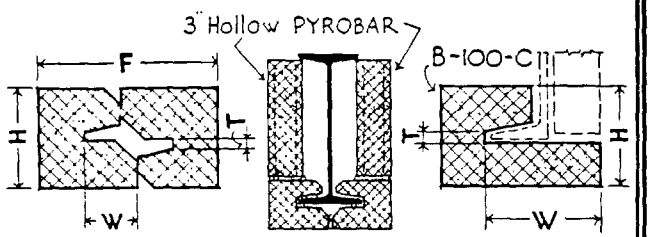
Size of Pyrobar, Gypsum Tile, In.	Recommended heights for each size	Weight tile per sq. ft., lb.	Weight mortar per sq. ft., lb.	Weight plaster, one side, per sq. ft., lb. ½ in. grounds	Total weight plastered, one side, per sq. ft., lb.	Weight plaster two sides per sq. ft., lb.	Total weight plastered, two sides, per sq. ft., lb.	Approx. mortar requirements per 1000 sq. ft.	
								Pounds Set Fast Cement	Cubic yards sand
1½-in. Split...1½ x 12 x 30	Furring†	4.9	1.4	3	7.9			500	0.625
2-in. Split.....2 x 12 x 30	Furring†	6.4	1.4	3	9.4			600	0.75
2-in. Solid.....2 x 12 x 30	10 feet*	9.4	1.5	3	12.4	6	15.4	600	0.75
3-in. Hollow.....3 x 12 x 30	13 feet*	9.9	2.0	3	12.9	6	15.9	800	1.00
3-in. Solid.....3 x 12 x 30	15 feet†	13.0	2.0	3	16.0	6	19.0	800	1.00
4-in. Hollow.....4 x 12 x 30	17 feet*	13.0	2.5	3	16.0	6	19.0	900	1.125
5-in. Hollow.....5 x 12 x 30	20 feet*	15.6	2.75	3	18.6	6	21.6	1000	1.25
6-in. Hollow.....6 x 12 x 30	30 feet*	16.6	3.0	3	19.6	6	22.6	1100	1.40

*Underwriters' Laboratories recommendations. †No Underwriters' recommendation.

BB024 0939

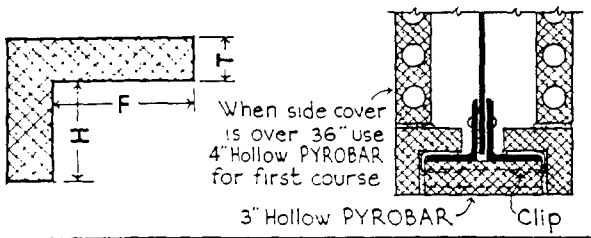
PYROBAR BEAM and GIRDER FIREPROOFING WEIGHTS of SHOE TILE, ANGLE TILE and SOFFIT TILE PER LINEAL FOOT OF BEAM

PYROBAR SHOE TILE



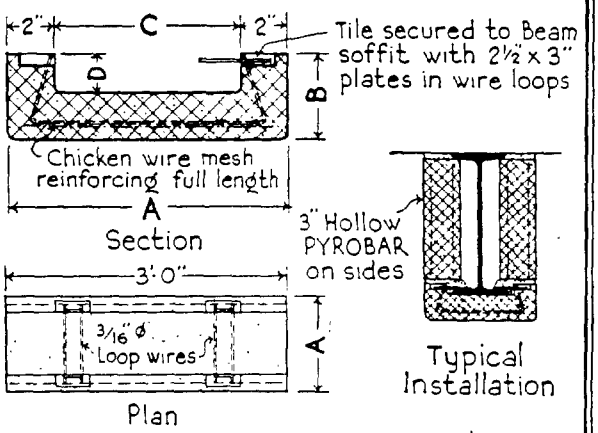
TYPE	MAX. WIDTH OF FLANGE	F	H	T	W	WEIGHT PER LIN. FT.
B-40	5"	7 5/8"	4 1/4"	1/2"	2"	12.5 lbs.
B-50	6"	8 1/4"	4 1/4"	5/8"	2 1/2"	13
B-65	7 1/2"	9 3/4"	4 1/4"	13/16"	3 1/4"	15
B-80	9"	10 1/2"	4 1/4"	15/16"	4"	16
B-100-C	Channels		4 1/2"	1/2"	4 7/8"	10

PYROBAR ANGLE TILE

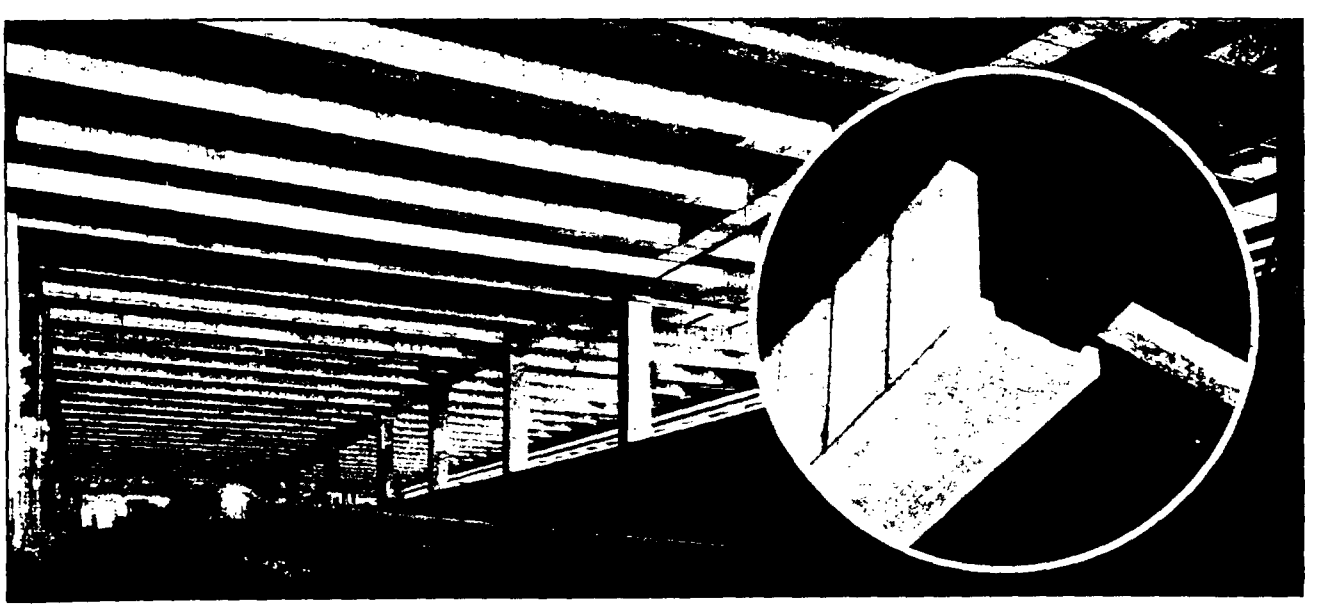


TYPE	F	H	T	WEIGHT PER LIN FT.
L-34	3"	4"	2"	15 lbs.
L-45	4"	5"	2"	18.5
L-46	4"	6"	2"	20

PYROBAR SOFFIT TILE



TYPE	A	B	C	D	WEIGHT PER LIN FT.	MAX. WIDTH OF FLANGE
B-30-S	7 1/4"	3"	3 1/4"	1"	8 lbs.	3"
B-40-S	8 1/4"	3 1/4"	4 1/4"	1 1/4"	9	4"
B-50-S	9 1/4"	3 1/4"	5 1/4"	1 1/4"	10	5"
B-60-S	10 1/4"	3 1/4"	6 1/4"	1 1/4"	11	6"
B-70-S	11 1/4"	3 1/2"	7 1/4"	1 1/2"	12	7"
B-80-S	12 1/4"	3 1/2"	8 1/4"	1 1/2"	13	8"
B-90-S	13 1/4"	3 1/2"	9 1/4"	1 1/2"	14	9"
B-100-S	14 1/4"	3 3/4"	10 1/4"	1 3/4"	15	10"
B-115-S	15 3/4"	3 3/4"	11 3/4"	1 3/4"	16	11 1/2"
B-130-S	17 1/4"	3 3/4"	13 1/4"	1 3/4"	17 1/2	13"
B-145-S	18 3/4"	4"	14 3/4"	2"	19	14 1/2"
B-160-S	20 1/4"	4"	16 1/4"	2"	20 1/2	16"
B-175-S	21 3/4"	4"	17 3/4"	2"	22	17 1/2"



Pyrobar Beam and Girder Fireproofing Used in New Chicago Post Office—Graham, Anderson, Probst and White, Architects

BB024 0940

Master Specifications

CORRELATIVE PROVISIONS

(Applying to Pyrobar Partitions, Furring and Column Covering)

NOTE—*The following should be included under other specification divisions where and when they apply.*

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) MASONRY WORK

NOTE—*As stated under "Recommended Thickness," page 15, there are two methods of securing furring and the ends of partitions to the building masonry walls: (1) with 10d cut nails driven into the joints of the masonry, (2) with corrugated metal wall ties of the proper length to be built into the masonry, spanning furring space if any and to be embedded in the Pyrobar Tile joints. If method (2) is used, include the following clause:*

(1a) Provide and build into masonry walls corrugated galvanized sheet iron ties to anchor the **[ends of Pyrobar partitions] [and] [Pyrobar Wall Furring]** to the masonry work.

(1b) Ties for partition ends shall be accurately set and spaced 12 in. apart o.c. to build into the Pyrobar Tile joints.

(1c) Ties for furring, one for each surface, sq. yd., shall be accurately set to build into the Pyrobar Tile joints.

(2) MISCELLANEOUS STEEL WORK

(2a) All openings in Pyrobar partitions so noted on plans or schedules shall be provided with (channel bucks) (channels reinforcing wood bucks).

(2b) The lintel bucks of all openings in Pyrobar partitions over 6 ft. wide shall be reinforced with steel lintels as **[noted on plans or schedules] [as detailed].**

(3) REINFORCING BARS

All openings in Pyrobar partitions over 4 ft. wide but not over 6 ft. wide shall be provided with ½ in. steel reinforcing bars, 3 to the opening. Bars shall be 8 in. longer than the actual width of tile opening (not buck width).

(4) CARPENTRY WORK

(4a) BUCKS—Provide wood bucks for all openings in Pyrobar partitions **[except where steel bucks are indicated] [reinforced with steel channels where so indicated].** Bucks shall be made of 2-in. lumber the depth of the Pyrobar Tile thickness, to the edges of which shall be secured ½ x 2¾ in. plaster grounds forming a rabbet to receive the tile. Bucks shall be accurately set, plumb and true and rigidly braced, so as to cause no delay or interruption in the erection of the partitions.

(4b) NAILING BLOCKS—Provide and nail directly to the end of Pyrobar **[partition] [and] [furring]** tile nailing blocks spaced 30 in. on centers to take all wood grounds to receive trim. Blocks shall be ⅞ in. thick and of such dimensions as will completely cover the end of the tile.

Where required to secure heavy fixtures, trim, etc., provide similar 1½-in. thick nailing blocks spaced not to exceed 15 in. on centers.

(4c) GROUNDS—Provide ½-in. plaster grounds to receive all trim.

(5) MISCELLANEOUS

NOTE—*Heavy fixtures, etc., are best secured to Pyrobar partitions with steel plates and through bolts as described on page 16 (under "Grounds"). Provide where required.*

(6) PLASTERING

NOTE—*For Plastering on Pyrobar, see Sweet's File Index for USG "Master Specifications—Interior Lathing and Plastering." Under no circumstances should Portland cement or lime plaster be used for the first coat—use only gypsum plaster.*

PYROBAR PARTITIONS, FURRING and COLUMN COVERING

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

All partitions **[and] [all furring for exterior masonry walls] [and] [all column covering]** shall be built of Precast Pyrobar Gypsum Tile.

NOTE—*If there are any exceptions, so note. List and locate any special requirements not clearly indicated on plans and details. Particularly list and locate where smooth face tile are to be installed requiring no plaster finish.*

(2) PRELIMINARY PROVISIONS

(2a) All reinforcing bars for reinforced lintels will be furnished by others.

(2b) All rough bucks for openings will be provided and accurately set by others.

(2c) All wood nailing blocks to receive grounds, etc., will be provided and attached to tile by others.

(3) MATERIALS

(3a) GENERAL—All gypsum tile and cement shall be as manufactured by the United States Gypsum Company.

(3b) PARTITION TILE—Pyrobar of thicknesses indicated on plans. **[Pipe chases] [small shafts] [heat] [and] [vent] [ducts]** etc. shall be constructed preferably with 3-in. Hollow Pyrobar, otherwise of 2-in. solid Pyrobar.

Where no plastering is required, tile shall be smooth face.

(3c) FURRING TILE—Pyrobar **[split] [solid] [specify thickness].** Where no plastering is required, tile shall be smooth face.

(3d) COLUMN COVERING—Pyrobar **[2-in. solid] [3-in. hollow].**

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(3e) MORTAR—Sand for mortar shall be clean and sharp and free from organic matter.

Cement for mortar shall be Settast Gypsum Cement.

NOTE—*Do not use Portland cement or lime.*

Mortar shall be mixed in a clean mortar box in the proportions of one part of cement to three parts of sand, by weight, and sufficient clean water to bring to the right consistency. First place a layer of sand in the high end of the mortar box, over which spread a layer of cement. Hoe dry from one end of the box to the other and back again, working sand and cement thoroughly together to a uniform color. Put water in low end of box and hoe mortar into water, mixing thoroughly. Do not mix more material than can be applied in approximately one hour. Do not retemper.

(4) ERECTION

(4a) BY USG CO.—All Pyrobar **[partitions] [and] [furring] [and] [column-covering]** shall be completely erected by the United States Gypsum Company's Engineering Sales Division.

(4b) GENERAL—All tile shall be laid in gypsum mortar with full, flush joints to a line, with horizontal beds uniformly level on each course. All joints, chinks and crevices between the tile and other work shall be filled with mortar well slushed in. Joints in alternate courses shall be broken.

All joints of smooth tile (unplastered) shall be neatly pointed smooth as the work progresses. Fill all exposed core openings at corners, etc.

All tile shall be started on the fireproof floor, set plumb straight and true, and wedged at ceiling and slushed with mortar. Tile at corners and re-entrant angles shall be laid interlocked in alternate courses.

(4c) PARTITIONS—All partitions coming in contact with existing wall shall be rigidly anchored, **[by driving 10d spikes into the mortar joints of the wall at the joints of each partition tile course] [by building in at each partition tile course metal ties provided and built into the masonry by others.]**

(4d) FURRING—Furring shall be laid **[against] [or] [free from]** the walls as shown on the plans and details.

Rigidly anchor the furring tile to the masonry wall every square yard of the face area **[by 10d spikes driven into the mortar joints of the wall at the course joints of the furring tile] [by building in at the furring tile course metal ties provided and built into the masonry by others].**

(4e) COLUMN COVERING—A single thickness of tile shall be laid against the outside edges of the steel **[and the space between the tile and steel shall be solidly backfilled with pieces of Pyrobar tile and gypsum mortar].**

NOTE—*Include or omit clause covering backfilling as required.*

(4f) BUCK ANCHORS—Anchor all wood bucks to tile by 10d cut nails driven into the buck at each tile course or other approved metal anchor.

(4g) LINTELS—Lintels shall have at least 4-in. bearing at each end on the tile beneath. Openings not over 22 in. wide shall be spanned by a single tile. Lintels over openings more than 22 in. and not over 4 ft. wide shall be laid in the form of a jack-arch. Lintels over openings more than 4 ft. and not over 6 ft. wide shall be reinforced with steel rods set in the tile voids flushed full with mortar. Lintels over openings more than 6 ft. wide shall be provided with steel lintel furnished by others.

PYROBAR BEAM and GIRDER FIREPROOFING

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

All steel **[beams] [girders] [trusses]** shall be protected with precast gypsum fireproofing.

NOTE—*List and locate any special requirements not clearly indicated on plans and details. Note exceptions if any.*

(2) MATERIALS

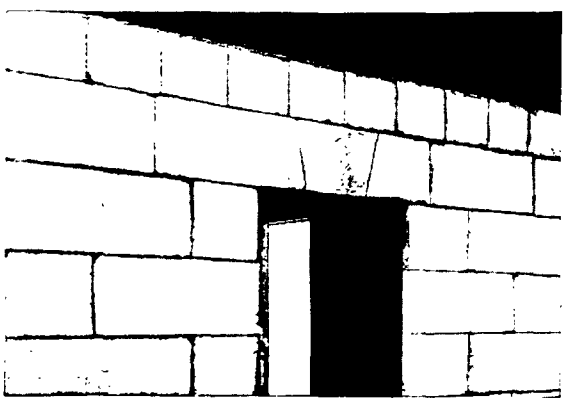
(2a) FIREPROOFING—All fireproofing shall be Pyrobar Beam Shoe, Angle and Soffit Tile, and Pyrobar **[2 in. solid] [3 in. hollow]** Partition Tile as made by the United States Gypsum Company. All steel shall be protected with a minimum of 2 in. of precast gypsum.

(2b) MORTAR—NOTE—*Same as "(3e) Mortar" above.*

(3) ERECTION

(3a) BY UNITED STATES GYPSUM COMPANY—All fireproofing shall be completely erected by the United States Gypsum Company's Engineering Sales Division.

(3b) GENERAL—All fireproofing shall be erected in strict accordance with the United States Gypsum Company's standard details. All units shall be laid in gypsum mortar with full flush joints, true to line and plumb. Joints in alternate courses shall be broken.





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RED BOOK · SECTION F

Sound Control Service

Engineering Sales Division

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RESEARCH, DEVELOPMENT and SERVICE

ACOUSTICAL MATERIALS ASSOCIATION—Manufacturers of sound absorbing materials have formed the Acoustical Materials Association, the purpose of which is to promote research in architectural acoustics and furnish architects and builders with reliable data on acoustical materials. Official Laboratories have been established under the direction of the leading authorities on this subject. The Association published its first data in February, 1934, and its fourth publication in March, 1936. You may obtain a copy of this data by calling the nearest USG Office.

RESEARCH and DEVELOPMENT—All USG Sound Control materials and Systems are the result of directed research at the Building Materials Laboratory of the United States Gypsum Company. This laboratory occupies an entire two story building owned by the United States Gypsum Company and located at 1253 West Diversey Parkway, Chicago, Illinois, especially equipped for research and testing. The research work is carried out under the direction of trained physicists and chemists, architectural engineers and investigators, comprising a personnel of some fifty individuals. Here new materials and methods are produced, tested and developed.

The laboratory is one of the few owned and maintained by a manufacturer of acoustical products. It is used to test and improve upon modern developments in the manufacture of acoustical materials. It is also used for control tests on the company's output, so that the acoustical absorption and sound insulation afforded by the sound control products of the United States Gypsum Company is constantly maintained equal or superior to the published determinations of recognized acoustical laboratories.

SERVICE—The United States Gypsum Company maintains a fully competent experienced corps of acoustical engineers, completely equipped to assist architects on any problem involving acoustical correction or sound insulation. They render this service, without obligation, in advance of the building construction or will gladly advise corrective methods for existing buildings in which sound difficulties are experienced.

In auditoriums this service includes analysis of the effect of curved or other sound concentrating surfaces, and investigation for objectionable echoes. In each case it indicates changes in design where they seem advisable. Where the reverberation is too great for comfort, recommendations are made for economically covering the necessary areas with acoustical absorbents.

Because the United States Gypsum Company handles all phases of the problem including manufacture and installation through its Engineering Sales Division or its authorized erectors and provides, not only materials for sound absorption, but also a complete system for the insulation of sound, architects are assured that absorption materials will not be recommended where sound insulation is required or vice versa.



ACOUSTONE*
Actual Size Showing Surface Texture

*Registered Trade-Mark

BB024 0943

United States USG Gypsum Company

ACOUSTONE · USG ACOUSTICAL TILE

Incombustible · Decorative

• • •

PHYSICAL CHARACTERISTICS

COMPOSITION and THICKNESS—Acoustone* is formed from inorganic, specially processed filaments. It provides an unusually high degree of sound absorption. The standard thicknesses are ¾ and 1 inch.

ACOUSTONE D—TECHNICAL DATA—Acoustone D has been tested and approved as a sound absorbent of high efficiency by recognized acoustical laboratories.

Absorption—The coefficients of absorption shown below are from tests made by the Acoustical Materials Association Laboratories:

Pitch	C2	C3	C4	C5	C6	Noise Red. Coef.
Frequency	128	256	512	1024	2048	
UNPAINTED						
¾-in. Thick	.19	.39	.66	.78	.65	.60
1-in. Thick	.37	.65	.84	.79	.72	.75
BRUSH PAINTED WITH LEAD AND OIL PAINT						
¾-in. Thick	.24	52	.69	.66	58	.60
1-in. Thick	43	71	.83	.77	69	75

SIZES (AREAS)—Tiles are made in the following standard rectangular sizes: 6 x 12 in., 12 x 12 in. Special shapes and sizes may be obtained when required.

OUTSTANDING DECORATIVE APPEARANCE—In addition to its high degree of acoustical efficiency, it is outstanding in its decorative effect. The surface texture is quite similar to travertine stone, surpassing it, however, in the richness and warmth it supplies through a wider range of color tones. From the viewpoint of design, it is adapted to harmonious, unobtrusive inclusion in any decorative scheme. Ashlar masonry walls for interiors can be constructed with Acoustone facings that are as beautiful as natural stone. Interiors in the modern trend may be delightfully handled in tile with a metallic lustre in many shades and colors. Acoustone D may be readily cut to irregular sizes and shapes. It fits all decorative interiors and is particularly adaptable to modern motifs. The tile may be laid up in many interesting patterns. There is no disconcerting mechanical effect. It is sanitary and easily cleaned. Due to its natural beauty, Acoustone D usually is installed without decoration. However, it may be painted if desired without materially affecting its sound absorbent efficiency. Colored borders, cornices in relief, and modifed coffered work are easily obtained. Joints between tile units may be accented with a V profile for decorative purposes or made less prominent as desired.

COLORS—Acoustone D is furnished in light-reflecting white, ivory or cream. Special colors will be made to order. Acoustone D may be painted with ordinary lead and oil or similar wall paints without affecting its acoustical efficency. When left undecorated, the inherent beauty of Acoustone enhances any decorative plan. Acoustone has none of the appearance of a mechanical device. Its beauty improves the appearance of any room. It is available in delicate pastel shades for the enrichment of borders, with fields in efficient light reflecting shades. It is readily cleanable and can eliminate future redecoration expense.

INCOMBUSTIBLE—Since it is made from specially processed mineral filaments, Acoustone is incombustible.

LIGHT WEIGHT—Due to its extremely light weight, it is safely and permanently cemented over plaster in both new and old work.

EASILY CLEANED—The complete and thorough cleaning of the porous structure of Acoustone with an ordinary vacuum cleaner thoroughly evacuates any foreign matter that may become lodged in the tile. Accumulations of grease and dirt on the surface of the material are easily removed by the same method or by using ordinary wall paper cleaner, restoring the original color and appearance. The cost of such cleaning is much less than the cost of decorating an equal area of wall or ceiling; and the wear on the tile, incidental to the cleaning, is so negligible that no appreciable difference is made either in its appearance or sound absorbing ability after repeated cleanings.

DURABLE—Because Acoustone is made from especially processed mineral filaments permanently tinted and completely cleanable, it is as enduring as the structure in which it is installed.

SANITARY—Acoustone offers complete sanitation. It is inorganic, durable, completely cleanable. It provides an aseptic, readily and cheaply cleaned sound absorbent for hospitals, sanitariums, and restaurants.

INSTALLATION—The manufacture, installation and acoustical design of Acoustone is entirely under the control and is the sole responsibility of the United States Gypsum Company and its authorized erectors.

*Registered Trade-Mark

BB024 0944

This policy enables the purchaser to buy a result without reference to the manner in which the result is obtained. It definitely fixes the responsibility as it frees the purchaser or the architect from all details, engineering and installation.

Such a policy, of course, means that the United States Gypsum Company will refuse to install Acoustone where satisfactory results will not be obtained.

The company is prepared to make the installation of Acoustone in busy offices, banks, restaurants, brokers' offices, hospitals, etc., at times that will eliminate any interruption in the usual routine.

For this work only experienced mechanics are employed, who will carefully protect the walls, floors and furnishings against damage during the installation.

ECONOMICAL—Acoustone is not expensive to install. It costs more than ordinary wall and ceiling decorating, but by eliminating redecorating costs, over a period of years, the expense is less.

Specifications · ACOUSTONE

LONG FORM

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

NOTE—*List and locate all walls and ceilings to be covered with Acoustone. If more than one thickness of Tile is used, specify the thickness for the various areas.*

(2) BASE

Acoustone shall be applied direct to plaster or similar smooth surface.

NOTE—*On existing work Acoustone is applied over any firm, standard plaster finish.*

(3) ACOUSTICAL TREATMENT MATERIAL

(3a) Acoustical treatment material shall be [¾-in.] [1-in.] thick Acoustone D of colors selected by the architect.

(3b) Joints between Tiles shall be **[a V formed by accurately beveling the tile edges] [as detailed] [specify].**

(3c) Tiles on walls and fields of ceilings shall be of size, shape, disposition and color as shown on the various details and approved shop drawings.

(4) APPLICATION of ACOUSTONE

(4a) Acoustone shall be completely erected by the United States Gypsum Company or one of its authorized erectors of sizes, colors and pattern shown on the drawings and details.

(4b) The Tile shall be laid close, accurately cemented in position in full conformance with the manufacturer's specifications.

SHORT FORM

The contractor shall allow the sum of $..... to cover the cost of acoustical treatment, using Acoustone to be furnished and erected by the United States Gypsum Company or one of its authorized erectors as directed and approved by the architect.



BANKER'S TRUST COMPANY, NEW YORK
This Acoustone ceiling absorbs the usual conflicting business office noises, assuring excellent working conditions.



DeMET'S TEA ROOM, CHICAGO
The Acoustone ceiling here absorbs the usual restaurant clatter and noise, producing a quiet, restful atmosphere.

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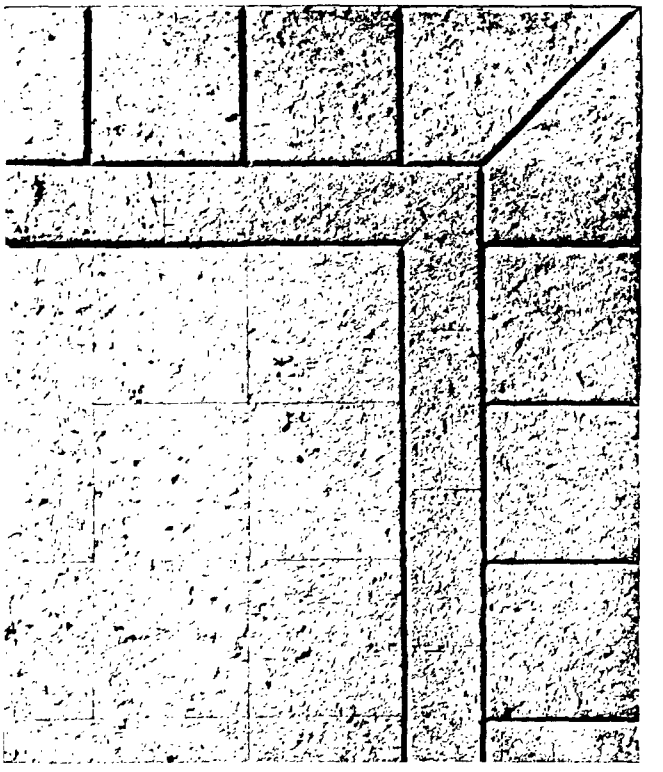
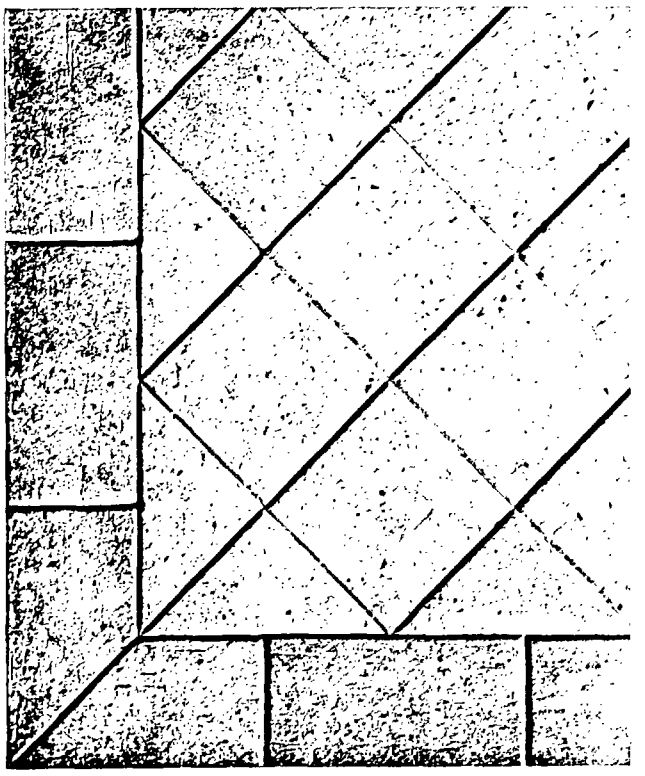
TYPICAL ACOUSTONE PATTERNS

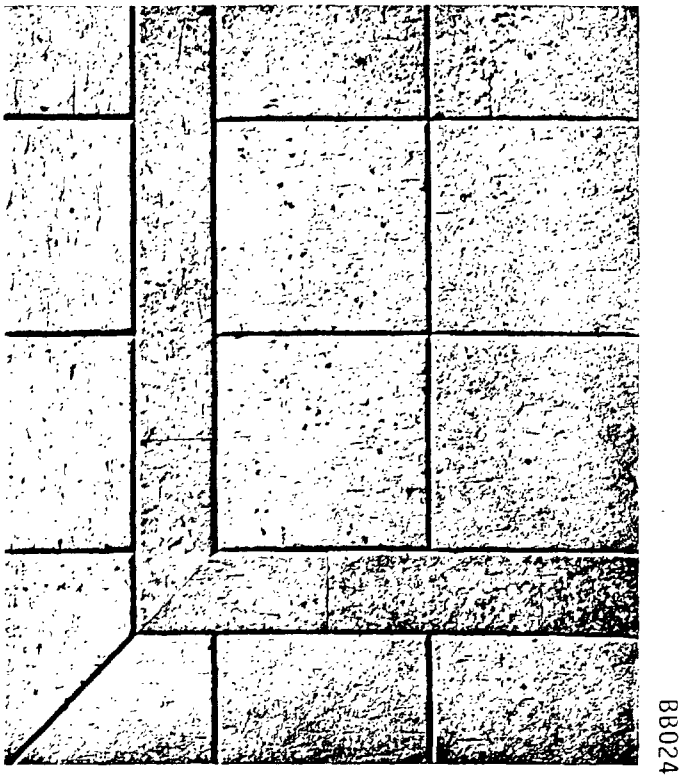
Combinations of Various Colors and Sizes

Acoustone May Be Obtained, on Order, Integrally Colored to Special Shades









United States U.S. Gypsum Company

SABINITE* ACOUSTICAL PLASTER

Incombustible • Economical

• • •

PHYSICAL CHARACTERISTICS

TYPES—

Sabinite A—For general use on ceilings or above wainscots.

Sabinite B—For troweling to a smooth hard surface, readily cleanable on wainscots or wall surfaces exposed to abrasion.

Sabinite 38—Specially developed to resist moisture in natatoriums, shower rooms, laundries, etc., when applied over Oriental Exterior plaster base. (See below.)

COMPOSITION—Sabinite Acoustical Plaster is a permanent, reasonably priced, sound-absorbing plaster. Sabinite A is substituted, over the standard scratch and brown coats, for hard, sound-repellent plaster finishes. Sabinite No. 38 is applied over Oriental Exterior Stucco base coats where extreme humidity, as in Natatoriums, is present. Gypsum base coats may be used where humidity is less severe but consult manufacturer first. Sabinite absorbs sound because of its great multitude of tortuous, minute passages, which have their start in tiny openings at its surface.

ABSORPTION—Coefficients below are by the Official Laboratories of the Acoustical Materials Association:

Sabinite Type	Thickness	128 Cyc.	256 Cyc.	512 Cyc.	1024 Cyc.	2048 Cyc.	Red. Coef.
A	½-in.	.34	.30	.31	.61	.69	.50
A	¾-in.	.36	.37	.55	.67	.67	.55
38	½-in.	.25	.26	.32	.60	.76	.50

THICKNESS—Applied ½-in. thick in two successive coats, or ¾-in. thick in three coats—each ¼-in. thick, with the usual plasterer's tools.

APPEARANCE—Sabinite presents an interesting surface texture similar to a pebbled, semi-smooth stucco. Sabinite A may be left with a troweled finish.

COLORS—Both Sabinite A and No. 38 are furnished in white and four standard colors or tints: ecru, ivory, cream, buff. Special colors will be furnished on orders exceeding 5 tons. On small orders, Sabinite may be tinted to special colors on the job.

It can be painted or decorated after application without loss of efficiency. (See specifications, page 6.)

INCOMBUSTIBLE—Composed of inorganic aggregates bonded together with gypsum plaster, long known as a fireproofing material, it is incombustible.

DURABLE—Sabinite Plaster is as rugged and durable as the ordinary sand float finish.

It is unaffected by dampness and does not shrink or swell with climatic changes.

SANITARY—Because it contains no vegetable or animal matter, Sabinite is sanitary. Like any gypsum plaster it is vermin proof.

DISTRIBUTION—Sabinite is made at the principal mills of the United States Gypsum Company, conveniently located for lowest transportation costs and quick delivery.

COVERING CAPACITY—One ton of Sabinite A applied in two coats, each ¼-in. thick, will cover a surface of from 100 to 110 sq. yds. The average plasterer can apply 100 sq. yds. of Sabinite A to full specifications in 11 hours.

To mix this material, including delivery to the mechanic, requires but 7 hours of labor.

A ton of Sabinite No. 38 covers from 60 to 75 yards and requires 14 hours of a plasterer's time and 8 hours of mixing labor per 100 sq. yds.

APPLICATION and SUPERVISION—It is applied by the plastering contractor in lieu of the usual finish. Its installation is always supervised by an experienced representative of the United States Gypsum Company.

EASY TO APPLY—Nothing but water is added to make Sabinite ready for application. It spreads with a trowel from the hawk, like ordinary plaster and bonds easily and firmly to the base coat.

ECONOMICAL—The low cost of the material, ease of application and excellent covering capacity, coupled with its relatively high sound absorption, makes Sabinite a most economical material.

*Registered Trade-Mark

BB024 0947

Specifications · SABINITE ACOUSTICAL PLASTER

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

NOTE *List and locate all walls and ceilings to be covered with Sabinite Acoustical Plaster. If Sabinite A, B and Sabinite No. 38 are used, list and locate separately. If different colors of integrally tinted Sabinite are used, specify the colors for the various areas.*

(2) GROUNDS

On walls, in addition to the usual grounds set for the scratch and brown coat plaster base, set additional [½-in.] [¾-in.] thick grounds to assure proper thickness of the Sabinite and form nailing for wood trim, etc. All corner beads shall be set to conform to the increased plaster thickness.

(3) ACOUSTICAL TREATMENT MATERIAL

(3a) Acoustical Treatment material shall be **[Sabinite A] [Sabinite B] [and] [Sabinite 38]** Acoustical Plaster as manufactured by the United States Gypsum Company.

(3b) Sabinite shall be integrally tinted by the manufacturer at the mill.

NOTE—*Integrally tinted Sabinite should be a shade lighter than the same color would be in paint because the texture of Sabinite casts a slight darkening shadow.*

(4) SCRATCH and BROWN COAT BASE

(4a) SABINITE A and B—All surfaces to receive Sabinite A **[and B]** shall be given scratch and brown coats of gypsum plaster containing no more than two parts of sand (by wt.) to one part of plaster.

(4b) SABINITE No. 38—Hydraulic Sabinite shall be applied over **[Oriental Exterior Stucco] [Gypsum]** Base Coat.

NOTE—*Oriental Interior Stucco Base Coat is a prepared material requiring no sand or other addition except water. It is applied in two coats in place of the regular scratch and brown coats. Use where humidity is severe.*

(4c) The scratch coat shall be thoroughly broomed before the second or brown coat is applied. The second or brown coat shall be deeply raked after straightening.

(5) APPLICATION of SABINITE

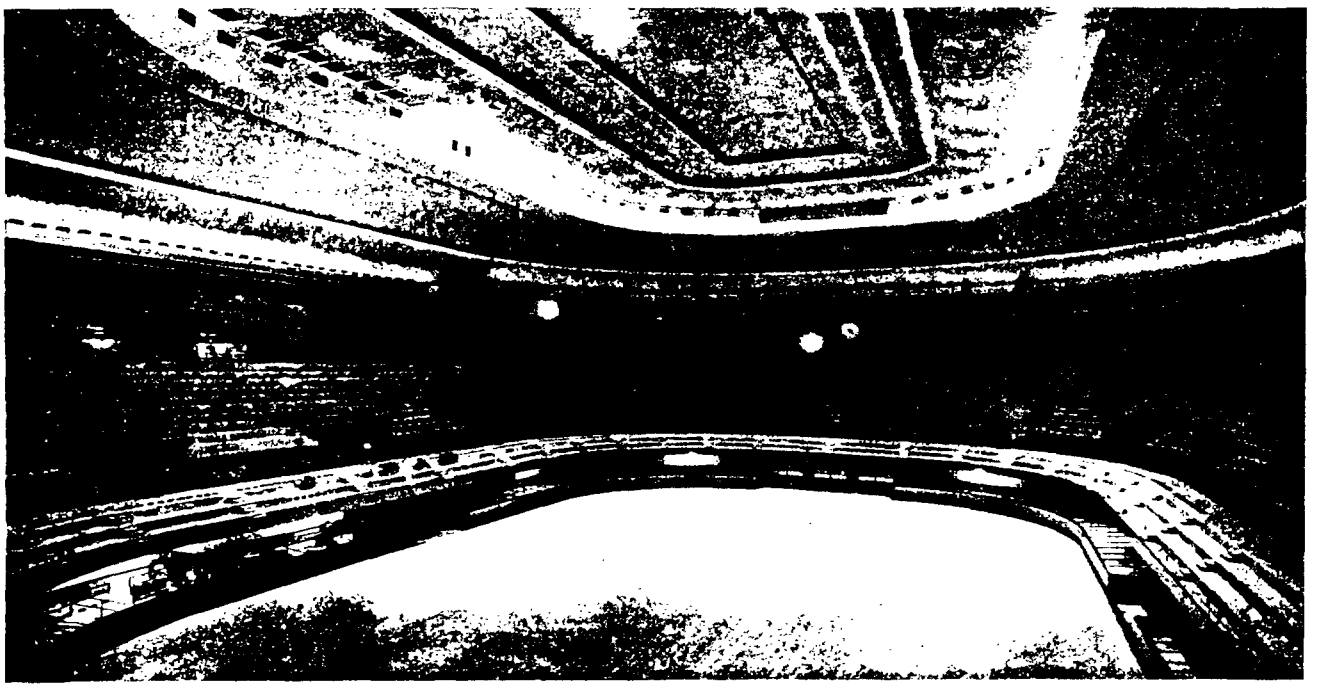
The application of Sabinite shall only be made under the supervision of the United States Gypsum Company.

The plastering contractor shall arrange with the nearest sales office of the United States Gypsum Company for the servicing of Sabinite and shall not commence its application until so directed by the manufacturer's service representative.

Sabinite shall be applied in **[two] [three]** coats each ¼ in. thick over a thoroughly dry base coat. The second **[and third]** coat**[s]** shall not be applied until the previous coat has set. The instructions of the service representative for floating and troweling each coat shall be observed throughout regardless of his presence.

PAINTING SABINITE

SPRAY PAINTING—Sabinite may be spray painted. Depending on the conditions and the effects desired the United States Gypsum Company will make definite recommendations as to the paint or spraying lacquer to be used, the type of spraying equipment best adapted to the conditions and application specifications.



KANSAS CITY AUDITORIUM, KANSAS CITY, MO.
Gentry, Voskamp & Neville, Archts.
Sabinite Ceiling assures excellent hearing condition.

United States Gypsum Company

QUIETILE*

Low Density Wood Fiber Acoustical Tile

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PHYSICAL CHARACTERISTICS

DESCRIPTION—Quietile is a decorative interior tile used to absorb sound and correct noisy conditions in offices, restaurants, etc., and to improve hearing in auditoriums, theatres, and buildings of similar use.

It is a wood fiber product but should not be confused with ordinary insulating tiles used primarily for insulating purposes. It has unusually low density and exceptionally high and uniform absorption. It is a homogeneous material made by a unit felting process to produce a material of high acoustical excellence. Its attractive surface is free from surface oddities and puncturing, not uncommon in acoustical materials.

ABSORPTION—Quietile classes among the high-efficiency absorbents, the one-inch thickness having a 70 per cent noise reduction through the significant pitches, 256 to 2048 cycles. This means that through these pitches it absorbs 70 per cent of all sound striking it and that the reverberation time and the noise level in the room where it is used are greatly reduced.

It is important to note in considering the efficiency of Quietile that it has unusually efficient absorption through the significant ranges. This means, for example, that it is almost equally efficient in absorbing the sound of the human voice, around 512 cycles, and the noise of a typewriter, an octave or more higher. This efficiency is especially characteristic of one-inch Quietile.

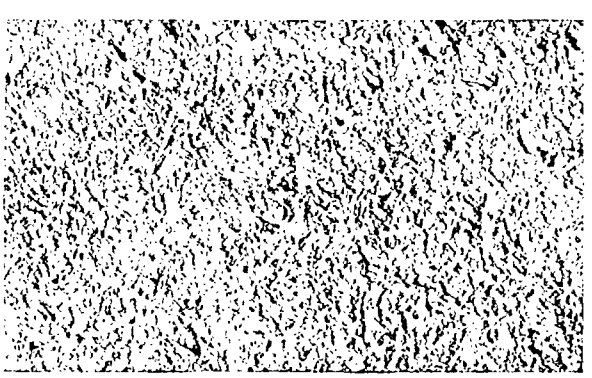
Quietile Thickness	128 Cycles	256 Cycles	512 Cycles	1024 Cycles	2048 Cycles	Reduction Coefficient
½-in.	.13	.30	.58	.64	.80	.60
1-in.	.29	.52	.73	.82	.75	.70

Absorption Coefficients are based on cemented to plaster mountings

COLOR and TEXTURE—Quietile is made in two standard textures and two natural colors. The textures are a sanded and a brushed surface texture. The former is a Light Cream in color and the latter is a Light Buff.

On order either of these textures or surfaces will be mill-tinted to any of the five standard colors in light pastel shades of Rose, Cream, Blue, Buff, and Green, all of which are relatively high in light reflecting value.

Any color or mixture of colors ground in oil or japan may be applied over Quietile with a spray gun after diluting with four parts of mineral spirits (turpentine substitute) to one part of color.



QUIETILE • SANDED TEXTURE • ACTUAL SIZE

SIZES—Quietile is made in three sizes—6 x 12 in., 12 x 12 in., and 16 x 16 in. Either the brushed or sanded surface or the ½-inch or 1-inch thickness can be had in these sizes.

All Quietile units are finished on all four edges with a $^{3}/_{16}$-inch bevel. Other sizes may be obtained at a slight increase in cost.

ADVANTAGES—

High Absorption—The absorption at the significant frequencies is extremely high.

Low Cost—In spite of its high efficiency, Quietile is a low cost material—so low in cost that it makes possible the use of acoustical treatment in almost any type of building where noise is a problem.

Appearance—The surface of Quietile is similar to that of other fiber tiles used primarily for decoration. It is free from perforations and other surface peculiarities that fall into a regular pattern. Its efficiency is secured by the natural surface of the tile in combination with a low and accurately controlled density. The result is an appearance just as pleasing as if the tile were made first of all for a decorative rather than an acoustical effect. This appearance is suited to any type of interior.

Maintenance—Cleaning is always cheaper than redecorating. Quietile can be cleaned with a vacuum cleaner. The mill-tinted pastel shades are deep tinted to withstand several cleanings before re-tinting becomes necessary. Painting reduces absorptive capacity and should not be resorted to. A change in color should be accomplished by tinting or staining.

Easy Erection—Quietile is easily and quickly erected in either an old or a new building.

*Registered Trade-Mark

Specifications · QUIETILE

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

NOTE—*List here all walls and ceilings to be covered with Quietile. If more than one thickness of material is to be used, specify the thickness for the various areas.*

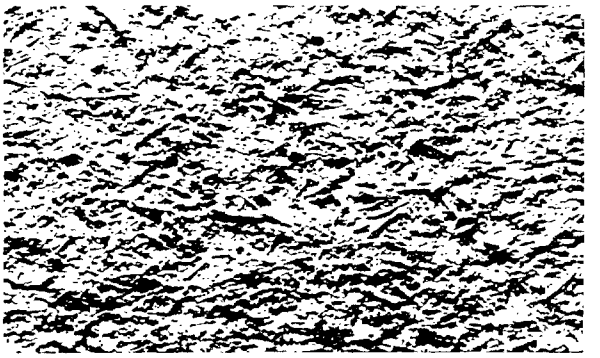
(2) BASE

NOTE—*Describe base. Quietile may be applied to the following surfaces:*

(a) *On new work, a good level brown coat of plaster offers the best base for Quietile.*

(b) *Quietile may be applied direct to any plastered surface if the plaster is in good condition.*

(c) *Quietile may be applied to furring strips. If this method is used with an open air space back of the furring strips, stretch a paper membrane over and attach to the strips to prevent passage of air through the tile with the resultant deposit of dirt on the tiled surface.*



QUIETILE • BRUSHED TEXTURE • ACTUAL SIZE

(3) ACOUSTICAL MATERIAL

(3a) Acoustical material shall be Quietile **[1 in.] [½ in.]** thick in **[a natural color] [mill tinted in standard shades] [cream] [green] [rose] [buff] [blue]** and **[sanded] [brushed]** surface.

(3b) Joints between tile shall be a 3/16 in. "V" formed by accurate beveling.

(3c) Tile shall in general be 12 x 12 in. with special sizes as shown on the various details.

(4) APPLICATION of QUIETILE

NOTE—*Quietile may be applied in a diagonal or a straight pattern with a border effect if desired. Other patterns may be worked out but they will require special tile sizes.*

(4a) Quietile shall be completely erected by the United States Gypsum Company or by one of its authorized erectors.

(4b) The tile shall be cemented or cemented and nailed in position, care being taken to align tile and maintain an even surface in full conformance with the manufacturer's specifications.

PERFATILE*

Incombustible Perforated Metal Pan Type

• • •

PHYSICAL CHARACTERISTICS

DESCRIPTION—Perfatile is a perforated metal tile concealing highly absorbent pads of mineral wool. The edges of the tile are beveled and returned vertically to be held firmly in place by special tee runners. The tile are painted to comply with rigid specifications and to give a finish pleasing in color, high in light reflection, and protected against abrasion due to ordinary maintenance cleaning.

The mineral wool pads are furnished either completely enclosed by a fire resistive membrane or wrapped in muslin. With the latter type the top of the construction is fully sealed during erection with fire resistive membrane. Either type of pad eliminates the so-called breathing action and avoids the accumulation of dirt on the surface which would result in a loss of absorption and an undesirable condition from the standpoint of sanitation.

ABSORPTION—In addition to its being the highest type of acoustical treatment from a construction standpoint, Perfatile is also one of the best from the standpoint of absorption efficiency. Its absorption coefficients present a fairly flat curve at the significant pitches, meaning more than average uniformity through the most important sound frequencies. Coefficients below are by the Official Laboratories of the Acoustical Materials Association.

Perfatile Type	128 Cycles	256 Cycles	512 Cycles	1024 Cycles	2048 Cycles	Red. Coef.
Muslin Wrap. Pad	.37	.52	.96	.94	.88	.85
Memb. Enc. Pad	.43	.61	.91	.88	.77	80
Mounting: Metal supports applied to 1 x 2-in. wood furring.						

*Trade-Mark

BB024 0950

COLOR—Perfatile is finished in baked enamel, a light ivory color, just off from dead white, to provide warmth with high light reflection.

SIZES—Perfatile is made in units 12 x 24 in. with a center groove which gives the effect of 12 x 12 in. units.

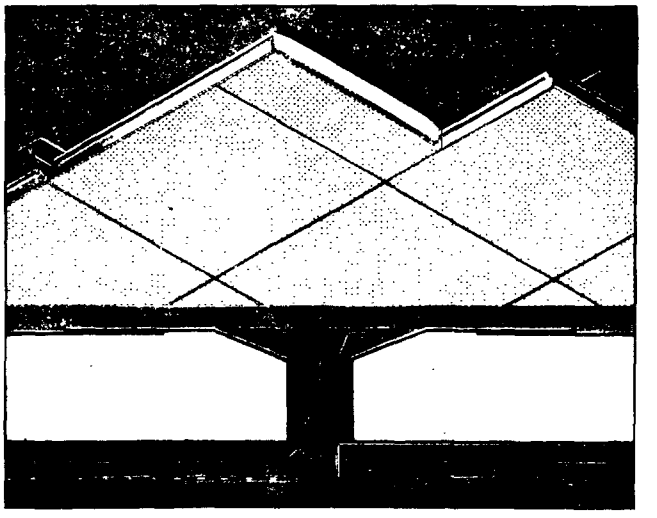
ADVANTAGES—

Fireproof—The metal tile and the mineral wool pads are entirely incombustible. The pad wrapping is all flame-proofed and fire resistive.

High Efficiency—The table above shows the extremely high absorption of Perfatile.

Washable—The painted metal surface of Perfatile may be washed many times before it becomes necessary to repaint it. Washing in no way affects the absorption efficiency of the tile or its appearance.

Paintable—Perfatile can be repainted many times without affecting the absorption efficiency of the construction. The perforations constitute approximately fourteen per cent of the total tile surface, and although small enough to blend into the neutral color of the tile, they are still large enough to maintain full absorption efficiency unaffected by many paintings.



CROSS SECTION

Specifications · PERFATILE

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

(1) WORK INCLUDED

NOTE—*List and locate all walls and ceilings to be covered with Perfatile.*

(2) BASE

(2a) Where suspended ceiling construction is used, 1½ inch carrier channels spaced not to exceed 4 ft. on centers, shall be furnished in place by others. The 1½-inch channels shall be hung so as to present a level under-surface. Sufficient cross channels shall be wired in place across the top of the 1½-inch carrier channels to hold them in position and prevent swaying.

(2b) Where Perfatile construction is to be held against concrete joist construction, wire ties shall be furnished in place by others on not more than 4-ft. centers along all joist bottoms. These ties shall consist of two No. 10 gauge galvanized wire projecting 4 inches below joist bottom. The ties must be carefully lined up in lines at right angles to the joists.

(3) ACOUSTICAL TREATMENT MATERIAL

Acoustical treatment material shall be Perfatile, a perforated metal tile, 12 x 24 in. in size, with a center groove giving the appearance of a 12 x 12 in. tile, the edges of which are beveled and return vertically to be held firmly in place by special tee runnners. The perforated metal tile shall conceal a mineral wool absorbent pad held slightly away from the perforated metal surface by means of pad support runners. The absorbent pad shall be completely enclosed and sealed on four edges, face, and back with a flame-proof membrane. (Or the absorbent pad shall be completely wrapped in flame-proof muslin and the top sealed during erection with flame-proof membrane.)

The perforated metal tile shall have a prime and finish coat of baked enamel on the back, and on the face a prime coat, an intermediate coat, and a finish coat of baked enamel.

(4) APPLICATION of PERFATILE

(4a) SUSPENDED CEILING CONSTRUCTION—The acoustical contractor shall wire or clip the special tee runners to the under-surface of the 1½-inch carrier channels, furnished in place by others, spacing the tee runners on 24-inch centers to hold the perforated metal tile. Perforated metal tile, pad supports, and absorbent pad shall be carefully assembled and pressed into position on the special tee runner. All edges shall be kept in alignment and care must be taken to secure a level under-surface. A suitable moulding shall be furnished in place by **[the acoustical contractor]** **[others]** at the junction of the perforated tile ceiling with the walls and columns. Care shall be taken in cutting and fitting the tile around all openings.

(4b) PLASTERED CEILING CONSTRUCTION—

NOTE—*Same as in (4a) except that the special tee runners shall be attached to the present ceiling by means of suitable clips or wire and brought to a level surface.*

SHORT FORM

Perfatile treatment shall be furnished and erected by the United States Gypsum Company or one of its authorized erectors on all areas indicated on plans to receive acoustical treatment.

BB024 0951

USG SYSTEM of SOUND INSULATION*

Fireproof Wall and Floor Constructions

• • •

DESCRIPTION

PURPOSE—To prevent the passage of sound from one room to another.

THEORY and DESCRIPTION—Sound passes through a wall, floor or ceiling by vibrating it as a diaphragm. The sound strikes it and sets it into vibration. This vibration sets up new sound waves, reduced in intensity on the opposite side. The USG System of Sound Insulation is built upon the principle of providing room boundaries in which one side can vibrate while the other side does not. This is accomplished by constructing a furred surface supported on springs.

The regular plastering system is applied directly to the spring supported furring. Concrete floors may be poured on the resiliently supported sleepers (see details, page 11).

ADVANTAGES—The USG System of Sound Insulation possesses the following advantages over other methods of sound insulation.

(1) **Permanence**—The efficiency of this construction, being primarily obtained by steel spring devices, is maintained permanently.

(2) **Fireproofness**—Only incombustible materials, steel and gypsum, are employed.

(3) **Economy**—Because of its simplicity of construction, the USG System of Sound Insulation offers a maximum of efficiency at a reasonable cost.

SALE and INSTALLATION—The USG System of Sound Insulation in Fireproof Construction is sold and installed only by the United States Gypsum Company or its authorized erectors which assures undivided responsibility for the results. All work is installed by trained mechanics under strict supervision.

ITEMS FURNISHED and INSTALLED—The following items are furnished and installed in the USG System of Sound Insulation (See details, page 11).

Ceilings—Resilient Saddles, 1½-in. Channel Runners, Furring Runners, Rocklath, Thermofill.

NOTE—*We do not include plaster or hanger rods. Hanger rods should be furnished by others, 2 by 4-ft. centers with first hanger 6 in. from all walls.*

Walls—Resilient Wall Clips, Furring Runners, Rocklath, Cornerite.

NOTE—*We do not include tile walls or plaster.*

Floors—Resilient Sleeper Chairs with tie wire and grout, Metal Sleepers, Thermofill, Metal Ts, Rocklath, metal lath and concrete slab.

NOTE—*We do not include the finished flooring.*

SPACE REQUIRED—The space required for the installation of the USG System of Sound Insulation is as follows:

Ceiling—Not less than 6 in. to the bottom of Rocklath.

Walls—2⅛ in. from the face of tile wall to outside face of Rocklath.

Floor—5 in. from the top of the floor slab to the top of the concrete slab to receive flooring.

Specifications • SHORT FORM

NOTE—*Notes are explanatory or advisory only and should not be included in the specifications.*

NOTE—*This specification should be included under a separate heading of "Sound Insulation"*

(1) WORK INCLUDED

NOTE—*Here list and locate clearly the walls, floors and ceilings to be treated. Also indicate the following areas clearly on the plans:*

Indicate partitions by heavy black line on the side to be insulated. Indicate floors and ceilings on room schedules and by notations on floor plans and sections.

(2) SOUND INSULATION

The sound insulation as above listed and shown on plans shall be the USG System of Sound Insulation furnished and installed by the United States Gypsum Company, 300 West Adams Street, Chicago, Ill., or its authorized erectors.

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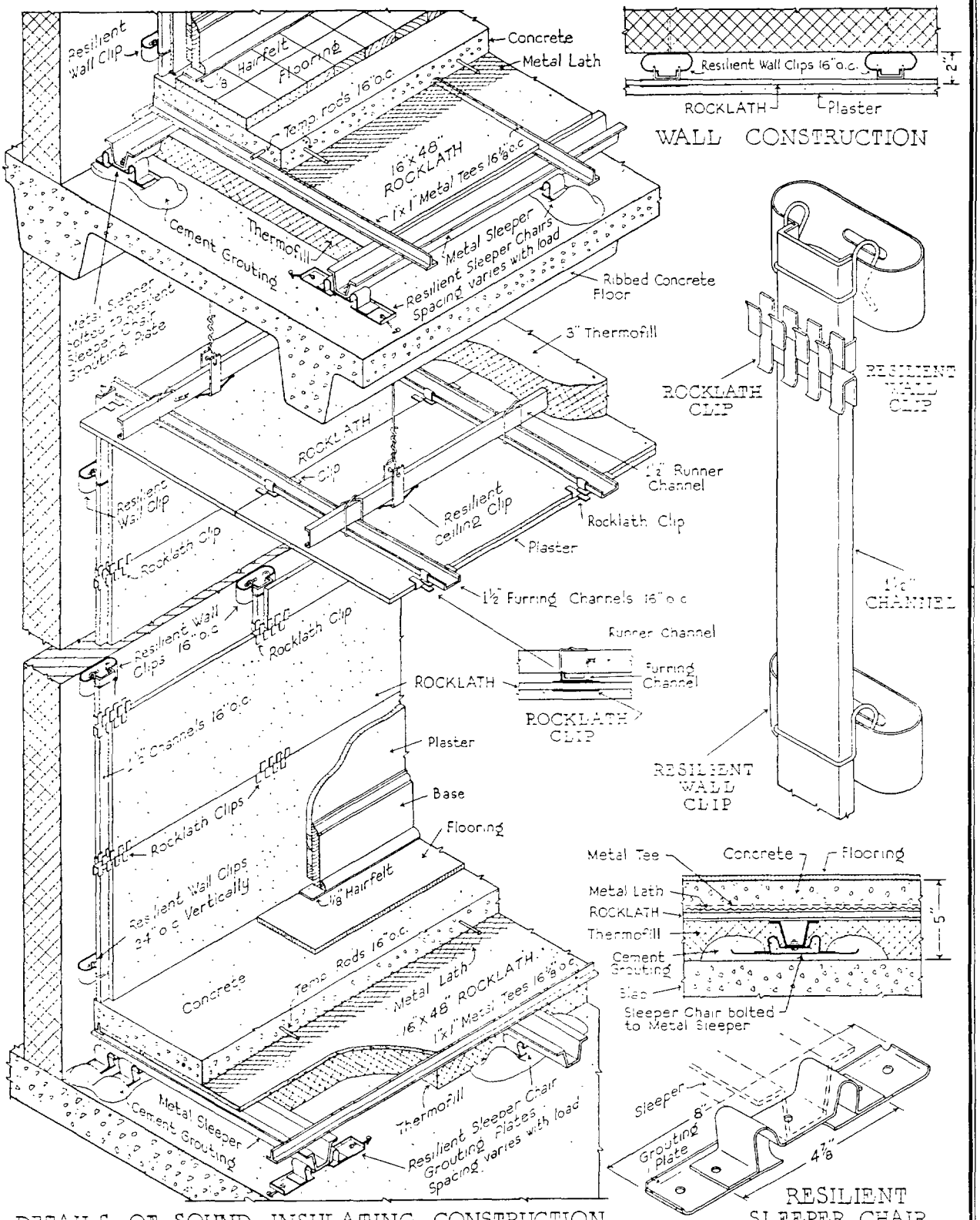
USG SYSTEM OF SOUND INSULATION



DETAILS OF SOUND INSULATING CONSTRUCTION FOR WALLS, FLOORS AND CEILINGS

RESILIENT SLEEPER CHAIR GROUTING PLATE

BB024 0953

TREMBAR RESILIENT MACHINERY MOUNTINGS

• • •

DESCRIPTION

PURPOSE—To prevent the transmission of noise and vibration from motors, motor generators, ventilating equipment, printing presses, and many other types of machinery, all of which frequently produce annoyance through vibration or noise.

DESCRIPTION—Trembar* Sound Insulative Machine Base has been especially designed for use under machinery of all kinds to localize vibration and the resultant noise.

Its construction is essentially that of a rigid platform supported on very sensitive steel springs. These resilient springs float the machine so that practically none of its vibration is transmitted to the floor upon which the machine rests. The platform has no connection of any kind with the floor except through the resilient springs. The action of the springs in the base might be likened to those in an automobile which float the body of the car free from the vibration produced in the running gear by the road.

ADVANTAGES—Trembar Resilient Machinery Mountings possess the following advantages:

(1) Adaptability—Each base is especially designed and built for the piece of equipment to be supported. The major factors in determining the area of the base are the horizontal projections of the machine, the weight of the machine, the relative position of the center of gravity and the R.P.M. of the machine. The number and type of spring units are determined by the weight of the machine base and the R.P.M. of the machine. The base is adapted to the machine it carries.

(2) Economy—By the use of this base, equipment can be placed in that part of the building most desirable from the standpoint of efficiency and economy, without regard to the possibility of disturbances to adjacent rooms.

(3) Structures with Mixed Occupancy—Trembar Bases so fully free buildings from the vibration and noise produced by machinery that it is possible to include space for manufacturing in office buildings without causing the least annoyance to tenants.

(4) Hotels and Hospitals—The machinery necessary to the operation of these buildings may be quieted by the use of Trembar Mountings under all rotating or oscillating equipment.

(5) Installation—Bases are shipped ready for installation by others, or they will be installed complete by the Engineering Sales Division of the United States Gypsum Company or its authorized erectors.

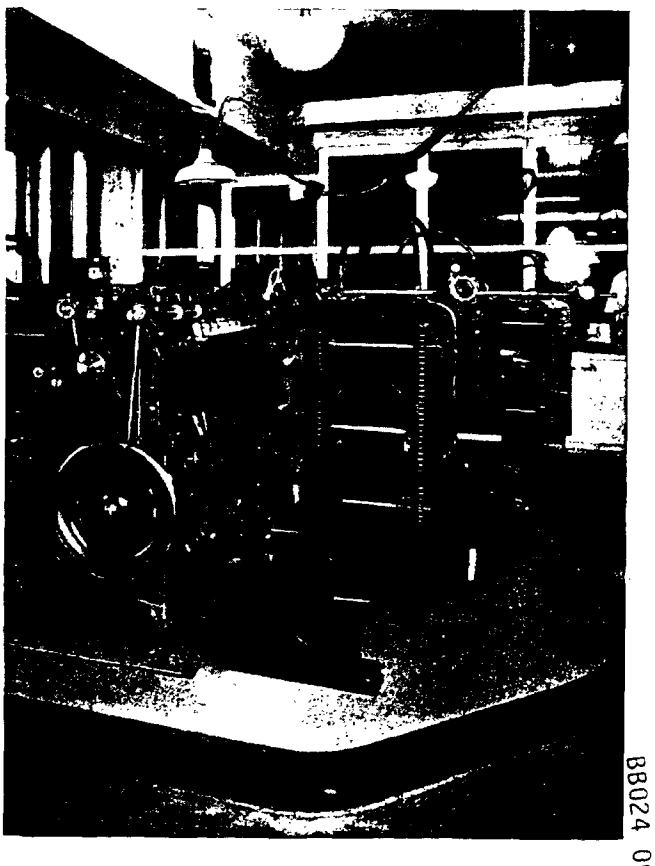
DEMONSTRATED ACCOMPLISHMENTS—Trembar Vibration Isolating Equipment is in successful operation in the United States Navy, Coast Guard Vessels; Bureau of Standards; most of the newer broadcasting stations; and in many hotels, hospitals, apartments, office buildings, and factories. It is completely adaptable to practically any vibration problem.

Specifications

SHORT FORM

NOTE—*List under heading of "Sound Insulation."*

Under all **[name and describe items of equipment to be insulated]** the **[specify which]** contractor shall install Trembar Resilient Machinery Mountings as designed and manufactured by the United States Gypsum Company.



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