PLAINTIFF'S EXHIBIT

USG-2025

# The Red Book



## of Good Lathing and Plastering Practice

**UNITED STATES GYPSUM COMPANY**

300 West Adams Street, Chicago 6, Illinois

BB013 0061

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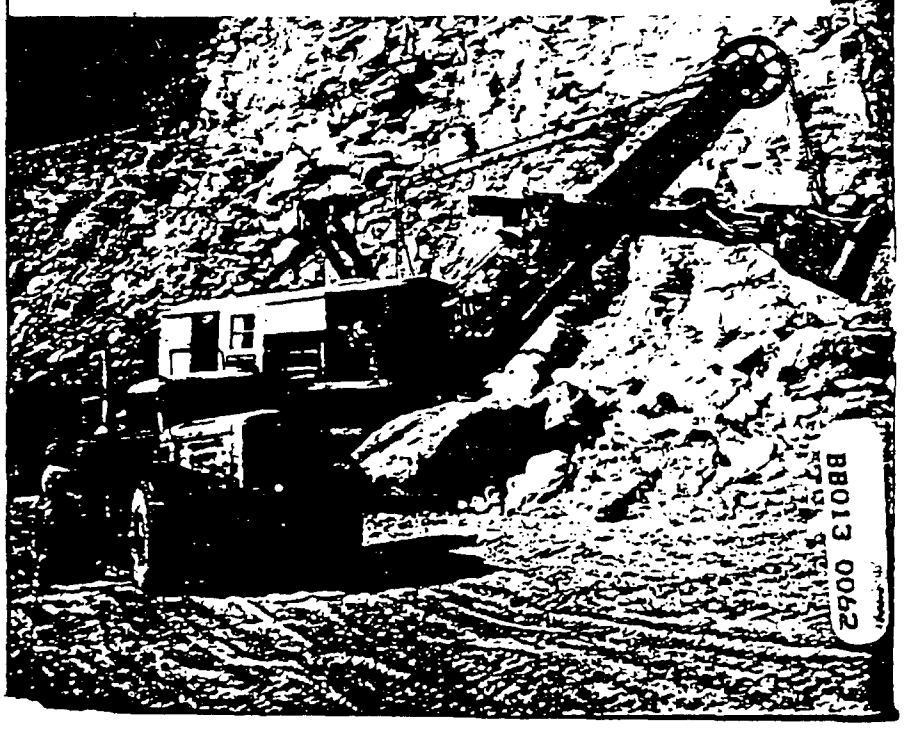

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# Gypsum...the basic material for lathing and plastering

**What is Gypsum?**

Gypsum is one of the most common minerals of the earth. Non-metallic, it is usually in the form of grey or white rock, found in veins varying from a few feet to 20 and 30 feet in thickness. Chemically, gypsum is a mineral composed of calcium sulphate combined with water of crystallization. This "dry" water makes up approximately 20 percent of the weight of raw gypsum rock, and it is this feature which gives gypsum its fire-protective qualities and makes it so adaptable for the manufacture of building materials.

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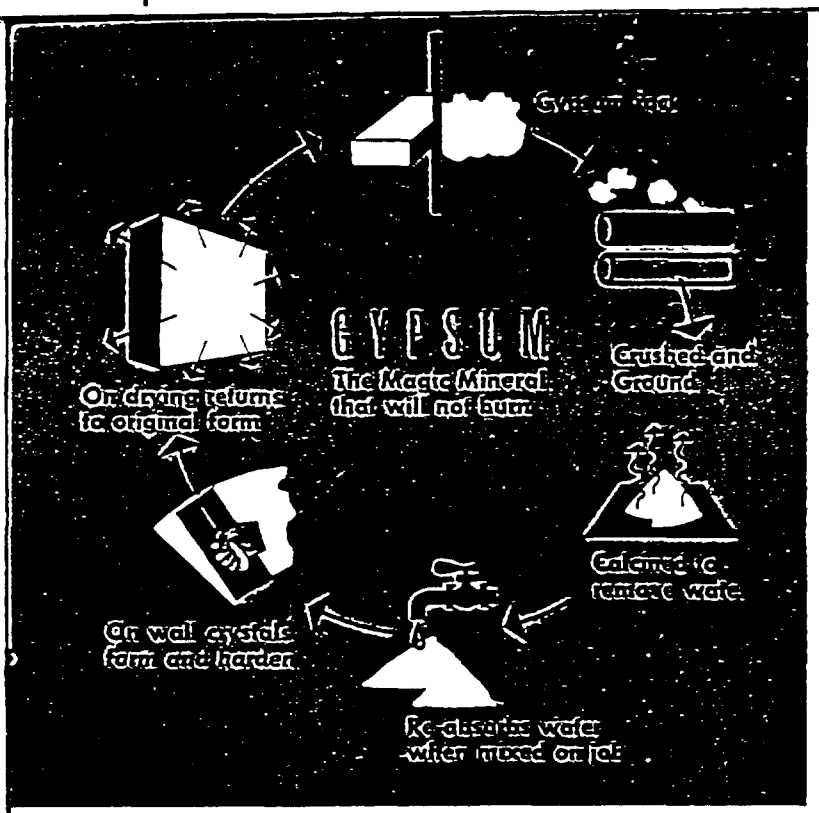


**How Gypsum is Processed**

After gypsum is mined or quarried, it is crushed and ground and then calcined (or cooked) to remove the greater part of the chemically combined water. This calcined product, or Plaster of Paris, is the basic ingredient of all gypsum materials. Combined with other materials and water, it is used for the manufacture of gypsum lath, partition tile and gypsum plasters. When it is mixed with water to make gypsum lath or to make a plaster mix on the job, it re-absorbs the water removed in processing and reverts to gypsum rock. This recombination with water is why gypsum materials give such excellent fire protection to buildings.



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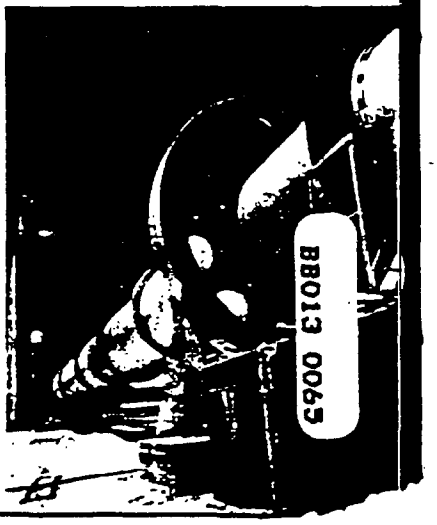
### How Gypsum Protects Against Fire

When fire heats a gypsum wall or ceiling to about 212° F., the water of crystallization is gradually converted into steam. The water of crystallization effectively retards the spread of flame. For instance, in an average room 10 feet square finished with gypsum lath and plaster, the heat of a fire could convert the water of crystallization in the gypsum into sufficient steam to fill the room *three times*. The back of the gypsum wall will not be much hotter than 212° F. until all the water is gone—a slow process. This protects the wood framing, which doesn't start to burn until about 400° F.

### Setting Action of Gypsum

Water is added to gypsum plaster on the job until the material is sufficiently plastic to spread easily under the trowel. After it is applied, the gypsum particles re-absorb part of the water from the mix and the plaster reverts through crystallization to the chemical form it originally had when taken from the ground.

Giant rotary calciner in which crushed gypsum is cooked.



The balance of the mixing water is dried out of the plaster slab through ventilation and evaporation. When crystals begin to form in gypsum plaster, it starts to harden; this is known as the "setting action" of gypsum. Gypsum which has been calcined begins to set soon after water is added.

### RED TOP—Stabilized Set

Mill addition of special ingredients developed by USG Research has resulted in the famous "Stabilized Set" of all RED TOP plasters. RED TOP minimizes variability in sets often caused by sand and water impurities which would accelerate or retard the set of ordinary plaster. Whether machine or hand mixed—applied over metal, wood, gypsum, insulating lath, cement block, brick, clay or gypsum tile—a scratch or brown coat of RED TOP mixed with sand or lightweight aggregates (vermiculite, perlite) sets more uniformly. It also sets to more uniform hardness, providing a better surface for application of white coat. The set progresses evenly from the base out to the surface.

### Why gypsum is better for building

In addition to its outstanding fire-protective qualities, the mineral gypsum will not rot nor decay and combines light weight with strength. It builds durable walls that last a lifetime, and may be economically adapted to any architectural design.

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# Plaster Bases


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| **ROCKLATH plaster base** | 10 |
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| **USG COLOR-RITE Metal Lath and Accessories** | 21 |


Proper use and application of USG plaster bases is important in the construction of strong durable finished walls and ceilings.

A secure bond between the plaster and plaster base is essential to develop strength and resistance to abuse and cracking.

Gypsum plaster adheres to a plaster base because a bond is developed which virtually makes the two materials a solid unit. A "mechanical" bond is formed when plaster is pressed through the mesh or holes of the lath, forming keys on the other side. The keys actually "rivet" the plaster and lath together. This mechanical bond results when plastering over metal lath or perforated gypsum lath.

A "suction" bond is formed when gypsum plaster is applied over gypsum lath, and masonry bases. In this case the tiny needle-like plaster crystals penetrate into the surface pores of the base by suction. When the plaster sets, the base becomes "welded" to the plaster. When perforated gypsum lath is used, both suction and mechanical bonds are developed.

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# ROCKLATH Plaster Bases

## Plain ROCKLATH

Plaster Base is a gypsum lath made in sheet form in thicknesses of 3/8 in. and 1/2 in. It consists of a core of gypsum pressed and rolled between two layers of special absorptive paper, and is the standard of excellence for receiving gypsum base coat plaster.

### ADVANTAGES

**Fireproof**—ROCKLATH has an incombustible gypsum core and will not transmit temperatures much over 212 degrees F. until completely calcined.

**Resistant to Sound Transmission**—Wood stud partitions with ROCKLATH and gypsum plaster on both sides have a high resistance to sound transmission. (*See* ROCKLATH Resilient System *page 60* for higher sound transmission resistance.)

**Strong Bond**—Gypsum plaster bonds to ROCKLATH with a safety factor of 144—far higher than required to meet usual construction standards.

**Structurally Strong**—Large units add resistance to racking of framing members.

**Durable**—Not harmfully affected by decay, dry rot or normal moisture. Will not attract vermin.

**Economical**—The low cost of ROCKLATH, its ease and speed of erection and savings in plastering are outstanding.

### LIMITATIONS OF USE

1. Gypsum lath, 3/8 in. thick, is designed for supports not to exceed 16 in. o.c. For framing spaced more than 16 in. o.c. but not more than 24 in. o.c., 1/2 in. thick ROCKLATH should be used.

2. Use with gypsum plaster only. Bond between lime or portland cement plaster and ROCKLATH is inadequate.

3. Gypsum lath and plaster, painted with 3 coats of lead and oil, has a vapor permeability of about 3¾ Perms (grains of water per square foot per hour per inch of mercury vapor pressure difference). For higher resistance to vapor transmission, use Insulating ROCKLATH plaster base.

4. Do not use in areas exposed to excessive moisture for long periods of time. Use galvanized metal lath and portland cement-lime plaster.

5. Where one hour fire resistive ratings are required, Perforated ROCKLATH plaster base should be used.

## Perforated ROCKLATH

is identical to plain ROCKLATH except that ¾ in. round holes are punched through the lath 4 in. o.c. These perforations allow the applied plaster to "mushroom" through the



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holes and form "rivets" to mechanically key the plaster to the ROCKLATH, providing both mechanical and suction bonds.

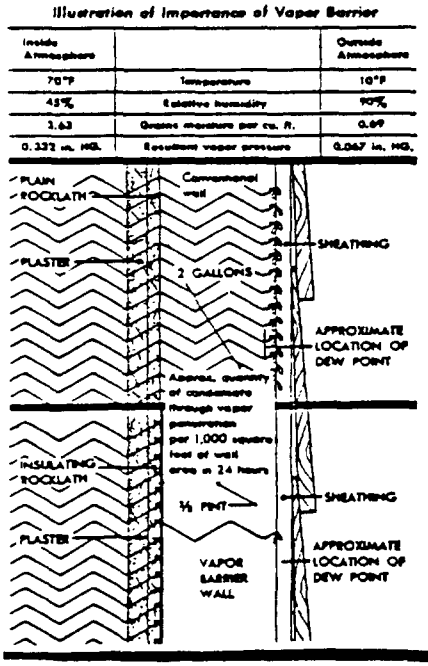
### ADVANTAGES

Same as plain ROCKLATH but with higher fire rating. Gives one hour fire rating on partitions with ½ in. gypsum plaster sanded 1:2-1.2 by weight, or gypsum-perlite plaster 100 lbs. to 2½ cu. ft. and a one hour rating on ceilings, with ½" gypsum-perlite plaster proportioned 100:2½.

### LIMITATIONS OF USE

Same as for plain ROCKLATH plaster base, except perforated ROCKLATH should not be used on ceilings with Resilient ROCKLATH clips or other side suspended clip systems.

*Illustration of Importance of Vapor Barrier*




## Insulating ROCKLATH

is manufactured with a sheet of bright aluminum foil laminated to the back of plain ROCKLATH. It provides insulation against heat and cold and is an effective vapor barrier.

### ADVANTAGES

All those of plain ROCKLATH plus:
1. Insulating value equal to ½ in. fiber insulation board when installed with at least ¾ inch air space next to foil.
2. Aluminum foil is one of the best vapor barriers known and used commercially.
3. Economical—one material, one application provides plaster base, insulation, vapor barrier.

### LIMITATIONS OF USE

Same as plain ROCKLATH plaster base. Use only on the interior of exterior walls and top floor ceilings.

### IMPORTANT

When Insulating ROCKLATH is installed with at least a ¾ in. air space next to the foil, it has the same insulating value as a half inch of fiber insulating board.

An efficient vapor barrier should be installed in all exterior walls and ceilings where freezing weather occurs for extended periods of time. The vapor barrier should be located on the warm side of the exterior wall or top floor ceiling.

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# TECHNICAL DATA
## Wood Frame Construction

**PARTITIONS**

| Construction | Total Weight Lbs. per Sq. Ft. Lath and Plaster Only | Plaster & Aggregate | Thickness | Fire Rating Reference | Sound Transmission Loss & Reference |
|---|---|---|---|---|---|
| ⅜" Plain ROCKLATH nail-on 2" x 4" studs. | 12.0 | Gypsum-Sand 1:2—1:2 | ½" | 45 min. (1) | 41 (1) |
| ⅜" Plain ROCKLATH nail-on, 2" x 4" studs. | 11.0 | Wood fiber plaster | ½" | 1 hr. (1) | 41 (2) |
| ⅜" Perforated ROCKLATH nail-on, 2" x 4" studs. | 12.0 | Gypsum-Sand 1:2—1:2 | ½" | 1 hr. (1) | 41 (2) |
| ⅜" Perforated ROCKLATH nail-on, 2" x 4" studs. | 8.0 | Gypsum-Perlite 100:2½ | ½" | 1 hr. (1) | |
| ⅜" Perforated ROCKLATH nail-on, 2" x 4" studs. | 8.0 | Gypsum-Vermiculite 100.2½ | ½" | 1 hr. (1) | |

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## CEILINGS

| | | | | | |
|---|---|---|---|---|---|
| ⅜" Perforated ROCKLATH nailed to 2" x 10" wood joists with 1¼" headed nails. ¾" sub floor—diaphragm of asbestos paper—T&G finished floor | 6.0 | Gypsum-Sand 1:2—1:2 | ½" | 30 min. (1) | |
| Same as above except nails had ⅞" head. | 6.0 | Gypsum-Sand 1:2—1:2 | ½" | 45 min. (1) | |
| ⅜" Perforated ROCKLATH nailed to 2" x 10" wood joists with 1⅛" headed nails (5 per lath per joist). Striplath applied to joists with ¾" nails having ½" head. | 6.0 | Gypsum-Sand 1:2—1:2 | ½" | 1 hr. (1) | |
| ⅜" Perforated ROCKLATH nailed to 2" x 10" wood joists with 1¾" head nails—4 per lath per joist. | 4.0 | Gypsum-Perlite 100:2½ | ½" | 1 hr. (1) | |
| | | Gypsum:Vermiculite 100-2½ | ½" | 1 hr. (1) | |
| ⅜" Plain ROCKLATH nailed to 2" x 10" wood joists with 1¾" head nails—4 per lath per joist—20 ga. 1" hex. wire mesh nailed to joists through lath. | 4.0 | Gypsum-Perlite 100:2½ | ½" | 1½ hr. (1) | |

*(1) National Bureau of Standards BMS 92.*
*(2) Estimated to be same as plain ROCKLATH Plaster Base with sanded plaster.*



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# ROCKLATH Plaster Base

**Types—Recommended Stud Spacing—Special Uses**

**Recommended Stud Spacing for thickness indicated.**

| TYPES | SIZES | ⅜" | ½" | COMMENTS |
|---|---|---|---|---|
| Plain | ⅜", ½" thick<br>16" x 48" | 16" o.c. | 24" o.c. | ½" ROCKLATH is particularly adaptable to nailable steel framing spaced 24" o.c. |
| Perforated* | ⅜", ½" thick<br>16" x 48" | 16" o.c. | 16" o.c. | Required for higher fire rating |
| Insulating | ⅜", ½" thick<br>16" x 48" | 16" o.c. | 24" o.c. | Recommended for side walls and top floor ceilings for insulation and as a vapor barrier. |
| Plain<br>Long Length<br>V-edge | ½" thick<br>24" wide by<br>ceiling height<br>up to 12' | | | For constructing 2" Solid ROCKLATH and plaster partitions. (See page 65.) |
| Insulating<br>Long Length<br>Square Edge | ⅜" thick<br>24" wide by<br>ceiling heights<br>up to 12'. | | | For application to exterior masonry walls using USG Wall Furring Brackets and ¾" channels. (See page 68.) |

*Perforated ROCKLATH is not recommended for ceiling applications when side-suspension clip attachments are used.*

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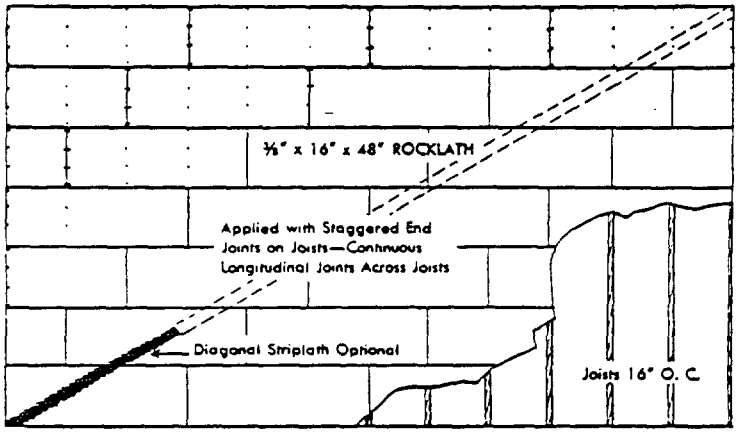
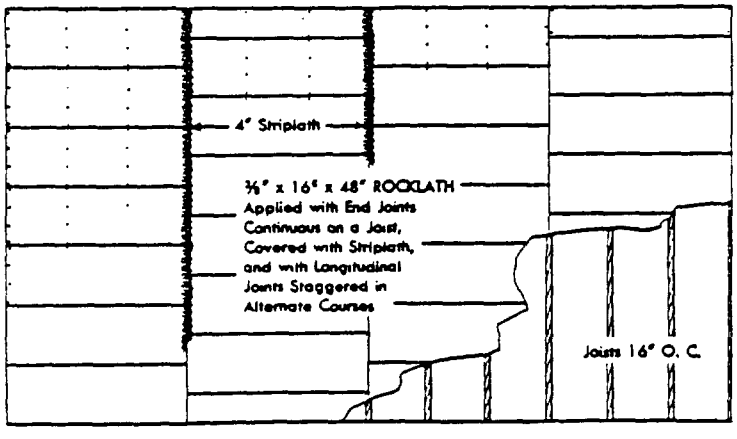



FIG. 1 (Ashlar pattern)

**Sidewall and Ceiling Application** Apply 16 x 48 in. ROCKLATH with staggered end joints on studs or joists, spaced 16 in. o.c. Apply 4 nails per board per support—space approximately 5 in. apart, ⅜ in. from edges and ends.

FIG. 2. Alternate Ceiling Application (Canadian system)

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## Long Length ROCKLATH

plaster base ½ in. thick, 24 in. wide with V edges is used to construct 2 in. Solid ROCKLATH and plaster partitions. (*See page 65.*) Long Length Insulating ROCKLATH, ⅜ in. thick, is used as an economical furring application for exterior masonry walls, providing ease of erection, insulation and an excellent vapor barrier (*See page 68*).

### ADVANTAGES

The same fire protection as other ROCKLATH plaster bases of corresponding thickness, as well as economy and ease of application.

# APPLICATION of ROCKLATH

**Proper Nails**—For ⅜ in. ROCKLATH, nails should be 1⅛ in., 13 gauge blued, 19/64 in. flat head, smooth diamond point. For ½ in. lath, use 1¼ in. length. For nailable steel framing (spaced not more than 24 in. o.c.) use nails of proper gauge with not less than ⅜ in. heads and long enough to develop the proper nail holding of the framing.

**Nailing (Sidewalls and ceilings)**—Space nails approximately ⅜ in. from the edges and ends, approximately 5 in. apart, using four nails per lath per support. For ½ in. ROCKLATH with supports more than 16 in. o.c., nails must be spaced approximately 4 in. apart using 5 nails per lath per support. For a one hour ceiling fire rating when using sand as the aggregate, 5 nails per lath per support plus striplath on joints must be used.

**Sidewall and Ceiling Application**—ROCKLATH plaster base should always be applied face out with the long dimensions at right angles to the framing members. On walls, end joints should fall on different supports in adjacent courses. On ceilings, end joints are staggered as for side walls (*See Fig. 1*) or ROCKLATH should be erected so that end joints are made continuous on a support, in which case, end joints must be covered with 3 in. striplath and the long or edge joint offset or staggered (*See Fig. 2*). In all cases, ROCKLATH joints should be butted together.

**Cornerite and Corner Bead Application**—Inside corners should be reinforced over ROCKLATH plaster base with cornerite. Staple cornerite to the lath to retain position until plastered. Corner bead should be stapled to exterior corners.

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# PYROBAR and Other Masonry Plaster Bases

## PYROBAR

**Gypsum Partition Tile**—A precast gypsum tile for building non-load bearing fireproof partitions, either in new construction or alteration work. Because it is made of gypsum, it has a strong natural bond with gypsum basecoat plaster. PYROBAR is available in several types and thicknesses (*See chart, page 19*).

### ADVANTAGES

**Fireproof**—3 in. hollow PYROBAR plastered two sides has 3 hour fire rating. 4 in. hollow PYROBAR plastered two sides has 4 hour fire rating.

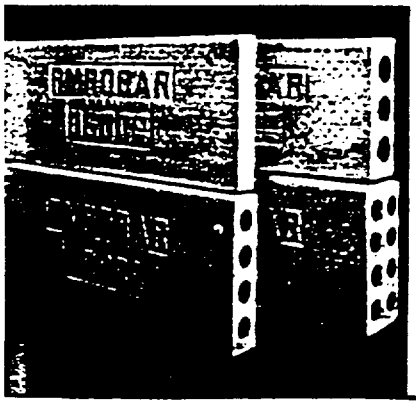
**Lightweight**—30 to 50% lighter than other commonly used masonry units.

**Plaster Bond**—safety factor of 173.

**Saves Plaster**—large size, machine moulded units lay accurately to form a level surface, requiring less plaster as compared with other masonry units.

**Sound Resistant**—3 inch hollow PYROBAR plastered two sides has a sound transmission loss rating of 39.2 decibels. 4 inch hollow PYROBAR plastered two sides has a rating of 42.8 decibels. Ratings in excess of 50 decibels are obtainable with resilient lath and plaster facings on one side of PYROBAR tile, normal plastering on the opposite side.

**Economical**—low material cost . . . goes up fast . . . fewer joints, saves up to 20% of plaster and up to 40% of mortar . . . easy to cut, less waste.



### LIMITATIONS OF USE

1. Do not use PYROBAR for load-bearing construction.
2. Portland cement and lime mortars do not bond adequately with PYROBAR. Use RED TOP Partition Tile Cement.
3. Do not use portland cement or lime plasters over PYROBAR. Use RED TOP Cement Plaster. Before applying portland cement bedding for ceramic tile, nail or staple metal lath to PYROBAR. Other types of masonry, such as structural clay tile also may be used as backing for ceramic tile.
4. Where concrete floor fill, granolithic finish, terrazzo or other wet types of flooring or base materials are to be applied to the rough floor construction subsequent to installation of PYROBAR tile, a continuous coating of asphaltic material shall be applied from rough floor up to height of wet application on tile.

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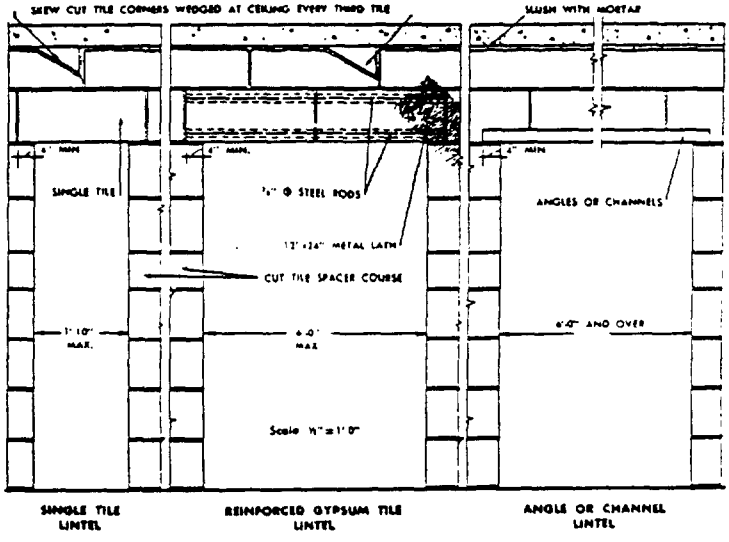
## LINTEL SCHEDULE:




### DIRECTIONS FOR ERECTING

**Mortar Requirements:** use RED TOP Partition Tile Cement. Mix 1 part cement with 3 parts sand by weight. Mortar must *not* be retempered.

**Erection:** after door bucks are erected and rough plumbing and wiring are in place, lay the first course, with core holes horizontally, by bedding in mortar to a true and straight line. Lay succeeding courses in approximately ½ in. thick mortar beds, uniformly level in each course, and with vertical joints staggered. Cut all joints flush. Anchor partitions to intersecting masonry walls 12½ in. o. c. vertically, with corrugated wall ties or 16d or 20d cut nails in mortar joints. Wedge tightly at ceiling and slush all chinks and crevices full with mortar.

Anchor wood door bucks to the PYROBAR with 16d cut nails or three buck ties each side (approximately 12 in. from top and bottom and at center) laid in the mortar joints. Lintel construction (*See above*) should be held about ⅛ in. above head of wood buck and not slushed with mortar.

Anchor steel door frames with proper ties, minimum of three each side (approximately 12 in. from top and bottom and at center), in mortar joints and slush space between tile and hollow frame with mortar.

### APPLICATION OF BASECOAT PLASTER

Apply RED TOP Cement Plaster mixed with 3 parts of sand by weight or 3 cu. ft. lightweight aggregate per 100 lbs. plaster to ⅝" grounds. (*See page 33.*)

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## Other Masonry Bases

**Clay Tile and Brick**—materials produced by exposing a clay putty to extreme heat until hardening has taken place. Clay tile is produced in 12 x 12 in. size in thicknesses usually 2 to 6 in. with scored faces.

**Concrete Block**—precast in molds using a slurry composed of cementitious materials and an aggregate. It is generally produced in 8 x 16 in. size in thicknesses usually 3 to 12 in. and must have rough, porous faces. Such units must be properly cured to minimize volume changes during and subsequent to plastering.

These masonry plaster bases are available in units for constructing interior bearing and non-loadbearing partitions and should be used as a backup for ceramic tile, terrazzo and cement bases. Portland cement-lime sand mortar is generally used for laying up, although RED TOP Partition Tile Cement can be used where construction will not be exposed to undue wetting.

They are 60-80% heavier in weight than PYROBAR Partition Tile, and thickness for thickness, have a lower fire resistance rating.

Gypsum plaster may be applied direct to these units providing the surface is porous to develop proper suction or scored to develop adequate mechanical bond with plaster.

**Monolithic Concrete**—many multiple story fireproof buildings are constructed of poured reinforced concrete. Frequently, specifications require application of plaster basecoats direct to the concrete.

It is important, in order to secure proper bond between the concrete and gypsum plaster, that specifications for this particular application be *strictly* adhered to. (*See page 39*).

## PYROBAR Partition Tile Data

| Size of PYROBAR Partition Tile | Limiting Partition Height | Approximate Weight per sq. ft. Tile | Partition Tile Cement Required per M sq. ft. Tile |
|---|---|---|---|
| 2x12x30 in. solid | 10 ft. | 10 lbs. | 500 lbs. |
| 3x12x30 in. hollow | 13 ft. | 10 lbs. | 700 lbs. |
| 4x12x30 in. hollow | 17 ft. | 13 lbs. | 900 lbs. |
| 6x12x30 in. hollow | 30 ft. | 20 lbs. | 1300 lbs. |

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MEMORANDUM



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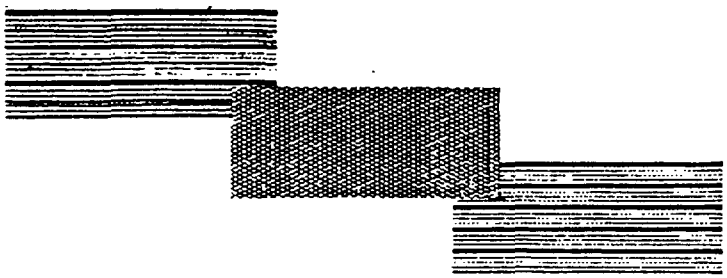

# USG COLOR-RITE METAL LATH

USG COLOR-RITE Metal Lath is rust-resisting copper alloy sheet steel, slit and expanded to form a multitude of small mesh openings. It is further protected by dipping the expanded sheet into black asphaltum paint. (Exception: 3.4 lb. diamond mesh when made from galvanized sheets.)

## ADVANTAGES OF USG COLOR-RITE METAL LATH

**1. Strength and Reinforcing**—Metal lath embedded within the plaster provides strength in a manner similar to steel reinforcement in concrete slabs, thus providing high resistance to transverse impact. It decreases the hazards of serious cracks and failures due to structural movement of the frame.

**2. Flexible**—Readily shaped to ornamental contours to a degree not possible with other plaster bases.

**3. Quality Plastering**—It makes the use of over-aggregated plaster in the scratch coat impractical.

**4. Economy**—Intended for highest quality, fire resistant, durable plastering with low maintenance costs.

**5. Fire Resistance**—Metal lath and gypsum plaster provide high fire ratings.

## USG COLOR MARKING SYSTEM

USG COLOR-RITE Metal Lath is the newest development in the metal lath industry. Ends of bundles are spray painted *red* for all 3.4 lb. lath, *white* for 2.5 lb. diamond mesh and 2.75 lb. ⅛" riblath, *yellow* for 4.0 lb. ⅜" riblath. This makes warehousing, inventory and job distribution easier and positive. An architect may quickly and visually inspect a job to make sure the weight lath he specified is used. When the lather erects the colored end to the right as we recommend, the plasterer saves up to 25 percent of the scratch coat; saves time and effort because of the uniform "drag" on his trowel since all sheets lay in the same direction.

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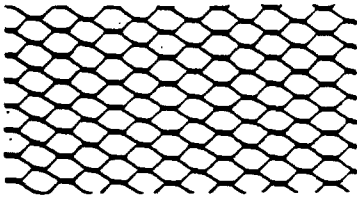


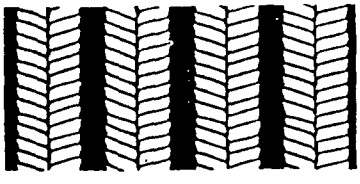
## USG COLOR-RITE Diamond Mesh Lath Size: 27 in. x 96 in.

**A small mesh (approximately 11,000 meshes per yard) diamond pattern metal plastering base.**

**A general all purpose lath. Best for ornamental, contour plastering. The small meshes conserve plaster and reduce droppings.**

**Weights:** 2.5 lbs. (End Painted White) and 3.4 lbs. (End Painted Red) per square yard. Galvanized available in 3.4 lb. weight only.

**Limitations of Use**—Specify "self-furring" for use as stucco base and 3.4 lb. galvanized where additional corrosion resistance is required. Also an ideal plaster base for lathing over old plaster surfaces.



## USG COLOR-RITE 1/8 in. Riblath (Flat Riblath)

**Size: 24 in. x 96 in.**

**A herringbone mesh pattern, with ⅛ in. deep Z-shaped ribs running lengthwise of the sheet at 1½ in. intervals.**

Stiffening ribs and herringbone pattern increase rigidity, thus permitting a wider spacing of supports or a saving in the weight of lath required. Particularly suitable for attachment by nailing. Small meshes conserve plaster materials.

**Weights:** 2.75 lbs. (End Painted White) and 3.4 lbs. (End Painted Red) per square yard.

**Limitations of Use**—Its rigidity makes it unsuitable for contour lathing. Use Diamond Mesh.

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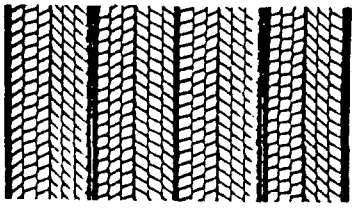
## USG COLOR-RITE 3/8 in. Riblath Size: 27 in. x 96 in.

**A herringbone pattern mesh with ⅜ in. deep V-shaped ribs running lengthwise of the sheet at 4½ in. intervals, with inverted intermediate ¼ in. ribs.**

**The heavy ribs provide exceptional rigidity. Used when supports are spaced more than 16 in. o.c. and not more than 24 in. o.c. and for 2 inch solid (studless) partitions.**

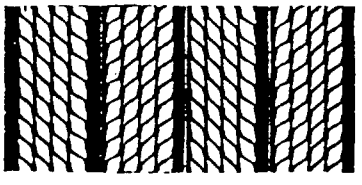
**Desirable as a plaster base for heavy duty plastering.**

**Used as centering and reinforcement for concrete floor and roof slabs.**



**Weights:** 3.4 lbs. (End Painted Red) and 4.0 lbs. (End Painted Yellow) per yard.

**Limitations of Use**—Its extreme rigidity makes ⅜ in. Rib-lath unsuitable for contour lathing. Use Diamond Mesh Lath.



## USG COLOR-RITE 4-Mesh Z-Riblath Size: 27 in. x 96 in.

**A "flat rib" type of lath with smaller mesh openings. An excellent nail-on lath, or for tie-on work on flat ceilings.**

**Weights:** 2.75 lbs. (End Painted White) and 3.4 lbs. (End Painted Red) per square yard.

**Limitations of Use**—Use Diamond Mesh lath for contour plastering.

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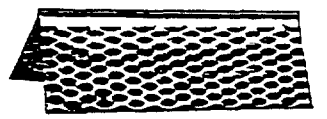
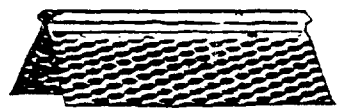
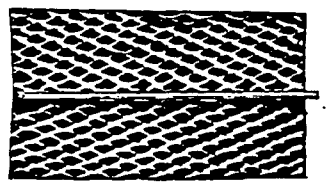
# STRUCTURAL AND TRIM ACCESSORIES

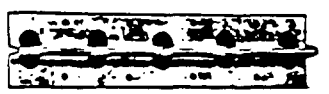


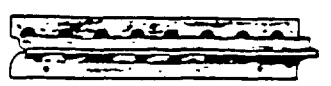












USG offers a complete line of accessories. All beads, base screeds and picture mould made from 26 gauge galvanized steel.

**1-A Expanded Corner Bead**—Its wide expanded flanges are easily flexed. Preferred for irregular corners. Provides increased reinforcement close to nose of bead.

**4-A Flexible Corner Bead**—The general purpose corner bead. Economical and most generally used. By snipping flanges, this bead may be bent to any curved design (for archways, telephone niches, etc.).

**5-A Bull Nose Corner Bead**—A ¾ in. radius bull nose bead with short flange. Used for rounded corners. Can be secured to corners with No. 9-A Corner Bead Clips attached to flanges, where wide nailing flanges are required.

**10-A Expanded Bull Nose Corner Bead**—A bull nose bead similar to above, but with 2½ in. wide expanded flanges. Especially suitable on corners where plaster base is uneven.

**3-A Expanded Flange Base Screed**—A flush type ½ in. ground (job shimmed to ¾ inch grounds) with wide flexible expanded flanges for added reinforcement or for attachment to uneven surfaces. Used as a dividing point between plastered surfaces and portland cement base.

**6-A Plain Base Screed**—A flush type ½ in. ground (job shimmed for ¾ in. grounds), used at the juncture of different finishes.

**7-A Curved Point Base Screed**—For use where base or wainscot is to project beyond the plastered surface. Made for ½ in. plaster ground (job shimmed for ¾ in. grounds) with ½ in. projection for base or wainscot.

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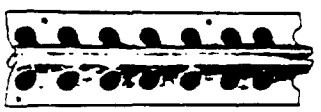
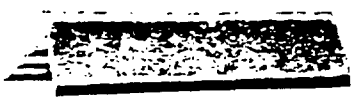
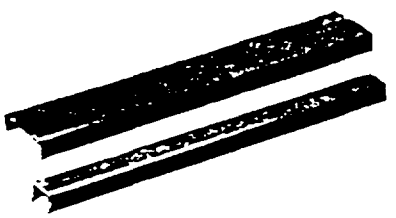


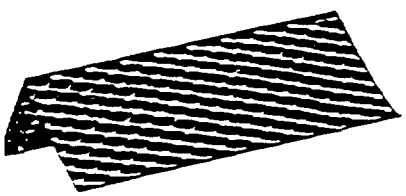
**8-A Picture Mould**—A concealed mould. Attached to lath and plastered flush to the slotted opening. Grounds ½ in. (job shimmed for ¾ in. grounds).



**USG 2 in. Partition Terminal**—For use as a vertical partition terminal for 2 inch solid metal lath or ROCK-LATH partitions, or as a runner where 2 inch partitions abut an unplastered surface. Cap is of 18 gauge steel welded to a 24 gauge punched runner. Standard length 8'-2". Prime coated.

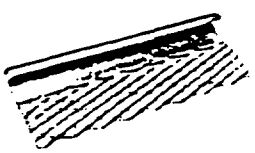


**Lathing Channels**—Strong, lightweight cold rolled channel sections used for furring, suspended ceilings, partitions, etc. Sizes: ¾ in. or 1½ in., 16 ft. or 20 ft. lengths. Weights: ¾ in. 300 lbs. per M Lin. Ft., 1½ in., 514 lbs. per M Lin. Ft. Made of 16 gauge steel, black asphaltum painted.



**USG Selv-Edge Cornerite and Striplath**—Cornerite is a 4 in. or 6 in. wide strip of 2.5 lb. copper alloy painted diamond mesh lath, bent to form a 100° angle, length 96 in.

Striplath is a 4 in. or 6 in. wide strip of 2.5 lb. diamond mesh lath, copper alloy, painted, 96 in. long.



**Metal Door and Window Casing Beads**—Used as a plaster stop and ground at window and door openings, eliminating wood trim.

| No. | Type | Flange |
|---|---|---|
| 4 | quarter round | expanded |
| 138 | quarter round | short |
| 60 | semi square | short or exp. |
| 66 | square | short or exp. |



All expanded flange casings available in ½" and ¾" grounds; short flange in ½", ¾" and ⅞" grounds. All casings manufactured from 24 gauge galvanized steel and furnished in 7', 8' and 10' lengths.



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# APPLICATION of METAL LATH

**IMPORTANT**

Observe the minimum weights of lath for spacing of supports listed in table below. Use only clean sand, perlite or vermiculite for plastering. Do not use unwashed salt water sand. When humidity is higher than normal and moisture or acid fumes are anticipated, contact your nearest USG Sales Office for proper recommendations.

## How to Erect COLOR-RITE METAL LATH

1. Lath ceilings first with sheets carried down six inches on to the walls and partitions. If metal lath is not used on the ceiling, then carry out metal lath six inches from the walls onto the ceiling plaster base.

2. Apply metal lath with long dimension of the sheet running across the studs, joists or furring channels. Secure sheets by nailing along studs or joists or tieing to channels at not more than six inch intervals.

3. On sidewalls, begin lathing at top and continue downward. Place sheets so that the lower sheet laps over the upper sheet. Diamond mesh

## USG METAL LATH TECHNICAL DATA

**TYPES AND WEIGHTS OF METAL LATH AND SPACING OF SUPPORTS**

| Type of Lath | Weight Per Square Yard | Type of Steel |
|---|---|---|
| Diamond Mesh | 2.5 lb. | Copper Alloy (1) |
| Diamond Mesh | 3.4 lb. | Copper Alloy |
| Diamond Mesh | 3.4 lb. | Galvanized (2) |
| ⅛" Z-Rib | 2.75 lb. | Copper Alloy |
| ⅛" Z-Rib | 3.4 lb. | Copper Alloy |
| ⅜" Rib | 3.4 lb. | Copper Alloy |
| ⅜" Rib | 4.0 lb. | Copper Alloy |
| STUCCOMESH (3) | 1.8 lb. | Copper Alloy |
| STUCCOMESH | 3.6 lb. | Copper Alloy |

**Notes**

*(1) Copper alloy lath contains from 0.2% to 0.25% pure copper.*
*(2) Galvanized lath is cut from galvanized sheets.*
*(3) STUCCOMESH generally applied over exterior sheathing.*

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lath is carried around corners at least one stud spacing.

4. Riblath on both sidewalls and ceilings is applied with ribs against the supports.

5. Lap diamond mesh at sides not less than ½ in. and at ends not less than 1 in. Riblath is lapped at sides by nesting outside ribs, and at ends by lapping not less than 1 in.

6. Tie all side laps with 18 gauge tie wire at least midway between joist or stud supports, but at not more than 9 in. intervals.

7. Ends of sheets generally should occur over supports; if between, ends of sheets must be securely laced together with 18 gauge tie wire.

8. Staggering of sheets is preferred, but not essential.

## How to Nail COLOR-RITE METAL LATH

**DIAMOND MESH and FLAT RIBLATH**

**On walls**—4d common nails driven ¾ in. and bent to engage three strands, or 1 in. 7/16 in. head roofing nails, or 1 in. No. 14 wire staples.

**On ceilings**—1½ in. No. 11 gauge, 7/16 in. head barbed roofing nails.

**⅜ IN. RIBLATH**

**On walls**—4d common nails driven through the rib or 6d common nails driven ¾ in. and bent over the rib.

**On ceilings**—1½ in. No. 11 gauge

| | Maximum Allowable Spacings | | | | |
|---|---|---|---|---|---|
| | Vertical Supports | | | Horizontal Supports | |
| | Wood | Metal | | | |
| Size Sheets | | Solid Partitions | Others (5) | Wood or Concrete | Metal |
| 27" x 96" | 16" | 16" | 12" | (4) | (4) |
| 27" x 96" | 16" | 16" | 16" | 16" | 13½" |
| 27" x 96" | 16" | 16" | 16" | 16" | 13½" |
| 27" x 96" | 16" | 16" | 16" | 16" | 12" |
| 27" x 96" | 19" | 24" | 19" | 19" | 19" |
| 27" x 96" | 24" | 24" | 24" | 24" | 24" |
| 27" x 96" | 24" | 24" | 24" | 24" | 24" |
| 48" x 99" | 16" (3) | | | | |
| 48" x 99" | 16" (3) | | | | |

All metal lath (except galvanized) is painted with a rust-inhibitive black asphaltum paint.

*(4) Not recommended, except for fireproofing of steel shapes.*

*(5) Including vertical furring.*

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⅛ in. head barbed roofing nail driven through the rib.

Lathing nails—for 16 in. stud spacing, nailing 6 in. o.c. requires approximately 17 nails per sq. yd.

## Tie-Up Work

For tying metal lath to channels use 18 gauge galvanized annealed tie wire. For tying channels to channels (horizontal or vertical construction) use 4 strands of 18 gauge or 2 strands of 16 gauge galvanized annealed tie wire.

## Estimating Quantities

**For Suspended Ceilings**—The following "rule of thumb" method will be found helpful in making a quick approximate quantity estimate.

1. Determine surface area in square feet. Example: ceiling area 30 x 100 feet = 3,000 square feet. Divide by 9 to determine square yards of metal lath required.
Assume standard suspended ceiling construction of 1½ in. runner channels 3 feet apart, and ¾ in. furring channels either 12 in. or 16 in. apart, depending on type and weight of metal lath used.

2. Quantity of 1½ in. channels 3 feet apart—divide square foot area by 2½ (3,000 divided by 2½ = 1200 lineal feet).

3. Quantity of ¾ in. channels 12 in. apart—multiply square foot area by 1.1. (3,000 x 1.1 = 3,300 lineal feet.)

4. Quantity of ¾ in. channels 16 in. apart—multiply square foot area by 0.8. (3,000 x 0.8 = 2,400 lineal feet.)

5. Figure tie wire at approximately 10 pounds per 100 square yards of lathing.

## Nail Data

| | Length | Gauge | No. per lb. |
|---|---|---|---|
| Barbed Roofing Nails (⅞ in. head) | 1 in. | No. 11 | 275 |
| | 1½ in. | No. 11 | 188 |
| Common Nails | 4d | No. 12½ | 316 |
| | 6d | No. 11½ | 181 |

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## SIZE AND SPACING OF HANGERS FOR SUSPENDED CEILINGS

| Size & Type | Maximum Ceiling Area Supported per Hanger | Maximum Center to Center Spacing of Hangers |
|---|---|---|
| No. 9 Gauge Galvanized Wire | 12½ sq. ft. | 4 ft. x 3 ft.; 3½ ft. x 3½ ft. |
| No. 8 Gauge Galvanized Wire | 16 sq. ft. | 4 ft. x 4 ft.; 5 ft. x 3 ft. |
| ⅛" Mild Steel Rod (1) (2) | 25 sq. ft. | 6 ft. x 4 ft.; 7 ft. x 3½ ft.; 8 ft. x 3 ft. |
| ¼" Mild Steel Rod (1) (2) | | |
| ¾" x 1" Mild Steel Flat (1) (2) | | |

(1) Galvanized rods and rust inhibitive painted or galvanized straps recommended where severe moisture conditions may occur.

(2) Not manufactured or supplied by United States Gypsum Company.

## SIZE AND SPACING OF MAIN RUNNERS

| Size & Type | Weight per 1000 Lineal Feet | Maximum Spacing of Hangers along Runners | Center to Center Spacing of Runners |
|---|---|---|---|
| 1½" Cold Rolled Channel | 514 lbs. | 4 ft. | Up to 4 ft. |
| 1½" Hot Rolled Channel (2) | 1120 lbs. | 5 ft. | Up to 4 ft. |
| 2" Cold Rolled Channel | 625 lbs. | 5 ft. | Up to 4 ft. |
| 2" Hot Rolled Channel (2) | 1260 lbs. | 6 ft. | Up to 4 ft. |
| 2½" Hot Rolled Channel (2) | 1500 lbs. | 7 ft. | Up to 3½ ft. |
| 2½" Hot Rolled Channel (2) | 2270 lbs. | 8 ft. | Up to 3 ft. |

2) Not manufactured or supplied by United States Gypsum Company.

## STEEL STUD PARTITIONS
## (PER 100 SQ. YDS.—ANY CEILING HEIGHT)

| Lineal Feet of Ceiling or Floor Runner Required | With Spacing of Studs | Approximate Lineal Feet of Studs Required |
|---|---|---|
| 900 + *ceiling height* | 12 in. | 910 lin. ft. |
| Same | 16 in. | 675 lin. ft. |
| Same | 19 in. | 570 lin. ft. |
| Same | 24 in. | 455 lin. ft. |

Lath one side—100 sq. yds. required.

Lath two sides—200 sq. yds. required.

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MEMORANDUM



BBO13 00BB

# Basecoat Plasters


| | PAGE |
|---|---|
| **RED TOP Gypsum Basecoat Plasters**<br>Aggregates<br>Mixing—Application<br>Important Job Precautions | 32 |
| **RED TOP Cement Plaster** | 38 |
| **RED TOP STRUCTO-LITE Plaster** | 38 |
| **RED TOP BONDCRETE Plaster** | 39 |
| **RED TOP Wood Fiber Plaster** | 39 |
| **Portland Cement Plasters** | 41 |


Basecoat plasters are applied to bases of masonry or lath and support the finish coat. Their primary functions are to cover the base, receive the finish coat, and tie together all units into a durable continuous slab.

Of the three general types of basecoat plasters, gypsum plaster is by far the most modern and widely used. Portland cement plaster excels for a few specialized uses, while lime plasters—very limited in use—have been largely replaced by gypsum and portland cement.

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# RED TOP Gypsum Basecoat Plasters

### ADVANTAGES

**Uniform**—setting time is stabilized. Hazards due to job conditions and variables in water and aggregates are minimized. Controlled set assures maximum hardness and high strength.

**Fireproof**—gypsum is incombustible, will not transmit high temperatures until completely calcined. It actually fights fire by retarding spread of flame.

**Plastic**—gypsum base coats are highly workable and easy to apply.

**Strong**—capable of withstanding normal wear and abuse for the lifetime of the building.

**Adaptable**—gypsum bonds firmly to any approved plaster base and will take most any type of finish coat.

**Economical**—high coverage with minimum effort. Easily worked and mixed.

### GENERAL LIMITATIONS OF USE

1. Aggregate must be added strictly according to specifications. Use of too much aggregate reduces the strength of the plaster slab.
2. RED TOP Cement, STRUCTOLITE or Wood Fiber Plasters should never be applied to concrete. Use BONDCRETE as required according to directions.
3. RED TOP Plasters should not be used on exteriors exposed to the elements, or on interiors where excessive water or moisture is expected. Use Portland cement-lime plaster.
4. Bituminous compounds do not provide a good base for gypsum plaster basecoats. Therefore, do not apply such plasters to masonry walls and concrete that have been treated with these compounds.
5. Because of possible moisture condensation or water seepage, direct plastering to the inside of exterior masonry walls is not recommended. Such walls should be furred prior to plastering.
6. When used in conjunction with Radiant Heating systems, the temperature at the surface of plaster shall not exceed 115° F, nor shall water in the pipes embedded in the plaster exceed 125° F. Gypsum-sand plaster has approximately three times the conductivity of gypsum-lightweight aggregate plasters.

## Aggregates

Aggregates in the form of sand—and more recently, perlite and vermiculite—are added to gypsum cement plasters to extend coverage and reduce cost. They also act as a gauging agent to minimize shrinking of gypsum in setting.

The proper use and proportioning of aggregates with gypsum plaster determine the ultimate strength and



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hardness of a plastered wall. Typical compressive and tensile strengths that result with use of sand and lightweight aggregates (perlite, vermiculite) in varying plaster mixes are shown in the chart on following page.

The American Society for Testing Materials in ASTM Designation C35-54T has established the following specifications as standard for the proper gradation of good plastering aggregate:

| Sieve Size | Percentage Retained on Each Sieve | | | | | |
|---|---|---|---|---|---|---|
| | Perlite, by volume | | Vermiculite by volume | | Sand, by weight | |
| | Max | Min | Max | Min | Max | Min |
| No. 4 | 0 | ... | 0 | .... | 0 | .... |
| No. 8 | 5 | 0 | 10 | 0 | 5 | 0 |
| No. 16 | 45 | 10 | 75 | 40 | 30 | 5 |
| No. 30 | 85 | 45 | 95 | 65 | 65 | 30 |
| No. 50 | 95 | 75 | 98 | 75 | 95 | 65 |
| No. 100 | 100 | 88 | 100 | 90 | 100 | 90 |

**SAND**

Sand is the most commonly used plaster aggregate because it is economical and widely available. Proper proportioning and gradation of sand are most important in determining bulk and working qualities of plaster, and the ultimate quality of the finished wall. Over-sanding or the use of an excessive amount of fine sand reduces the strength and hardness of gypsum plasters.

**VERMICULITE**

is mined as a mica rock, ground and expanded under heat into lightweight granules for use as a plaster aggregate. It should weigh between 7½ lbs. and 10 lbs. per cubic foot and comply in gradation with ASTM designation C35-54T Inorganic Aggregate for use in Interior Plaster.

Walls plastered with gypsum plas-

## Recommended Proportioning & Coverage

**Gypsum Cement Plaster (weight) Sand (weight) or Gypsum Cement Plaster (100 lbs.) Perlite or Vermiculite (cu. ft.)**

| Plaster Base | Gypsum Lath | Metal Lath | Unit Masonry |
|---|---|---|---|
| Two Coat Work<br>Scratch-Double Back | 1:2½ | — | 1:3 |
| Three Coat Work<br>Scratch coat<br>Brown Coat | 1:2<br>1:3 | 1:2<br>1:3 | —<br>— |
| Coverage Range<br>Sq. Yds. Per Ton | 175-220 | 90-125 | 175-200 |

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## Relative Strength of Various Plaster Mixes

| | Wood Fiber | Cement Plaster | | | Cement Plaster | | Cement Plaster | |
|---|---|---|---|---|---|---|---|---|
| | | Plaster to Sand by Weight | | | Vermiculite per 100 # Cement Plaster | | Perlite per 100 # Cement Plaster | |
| Mix | Neat | 1:1 | 1:2 | 1:3 | 2 cu. ft. | 3 cu. ft. | 2 cu. ft. | 3 cu. ft. |
| Compressive Strength lbs. per sq. inch | 2100 | 1900 | 1200 | 750 | 500 | 300 | 1000 | 650 |
| Tensile Strength lbs. per sq. inch | 400 | 245 | 170 | 120 | 130 | 90 | 165 | 105 |

When the proper amount of aggregate has been used, each grain of aggregate is cemented on all sides to its neighbors by the gypsum. When the proportion of aggregate to plaster is excessive, the aggregate is not properly cemented. See illustrations below.

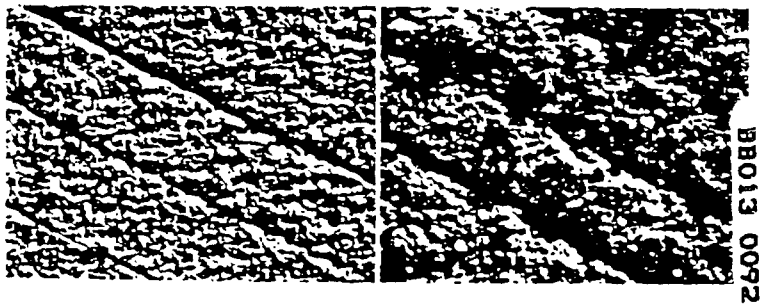
ter containing vermiculite as an aggregate have lower strength and require a longer period for drying than walls of sanded plaster, but are lighter in weight and have greater fire resistance.

Where hard finish coats (Keenes cement) are to be used, reduce the proportion of vermiculite to gypsum plaster in the basecoat. Vermiculite is proportioned with gypsum plaster on a volume of aggregate to weight of plaster basis, and the proportioning should be in strict compliance with the table on Page 33.

**PERLITE**

Perlite is a lightweight plaster aggregate produced from a volcanic rock. The perlite ore is ground and screened to proper size, then expanded to produce a light grey or white colored aggregate. Perlite ag-

**PROPER AMOUNT OF AGGREGATE** **EXCESSIVE AGGREGATE**



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gregate for plastering should weigh between 7½ and 15 lbs. per cubic foot. It should meet ASTM C35-54T Inorganic Aggregate for use in Interior Plaster. It has excellent fire-resisting qualities and when mixed with gypsum plaster it provides a higher strength plastered wall than does vermiculite. (*See* comparative strengths of various basecoat plasters, *page 34.*)

Perlite is added to gypsum plaster on a volume of perlite to weight of plaster and should be proportioned in strict accordance with specifications.

**Note:** See limitations, pages 32 and 37, if perlite or vermiculite aggregate is to be used with plaster on radiant heating jobs.

### WATER

All gypsum plasters require the addition of water on the job. Water provides lubrication and workability to permit application to the plaster base. It also induces the proper setting of gypsum. As a general rule, any water fit to drink is suitable for mixing with plaster.

### MIXING

Gypsum basecoat plasters may be machine or hand mixed. The former is preferred because it disperses the plaster, the aggregate and the water more evenly.

**Machine Mixing**—place the required water in the mixer. Add approximately half the required aggregate. Add all the plaster. Add the balance of the aggregate. If necessary add more water to obtain the proper consistency. Mix not less than 1 minute or more than 3, depending on the speed of the mixer. Dump the entire batch at once. Clean the mixer thoroughly when not in use or continuous operation.

**Box Mixing**—dry mix plaster and aggregate together until completely blended. Add water, and hoe plaster into the water until thoroughly mixed to proper consistency.

### PLASTER GROUNDS AND THICKNESS

To attain proper wall strength it is essential that the plaster slab be applied to the proper thickness. This is controlled by the use of grounds.

Grounds should be set to provide a minimum plaster thickness of: (a) ½ inch over gypsum lath; (b) ⅝ inch over gypsum partition tile, brick, clay tile or other masonry, (c) ¾ inch over metal lath when measured from the back of the lath (⅝ inch from face of the lath).

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# APPLICATION of RED TOP PLASTERS

Plastering specifications may require either two-coat or three-coat work.

**Two-Coat Work** consists of one base coat and one finish coat. It is generally used over a masonry plaster base and often over gypsum lath. The basecoat plaster is applied in one coat by either the "single-foot" or the "scratch-double-back" method to slightly less than the thickness of the grounds. It is rodded and darbied to a true, even surface left rough enough to take the finish coat.

**Three-Coat Work** consists of a scratch coat, a brown coat and a finish coat. Three coats are required over fiber insulating or metal lath. The first or "scratch" coat properly aggregated is applied to a thickness of approximately ¼ inch over the face of the lath and then cross-raked before it sets. This provides a mechanical key for the brown coat.

The brown coat is then applied directly to the *set* scratch coat. The brown coat is used to fill out to just slightly below the grounds and is rodded and darbied to a true, even surface. It is left rough enough to properly receive the finish coat.

**IMPORTANT JOB PRECAUTIONS**

**1. Equipment and Storage of Materials**—All successful plaster jobs require adequate equipment (mortar boxes, mortar boards, scaffolding and tools). Every job should be properly planned to provide ample scaffolding to permit continuous application of both basecoat and finish plasters for a complete panel of either a wall or ceiling. Keep all mixing tools clean. Wash them in clear water only. Keep plaster stored in a dry location. Stack on planks raised off the ground and away from damp walls or doors.

**2. Heating**—Plaster must not be applied to surfaces that contain frost. A minimum temperature of 55° F. should be maintained in the building for an adequate period prior to, during and after the application of the plaster. In cold, damp or rainy weather, properly regulated heat should be provided, but precautions must be taken against too rapid drying before set has occurred. This avoids "dry outs."

**3. Ventilation**—As soon as the plaster has set, free circulation of air should be provided to avoid "sweat outs." After plaster has set, heating should be continued to insure as rapid drying as possible. In hot, dry weather, protect the plaster from wind, and from drying unevenly or too rapidly before set has taken place. If glazed sash are not in position, exterior openings in the building should be screened with cheesecloth or similar material.

**4. Finishing Over Lightweight Aggregate Basecoats**—The use of lightweight aggregates (perlite and vermiculite) with gypsum basecoat plasters often results in a basecoat



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having a high suction (because of higher porosity). In applying a finish coat over this high suction base, the water in the finish coat is quickly sucked into the thirsty basecoat making application of finish difficult, due to loss of easy working characteristics of the finish plaster. Furthermore the finish coat is sometimes susceptible to severe check cracking, because water is sucked out before gauging plaster is set—thereby nullifying purpose of the gauging plaster (provide initial set to avoid possible shrinkage of the lime-putty finish).

Necessary precautions should be taken to apply finish coat plaster before the basecoat becomes thoroughly dry. When a basecoat has become bone dry, before finishing, spray lightly with water to eliminate the excessive suction of the basecoat, then apply finish coat.

**5. Radiant Heating**—The Gypsum Association makes the following recommendations when radiant heating coils are specified for use in a ceiling or are to be embedded in the plaster slab.

**a.** In all radiant panel heating systems where gypsum plaster or gypsum products are concerned, the surface temperature shall not exceed 115 degrees F. In those systems where pipes are embedded in gypsum plaster, this shall be met by requiring the water temperature in the pipes in contact with the plaster not to exceed 125 degrees F.
(*Note: The 125°F maximum water temperature is 15°F below that recommended in the ASHACE Guide to avoid possibility of calcination of the gypsum.*)

**b.** Radiant heating coils should *not* be used to heat the building or dry the plaster slab in which they are imbedded. The heating system should only be turned on and brought up to operating temperatures very slowly *after the plaster slab is thoroughly dry.*

**c.** Where heating elements are embedded in gypsum plaster, a minimum cover of ⅜" shall be maintained over the coils.

**d.** In radiant panel heating systems where the pipes are to be embedded in plaster applied to metal lath or gypsum lath, these pipes shall be supported by the *framing* and *not* by the lath.

**e.** Gypsum plaster, when used with radiant panel heating systems, shall be mixed and applied in accordance with the ASA A42.1 "Standard Specifications for Gypsum Plastering."

The design of a radiant panel heating system is the responsibility of a heating engineer, and the lathing and plastering specifications *must* be established by the designer. Therefore, lightweight aggregates (vermiculite and perlite) or mill mixed plasters incorporating them (Structolite), should *not* be used unless the heating engineer, heating contractor or architect have designed the heating system for their use, as lightweight aggregates offer greater resistance to the flow of heat than plasters mixed with sand.

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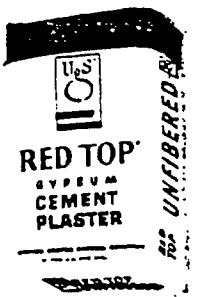
## RED TOP Cement Plaster

This is a "neat" gypsum plaster which requires the addition of an aggregate (sand, vermiculite, perlite) and water on the job. It is the most common base coat plaster because job-addition of aggregate generally provides low cost. It is used for both scratch and brown coat work, and for application over all approved plaster bases.




RED TOP Cement Plaster is available in two types: Regular for sand aggregate and LW Formula for lightweight aggregate—both types available for machine application or hand application. For hand application both types are available "fibered" or "unfibered."

It is usually desirable to use fibered plaster for scratch coat work on metal lath. It helps hold plaster mortar to lath until set takes place. Unfibered plaster is suitable for use over all other bases.

The use of fiber in plaster stems from its use with lime base coat plasters years ago. Lime does not set and requires a long period of time to harden. Consequently fiber was necessary to add cohesiveness to the mass.

### ADVANTAGES

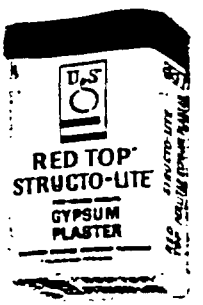
RED TOP Cement Plaster is fireproof, adaptable, plastic, uniform and strong. It is perhaps the most economical base coat plaster in use today.

### LIMITATIONS

see general limitations noted on page 32. Job-addition of aggregates must be in strict accord with gradation and proportioning specifications.

## RED TOP STRUCTO-LITE Plaster

This is a mill-prepared base coat plaster using a properly graded and proportioned perlite aggregate. It is ready for use with the addition of water only on the job.



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**ADVANTAGES**

Controlled proportioning of a properly graded and sized perlite aggregate.

Weighs much less than plaster and sand aggregate. Less than half the weight on wall.

More fireproof. Offers fire ratings almost double those attained with plaster and sand.

Mill formulation reduces suction to that of plaster and sand, assures easy application of the finish coat. Job-mixed lightweight aggregates often create considerable suction for finish coat work. Stabilized set.

**LIMITATIONS**

See general limitations page 32.

## RED TOP
## Wood Fiber Plaster

This is a mill prepared base coat plaster containing a wood fiber aggregate and requiring the addition of water only on the job. Over masonry surfaces, one part sand by weight may be added for easier working qualities, and to minimize shrinkage cracks.

**ADVANTAGES**

RED TOP Wood Fiber Plaster is recommended for use where excessive strength, toughness, or a higher fire rating is required. It has: three times the compressive and tensile strength of plaster sanded 1:3 (*see page 34*); approximately 50% greater surface hardness; 50 to 100% greater fire rating than plasters containing sand.

Highly desirable for use where good plastering sand is not available, and for alteration, patch and repair work.

**LIMITATIONS**

see general limitations page 32.




## RED TOP
## BONDCRETE Plaster

This is a specially formulated gypsum base coat plaster requiring only the addition of water on the job. It is the only recommended base coat plaster for application to properly prepared, rough monolithic concrete.

**ADVANTAGES**

unlike normal gypsum base coat plasters, BONDCRETE has thermal expansion equal to concrete, which provides continuous bond to this type surface.

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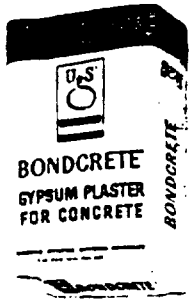


**LIMITATIONS**

BONDCRETE should be used only on rough concrete that is properly prepared for plastering. It should *never* be applied to smooth concrete.

Maximum thickness of BONDCRETE and finish coat should not exceed 3/8 in. on ceilings, and 5/8 in. on walls. If additional thickness is required, metal lath must be properly secured to the concrete surfaces before applying the plaster.

**Surface Preparation**—monolithic concrete surfaces should be brush-cleaned of all dust, loose particles and other foreign matter. Any laitance and efflorescence should be removed by washing with a 10% solution of commercial muriatic acid and water. Grease or form oil should be removed by wiping with naphtha spirits.

If surfaces are not rough enough to provide necessary mechanical key, they should be hacked or bush-hammered; or a dash-coat of portland cement grout composed of 1 part of cement and 1½ parts of fine sand (mixed to a mushy consistency) may be applied. Keep this coat damp for at least 2 days immediately following application and then allow to dry. Before application of BONDCRETE, the surface should be evenly dampened to provide proper suction.

**Application to Concrete Ceilings**—apply coat of BONDCRETE Plaster, scratching in thoroughly, doubling back and filling out to true, even surface left rough by brooming to receive the finish coat.

**Application to Walls and Columns**—apply a scratch coat of BONDCRETE. Follow with a brown coat of gypsum plaster (1 part RED TOP Cement Plaster to not more than 3 parts of sand by weight) troweled into the scratch coat *before* it has set. Bring out to grounds and level to true, even surface using rod and darby. It is then ready to receive the finish coat. Total thickness of plaster should not exceed 5/8 in.

## Portland Cement-Lime Base Coat Plaster

Portland cement, with the addition of lime to provide working qualities and water resistance, is frequently mixed with sand and water to form a plaster mortar. It is chiefly used as a base coat for exterior stucco and in places subject to excessive moistu such as swimming pools, show dairies and steam rooms, and a back up material for ceramic tile



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**LIMITATIONS**

Portland cement-lime base coat plaster is comparatively unplastic and hard to apply, thus high in cost. It must be kept damp to properly cure and prevent drying out and cracking. Several days delay between coats is necessary to assure proper curing and hardening.

**Mixing and Application**—Mix scratch coat in the proportion of one bag of portland cement, two bags of MORTASEAL or RED TOP Masons Hydrated Lime (2 cu. ft. lime putty) and not more than 7½ cu. ft. of sand (approximately 40 No. 2 shovels). For application over stucco mesh or self-furring metal lath, approximately two pounds of hair or fiber should be added to each mix.

Mix brown coat in the proportion of one bag of portland cement, two bags MORTASEAL or RED TOP Masons Hydrated Lime (2 cu. ft. lime putty) and not more than 9 cu. ft. of sand, approximately 50 No. 2 shovels).

Scratch coat should be applied in a full ⅜ in. thickness with sufficient pressure to form a good bond with masonry surface or to force it through and completely embed the stucco mesh or metal lath. Cross scratch, and after set, damp cure for not less than 48 hours.

Brown coat should be applied over the dampened scratch coat to a full ⅜ in. thickness with sufficient pressure to form good bond. Rod the brown coat level, and broom the surface to provide key for the finish coat. After set, damp cure at least 48 hours before applying the finish coat. (See ORIENTAL Exterior Stucco for finish coat, *page 49*).

**Curing**—damp cure each coat by applying water in a fine fog spray. Apply only as much water as is readily absorbed. The frequency of spraying depends on the weather, with more frequent applications required during hot, dry or windy weather.

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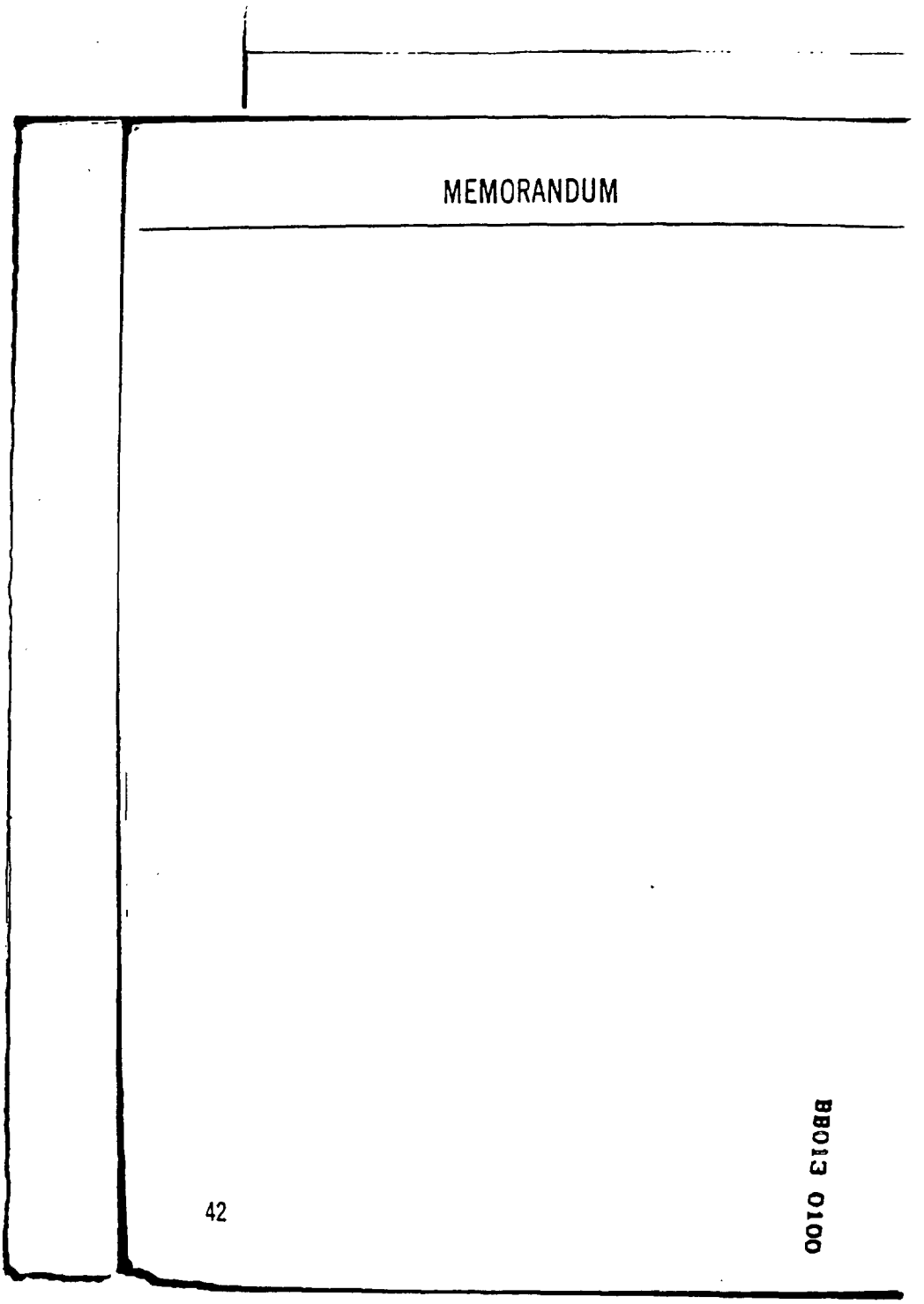
MEMORANDUM
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# Finishing Plasters


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| **Keene's Cement-Lime Putty** | **46** |
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Finish-coat plasters applied to basecoats (generally of gypsum plaster) provide the surface for final wall or ceiling decoration. They are either factory prepared, requiring the addition of water only; or they may be job-mixed by blending lime putty and gauging plaster, or Keene's Cement or STRUCTO-GAUGE. Finish-coat plasters are normally applied to a thickness of 1/16 inch for trowel finishes, up to 1/8 inch for float finishes and 1/2 inch for acoustical plaster finishes.

Finish-coat plasters are selected according to job requirements for texture, color, hardness, sound absorption and type of base coat.

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# USG Finishing Plasters

## Gypsum-Lime Putty Finishes

Finish lime putty into which is blended a gypsum gauging plaster is commonly known as "white coat." It is the most widely used finish coat because of its good working qualities, whiteness, economy and ability to take any form of decoration. Usually it is troweled to a smooth hard surface over a gypsum base coat. With the addition of sand, it is adaptable for sand-float finishes.

## FINISHING LIMES

Made from specially selected limestone rock of high purity, the most popular finishing limes come from the dolomitic fields in northwestern Ohio. They have excellent working qualities.

There are three types of finishing limes: (1) double hydrate, (2) normal hydrate and (3) quick lime. Each requires specific handling in slaking or soaking to produce a good finishing lime putty.

## Double Hydrate Finish Lime

Usually made from Ohio dolomitic limestone. It is over 92% hydrated during manufacture which eliminates troubles from delayed hydration, expansion and separation in the wall. Upon mixing with water, double hydrate finish lime *immediately* develops high plasticity. Thus, overnight soaking is unnecessary.

**ADVANTAGES**

Can be mixed with water by hand or with mechanical mixer. Becomes highly plastic right away. Easy working; uniform; white. Eliminates troubles from delayed hydration.

**USG Brand**—IVORY FINISHING LIME (Genoa, Ohio).

## Normal Hydrate Finish Lime

generally made from Ohio dolomitic limestone, it is the most widely used today. Although hydrated in manufacture, overnight soaking is still necessary to develop workability and plasticity.

**ADVANTAGES**

economical, uniform, easy working, white and plastic.

**LIMITATIONS**

Requires overnight soak.

**USG Brands**—GRAND PRIZE and RED TOP Finish Hydrate (Genoa, Ohio).

## Finish Quicklime

is usually made from high calcium limestone. It is produced and used in areas where it is not economical to ship from the Ohio lime fields.

Quicklime or "hot" lime requ slaking and relatively long per



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of soaking for complete hydration and to develop the plasticity necessary for easy application.

**ADVANTAGES**

economical because of its high putty yield. Easy working.

**LIMITATIONS**

Requires long slaking period. Unless handled carefully can cause serious burns in handling.

**USG Brand**—RED TOP Finish Quicklime (Texas).

## GAUGING PLASTERS

Lime does not "set" but hardens slowly. It likewise shrinks on drying. Therefore, gauging plaster is blended into the lime putty in proper proportion to provide controlled set and strength, and to avoid shrinkage cracks when used as a finish coat.

RED TOP Gauging Plasters are carefully ground and screened to just the right particle sizes to make this plaster quick soaking and easy to blend with lime putty.

Gypsum gauging plasters are available in "quick set" and "slow set," making it possible for the mechanic to use the material which best suits him. This makes it unnecessary to add retarder or accelerator for regulating the set of the finish. They are available as white gauging and local gauging which is somewhat darker in color. For brilliant white finishes, white gauging plaster should be used.

**MIXING & APPLICATION**

Gauging plaster is added to the lime putty in the proportion of one part of dry gauging to not more than 3 parts of lime putty by volume, or one part of dry gauging to not more than 2 parts of dry hydrated lime by weight. (Mixing on board—use 2 quarts of water in putty ring for each 12 qt. bucket of lime putty. One hod of lime putty equals approximately 36 qts. A 12 qt. bucket of lime putty, 35-40 lbs., contains 18-20 lbs. of hydrated lime on dry weight basis. Sift sufficient gauging plaster into this water to completely soak up the water.)

After the gauging plaster is sifted into the lime putty ring and allowed to soak a few minutes, the materials are *thoroughly* blended to avoid gauging "streaks" and to provide uniform density in the finish coat.

The gauged lime putty is applied over a partially dry gypsum base coat. Scratch in a thin coat, well ground into the base coat, and immediately double back with a second coat, filling imperfections. (A third or thin "sweetening coat" is sometimes applied to fill in any further imperfections that remain after the second coat has "taken up.") After the base coat has sucked most of the excess water from the finish, it is troweled to densify the surface and help eliminate check cracks.

As final set takes place, it is water-troweled thoroughly to provide a dense, smooth surface suitable for decoration.



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## Keene's Cement-Lime Finish

RED TOP Keene's Cement is a high strength, white gypsum plaster used with finish lime putty for extremely hard, dense surfaces.

Although Keene's Cement is a gypsum material, it differs from other gypsum plasters in several particulars; it is slow-setting; it is the *only* gypsum plaster that can be re-tempered; and the finish coat requires more troweling.

RED TOP Quick-Troweling Keene's sets faster and requires less troweling. It *must* be used with a minimum of 25 lbs. of dry hydrated lime per 100 lbs. of Keene's Cement.

Keene's-Lime Finish is similar in many respects to a lime-gauging finish except that Keene's Cement is used in varying proportions, depending on hardness required, in place of gauging plaster. Keene's-lime finish should be used where greater resistance to moisture, and greater surface hardness and resistance to abrasion are desired—as in hospitals, kitchens, bathrooms and corridors.

For medium hard finish, mix in the proportion of 50 lbs. of dry hydrated lime (100 lbs. lime putty) to 100 lbs. of Keene's Cement.

For hard finish, limit the quantity of lime to 25 lbs. of dry hydrated lime (50 lbs. lime putty) to 100 lbs. of Keene's Cement.




**APPLICATION**

the finish coat is applied over a set base coat which has been broomed and is partially dry. (If base coat has dried out, spray with water before finishing; do not soak). Scratch in a thin coat well ground into the base coat and immediately double back with a second coat filled out to a true, even surface. Allow to draw up a few minutes, then trowel with water to a smooth glossy finish, free of cat faces and other blemishes. Continue troweling until finish has set.

| AVAILABLE USG BRANDS | SET WITH LIME PUTTY |
|---|---|
| RED TOP CHAMPION Gauging Plaster (white) | Quick set—20-30 min. |
| RED TOP STAR Gauging Plaster (white) | Slow set—45-60 min. |
| RED TOP Gauging Plaster (gray) | Slow set—45-60 min |
| RED TOP Gauging Plaster (gray) | Quick set—20-30 n |
| RED TOP Regular Keene's Cement (white) | 3-6 hours |
| RED TOP Quick Troweling Keene's Cement (white) | 1-2 hours |
| USG STRUCTO-GAUGE | 1-1¼ hours |



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**LIMITATIONS**

For interior uses only. Where exposure to water is extreme or continuous, use Portland cement-lime plaster. Apply RED TOP Keene's Cement only over gypsum base coats of high compressive strength.

## STRUCTO-GAUGE Lime Finish

USG STRUCTO-GAUGE is a new high strength gypsum gauging plaster for use with varying proportions of lime putty to produce surfaces of extreme hardness and durability.

Wherever Keene's Cement is used, STRUCTO-GAUGE Lime Finish may be used. With a faster set than quick troweling Keene's Cement, easier working characteristics and higher lime proportions, STRUCTO-GAUGE finishes are more economical than any other hard finish. With the same proportions of lime, STRUCTO-GAUGE finishes achieve much greater hardness than a comparable Keene's Cement-Lime Finish.

For medium hard finish, mix in the proportions of 100 lbs. dry STRUCTO-GAUGE to 200 lbs. dry hydrated lime.

For hard finish, mix in the proportions of 100 lbs. dry STRUCTO-GAUGE to 100 lbs. dry hydrated lime.

**APPLICATION**

Apply over a partially dry gypsum base coat. Scratch in a thin coat, well ground into the base and immediately double back with a second coat, filling imperfections. Water trowel to a smooth finish, free of all blemishes. All troweling must be completed before final set. Clean tools and equipment immediately after each mix.

**LIMITATIONS**

Same as for Keene's cement-lime finishes.

## Gypsum Trowel Finish

RED TOP Gypsum Trowel Finish is mill-prepared and requires the addition of water only. It is recommended for use over gypsum base coats where hardness and immediate decoration are required. RED TOP Trowel Finish is available in most areas and is recognized for its easy working qualities and pure white finish.




**ADVANTAGES**

rated one of the hardest of all finish plasters, it provides protection against the most severe wear. It has approxi-

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nately twice the surface hardness of ordinary lime-gauging finishes. Non-alkaline, it will not injure paint or decoration and may be decorated as soon as it has set and dried. Made of gypsum, it provides a durable and natural bond to gypsum base coat plaster.

**MIXING AND APPLICATION**

RED TOP Trowel Finish requires the addition of water only. Allow to soak 10 or 15 minutes and then mix to a smooth, lump-free mortar of the desired consistency.

Apply over a gypsum base coat which has set, but is not bone dry. (If base coat has dried out, spray lightly, before the finish coat is applied. Do not soak.) Scratch in thoroughly, double back and fill out to true, even surface. The finish should not exceed ⅛ in. thickness.

Trowel the surface free of cat faces and other blemishes, using water sparingly. Troweling must be complete before final set occurs. Work from unset edges to avoid joining marks.

## Gypsum Sand-Float Finish

RED TOP Sand Float Finish is similar in every respect to gypsum trowel finish, except that it is carefully formulated with the correct proportion of properly graded sand. This provides a uniform, easy-working material which eliminates the uncertainty of job-mixed sand-float finishes. Available in its natural gray color, which requires painting for final decoration. Select lime-proof colors may be added which eliminates further decoration.

**APPLICATION**

same as for gypsum trowel finish except that the final coat is finished with a wood, carpet, cork or rubber float depending on texture desired.

## Colored Finish Plasters

Colored gypsum finish plasters are frequently used to produce a pre-decorated finish of either a finely floated or textured surface. Use of colored gypsum finish plasters eliminates the need for further surface decoration. This speeds the plastering job and results in lower costs. Colored gypsum finish plasters are available in either factory-prepared colors or they can be produced on the job.

**JOB PREPARED FINISHES**

require addition of limeproof color pigments on the job to proper proportions of lime putty, aggregate and Keene's Cement. In mixing this material for a job, the lime-proof color should be thoroughly blended and mixed with the plaster to prevent color streaking and variation. It is also necessary to mix job-prepared colored interior finishes in sufficient quantities to complete a job. This eliminates color variation which would result from trying to mix a second batch to match the first.

Keene's Cement-Sand Float Finish shall be mixed in the proportions of 100 lbs. of Keene's Cement to 50 lbs. of dry lime and 400 lbs. of sand, with or without the lime-proof colors.

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## ORIENTAL Interior Colored Finish

A factory prepared colored finish containing properly graded aggregate and select limeproof colors to insure easy working qualities and uniformity in results. Available in 6 pastel colors and white, it requires no further decoration and may be applied to produce many types of surfaces ranging from a very fine sand-float finish to a ragged texture. It is highly resistant to abrasion because of its great hardness; avoids variations of color intensity which sometimes occur when colors are mixed on the job; permits early occupancy.




**MIXING AND APPLICATION**

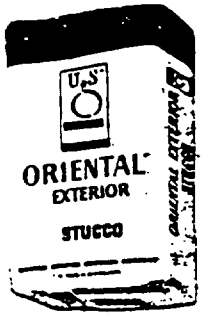
Add clean water only, hoe stucco into the water. Allow to soak 20 or 30 minutes and mix thoroughly to a smooth, creamy easy-working consistency. Must be applied to a set, "half-green" base coat of gypsum plaster. If the base coat is exceptionally dry, it should be sprayed uniformly with clean water the night before finishing.

Application is made in a two coat double back operation. Scratch in a thin coat well ground into the base coat and double back with a second coat, filling out to a true even surface. The surface can be floated with a sponge, sponge rubber float or carpet float. The finish can also be applied in any desired texture except a smooth trowel finish. Do not use water while floating.

## ORIENTAL Exterior Stucco

Factory formulated to insure color uniformity. Applied to exterior surfaces over a base coat of portland cement-lime and sand.

ORIENTAL Exterior Colored Finish is available in 11 pastel colors and white. Suitable for application on new work or for remodeling, it is an economical means for beautifying in two ways—texture and color.



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## MIXING AND APPLICATION

ORIENTAL Exterior Stucco requires only the addition of water on the job. When it is mixed and applied in the following manner, excellent finished results may be obtained:

1. The suction of the base coat must be uniform, therefore, the base coat should be in a "half green" condition. If it is too dry, spray lightly. (See detailed instructions for mixing, applying, and curing of Portland cement-lime base coat, page 41.)

2. Remove loose and projecting particles from base coat, then apply a thin coat well ground into the base and completely covering it. Double back and fill out to a uniform surface about ⅛ in. thick, covering area from top to bottom, in one operation to eliminate joinings. Trowel three or four times before starting to texture.

3. For a float finish, use a cork, wood, carpet or sponge rubber float, and float the surface to an even texture.

4. Do not use water in floating.

5. After setting, spray the surface periodically for several days to cure the finish.

6. Do not apply in freezing weather or before or during a rainstorm.

# FINISH PLASTER DATA

| | Gauging Plaster to Lime | STRUCTO-GAUGE to Lime | |
|---|---|---|---|
| Mix by weight of dry materials | 1:2 | 1:2 | 1:1 |
| Color | White or Gray (1) | White | White |
| Finish Texture | Smooth | Smooth | Smooth |
| Hardness in Kilograms (2) | 34 | 56 | 108 |
| Coverage | 1 ton gauging 2 tons lime cover approx. 1000-1400 yds. | 1 ton STRUCTO-GAUGE 2 tons lime cover approx. 1000-1200 yards | 1 ton STRUCTO-GAUGE 1 ton of lime cover approx. 600-750 yards. |

*(1) Gray with "local" gauging plaster.*
*(2) Kilograms required to force a 10 MM ball .01" into plaster face.*

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# SABINITE
## Acoustical Plaster

**TROWEL OR FLOAT**

a highly sound absorbent acoustical plaster which can produce a trowel or float finish. It is applied over a properly prepared gypsum base coat, and is available in oyster white and four standard colors.

**ADVANTAGES**

***High Sound Absorption***—carries a .60 NRC in Trowel and .55 NRC in Float Finish.

**Readily Maintained**—cleans with brush or wallpaper cleaner; may be spray-painted with only moderate loss of acoustical efficiency.

**Fire Resistant**—incombustible, mineral composition.

**Adaptable**—blends with any architectural design.

**Easily Applied**—any good mechanic, provided ordinary precautions are observed, can apply SABINITE.

**Economical**—applied in two successive coats, 16 to 24 hours apart—eliminates re-scaffolding.

**LIMITATIONS**

*Mixing and application instructions must* be closely followed.

Designed for use on ceilings or wall areas not subject to contact or high humidity.

SABINITE is not recommended over radiant heating panels.

| Quick Troweling Keene's to Lime | | Gypsum Trowel Finish | Gypsum Float Finish | ORIENTAL Finish |
|---|---|---|---|---|
| 2:1 Medium Hard | 4:1 Hard | Neat | Neat | Neat |
| White | White | White | Gray. | 12 colors |
| Smooth | Smooth | Smooth | Float | Float |
| 50 | 70 | 55 | (See Note 3) | (See Note 3) |
| 2 tons Keene's 1 ton lime cover approx. 850-1200 yds. | 4 tons Keene's 1 ton lime cover approx. 1300-1700 yds. | 1 ton will cover approx. 350-400 yds. | 1 ton will cover approx. 250-275 yds. | 1 ton will cover approx. 250-300 yds. |

*(3) These are hard finishes but the aggregate in the surface does not permit an indication with this test.*

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## MIXING AND APPLICATION

Machine mixing recommended. Put 22 quarts clean water in mixer for each bag of SABINITE. Mix until SABINITE weighs 15 to 17 lbs. net per 12-qt. pail (usually 3 to 5 minutes, depending on speed of mixer). To hand mix, place SABINITE in one end of clean mixing box. For each bag, add 23 qts. of clean water in other end. Hoe SABINITE into water. The mix will appear dry, but do not add more water. Hoe until SABINITE weighs 15 to 17 lbs. net per 12-qt. pail.

Apply in 2 coats to a uniform total thickness of ½ in. over a base coat of




RED TOP gypsum plaster. A full scratch and brown coat of gypsum plaster is required over metal lath, ROCKLATH plaster base, and masonry bases (excluding monolithic concrete) to provide proper rigidity, strength, and a solid base for the acoustical plaster.

Apply first coat ¼ in. thick by scratching in and doubling back over a set, semi-green gypsum base coat that is level and thoroughly broomed or cross raked. If base coat is dry, spray lightly to reduce suction. Follow immediately with a wood or metal darby, leveling SABINITE to provide a true, even surface for finish coat. Allow to set and to partially dry (at least overnight or longer depending on job drying conditions) before applying finish coat.

Apply finish coat to a thickness of ¼ in. by scratching in and doubling back, over a set, partially dry base coat of SABINITE. Bring total thickness to ½ in. Leave surface uniformly level and free of trowel marks, working from wet edge. Finish ceiling panels in one continuous operation to avoid joinings.

**Trowel Finish**—After water sheen leaves surface (about 30 minutes) trowel lightly to a uniform texture. *Do not use water during troweling.*

**Float Finish**—float second coat 5 to 10 minutes after water sheen has left surface. Use a shingle, cork, or rubber float. Do not use water in floating.

**Directions for Applying SABINITE Acoustical Plaster Over Rough Monolithic Concrete:** Over properly prepared *rough* monolithic concrete surfaces apply BONDCRETE plaster not to exceed ¼ in. thickness on ceilings and ⅜ in. on side walls. Appl the SABINITE over the set, semi green BONDCRETE base coat, a specified.



BB013 0110

**DIRECTIONS FOR PAINTING USG ACOUSTICAL PLASTERS.** Remove all loose dirt or dust by use of a vacuum cleaner. Paint should be water-thinned. TEXOLITE Imperial or Standard is recommended. First coat, mix one part TEXOLITE paste to one part water by volume. Second coat (if required), mix one part TEXOLITE paste to two parts water by volume. Spray on with any gun with a medium fine spray. DeVilbiss spray gun, type MBD, with a No. 30 nozzle or equivalent, is recommended. Use 30 to 40 lbs. pressure in the gun and 20 to 30 lbs. on the paint.

Hold nozzle 14 to 18 in. away from work. Use a slow, uniform motion. Cover surface in one pass. Do not pass over same area several times as this builds up paint unnecessarily.

Allow at least overnight drying between coats. If weather is extremely humid, allow additional drying as necessary.

## HI-LITE
## Acoustical Plaster

**STIPPLE OR STIPPLE-PERFORATED**

Highest light reflective acoustical plaster developed by U.S.G. (.77-.80), must be stippled or stipple-perforated to provide its acoustical efficiency (.60). Available in white only.

**ADVANTAGES**

**HI-LITE Finish**—it's snow white, with over 75% light reflection.

**Easy to Mix and Apply**—mechanically mixed, it works smoothly and easily under the tools.

**Attractive, Adaptable**—can be given a stippled or stipple-perforated finish. Can be used in areas of moderately high humidity, such as swimming pools.

**Fire Resistant**—HI-LITE will not burn or support combustion . . . an important safety advantage.

**Low Maintenance Costs**—can be decorated repeatedly with any good resin—emulsion or casein paint (TEXOLITE—Imperial or Standard) without appreciable loss in sound absorption.




**LIMITATIONS**

HI-LITE must be machine mixed to develop proper density.

Designed for use on ceilings or wall areas not subject to contact.

BB013 0111

When perforated, a special perforator with rust resistant prongs should be used.

HI-LITE is not recommended for use over radiant heating panels.

### MIXING AND APPLICATION

USG HI-LITE Acoustical Plaster shall be applied in two coats to a uniform thickness of ½". A full scratch and brown coat, either gypsum plaster or portland cement-lime plaster, that has been cross-raked is required over metal lath, gypsum lath and masonry bases (except monolithic concrete).

**First Coat**—Apply first coat of HI-LITE by scratching ⅛" hard, immediately doubling back to a total of ⅜" over a set and dry, partially dry, or semi-green basecoat. Darby lightly to a level surface. Allow to set and dry fairly well (usually overnight) before finish coat.

**Finish Coat**—Apply finish coat ⅛" thick to a set and fairly dry basecoat, scratching and doubling back leaving surface free of trowel marks. Work from wet edge to avoid joinings.

When surface gloss has disappeared and surface is crisp and hard enough to give clean perforations, stipple the surface with a rice root stippling brush to a uniform texture.

To obtain a stipple-perforated finish, perforate about 30 minutes after stippling (when surface is hard enough to give clean perforations), but before set. Use perforator furnished by the United States Gypsum Company. Perforations should number approximately 500 per square foot and should be at least 3/16" deep.

## AUDICOTE
## Acoustical Plaster

### SPRAY OR HAND APPLIED

A plastic, high-coverage material with excellent sound-absorbing properties. It has exceptional bonding characteristics, and is designed for use over gypsum basecoat plaster, portland cement-lime basecoat plaster or monolithic concrete. Available in Satin White and Special White.




### ADVANTAGES

**High Sound Absorption**—carries a .60 NRC in darbied finish and .55 NRC if machine textured finish is desired.

**Low Maintenance**—tests reveal n loss in noise reduction coefficien after two spray coats of TEXOLIT (Standard or Imperial), applied a



BB013 0112

cording to U.S.G. specifications for painting acoustical plasters. AUDICOTE may also be redecorated easily by direct spray application of a thin coat of AUDICOTE Plaster.

**Fire Resistant**—incombustible, basically mineral in composition.

**Low Cost**—the most economical of our acoustical plasters.

**Versatile**—because it can either be applied by machine or by hand in a variety of appealing finishes.

### LIMITATIONS

AUDICOTE is designed for use on ceiling and wall areas not subject to contact.

AUDICOTE is not recommended for use over radiant heating panels.

While a rust inhibitor is used in AUDICOTE Plaster, it is recommended that use of unprotected steel in the surface of monolithic concrete be minimized to avoid rust spotting of the finish.

### MIXING AND APPLICATION

**Machine Mixing**—Machine mixing is recommended. Add AUDICOTE to water, using approximately 55 quarts of clean water per bag for first coat of acoustical plaster. For machine application of finish coat more water will be required—70 to 90 quarts, depending upon type of machine used and degree of texture desired. An increase in the amount of water used per bag will give a finer texture. If hand application of finish coat is required, use approximately 55 quarts of water per bag for finish coat. Mix for minimum of five minutes in mixer to develop proper consistency.

**Hand Mixing**—If required, material must be hoed sufficiently to develop even consistency free of lumps.

**Machine Application**—First coat of acoustical plaster should be applied to thickness of $\frac{3}{8}$", leveled with a darby and pointed up with a trowel if necessary to provide a smooth and level base for finish coat. Allow to dry before applying finish coat, which should be $\frac{1}{8}$" thick.

**Hand Application**—First coat of acoustical plaster should be applied to thickness of $\frac{3}{8}$". Level with a darby to provide a smooth and level base for finish coat, and allow to dry. Finish coat should be applied to a $\frac{1}{8}$" thickness. After finish coat has taken up sufficiently, it may be stippled, stipple-perforated, darbied or floated to produce desired finish.

MEMORANDUM



BB013 0114

*Specialized Lathing and Plastering Systems*

# ROCKLATH Lathing Systems


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| **ROCKLATH Resilient Lathing System** | **60** |
| **BRACE-TITE Lathing System** | **62** |
| **2-inch Solid ROCKLATH and Plaster Partition** | **65** |
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| **TRUSSTEEL STUD—ROCKLATH Partition** | **71** |


USG has developed a complete line of attachment systems employing the use of clips for attaching ROCKLATH Plaster Base to wood framing, metal grillage, TRUSSTEEL Studs and masonry walls. These systems are designed to provide performance and economy in the construction of plastered walls and ceilings which offer:

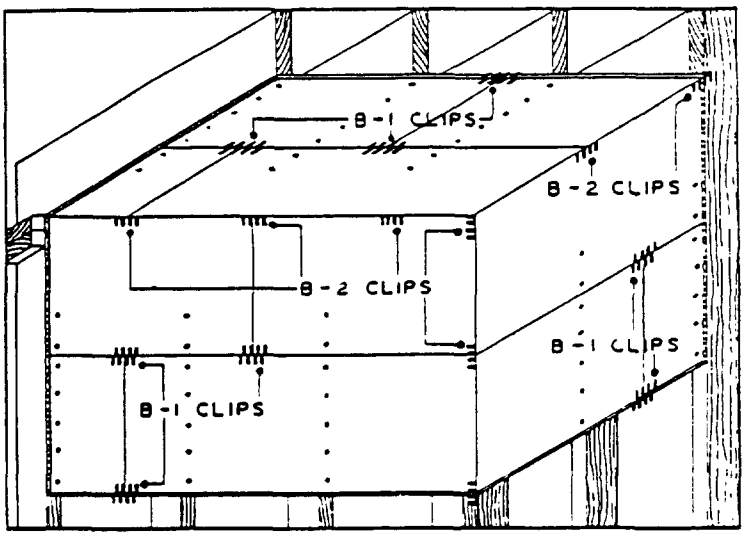
1. Greater resistance to cracking
2. Reduced sound transmission
3. High fire resistance
4. Insulation
5. Vapor barrier
6. Economy

BB013 0113

# BRIDJOINT Lathing System

## DESCRIPTION

The BRIDJOINT lathing system uses BRIDJOINT clips to apply ROCKLATH Plaster base on walls and ceilings in such a manner that the ends (16-inch dimension) of the lath fall between and not on the framing members. The ⅜" B-1 field clip and ⅜" B-2 corner clip are used for ⅜" ROCKLATH. A ½" B-1 field clip is used when ½" ROCKLATH is specified.




## ADVANTAGES

**Crack Resistant**—because ends of gypsum lath do not fall on framing members, resistance to cracking is increased at these vulnerable points.

**Adaptable**—This system facilitates application of ROCKLATH over nailable steel framing. Use ⅜" ROCKLATH with framing up to 16" o.c. and ½" ROCKLATH for framing spaced up to 24" o.c.

**Economical**—25% less nailing is required than conventional nailing of ROCKLATH plaster base to wood studs. On wood frame construction Cornerite and nailings are eliminated in the internal angles.



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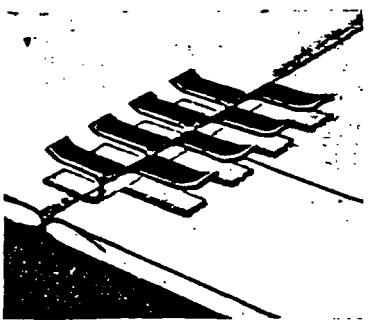
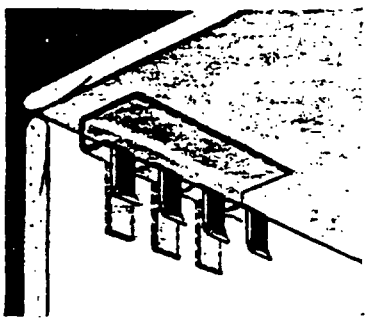


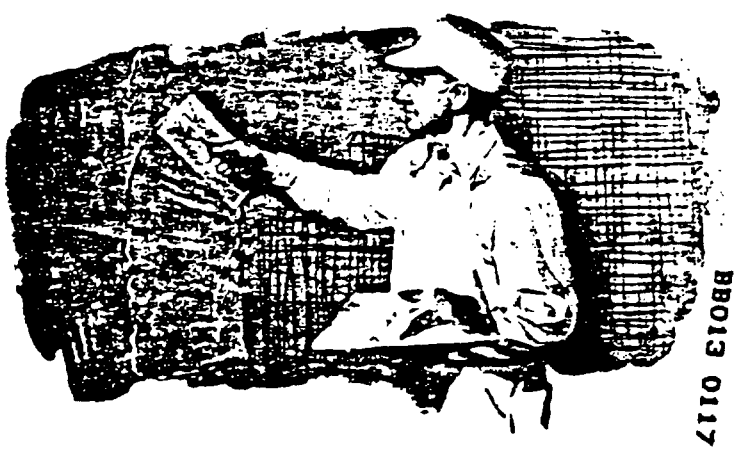


## DIRECTIONS FOR LATHING AND PLASTERING

**Lathing**—ROCKLATH is applied in such a manner that the ends of the lath do not fall on the framing members. End joints are staggered in adjacent courses. A BRIDJOINT clip is used at corners of each piece of lath to support the lath ends which fall between the framing members. ROCKLATH is nailed to the wood or steel framing. (*See page 16* for nail specifications.)

**Plastering**—plaster in two or three coats to ½-inch thickness. (*See page 36* for plastering specifications.)

**Estimating Quantities**—B-1 clips, 3½ per square yard; B-2 clips, one for each 16 inches of corner angles (or 75% of total lineal feet of corner angles).



BB013 0117

# ROCKLATH RESILIENT Lathing System

## DESCRIPTION

ROCKLATH Resilient Lathing System uses steel spring clips for attaching ROCKLATH plaster base to wood framing, steel channels or masonry. These resilient clips float the ROCKLATH and plaster free from framing members.

## ADVANTAGES

**Resistant to Sound Transmission**—National Bureau of Standards assigns average sound transmission loss rating of 52 decibels to a wood stud partition with R-1 resilient clips, gypsum lath and plaster both sides.

**Crack Resistant**—plaster cracking due to framing movement is greatly reduced. Where framing movement occurs back of lath and plaster, it is absorbed by the spring clips in much the same manner as automobile springs soften road shocks.

**One Hour Fire Rating**—wood stud partitions with R-1 Resilient Clips, perforated ROCKLATH, and ½-inch gypsum-perlite plaster proportioned 100 lbs. : 2½ cu. ft. (scratch and brown coats) have a one hour fire rating.

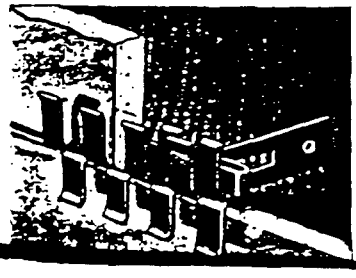
**Economical**—For a nominal increase in the lathing cost, the ROCKLATH Resilient Lathing System provides outstanding sound and crack resistance features.

## DIRECTIONS FOR LATHING AND PLASTERING

**Lathing**—apply ROCKLATH plaster base face out with the long dimensions at right angles to the framing members 16 inches o.c. Stagger end joints. ROCKLATH ends must occur over framing members and be secured with clips. Place a clip at every intersection of ROCKLATH edges and framing members. Staple or wire-tie all corner bead to ROCKLATH. Do not nail ROCKLATH Plaster Base or accessories to framing.

Where Resilient ROCKLATH ceiling joins conventional nail-on walls or partitions, a ⅜-inch thick furring strip (usually a strip of ROCKLATH 2 inches wide) should be nailed to joists at ceiling angle to compensate

R-1 for wood stud or joist farming.



R-2 for corners and angles of wood frame construction.



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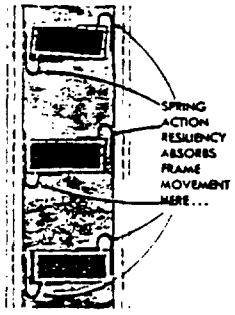



**FLEXIBILITY** replaces rigidity without loss of strength; walls and ceilings are thus able to compensate for normal frame movement, and the plaster surfaces are protected against cracking.

for the ⅜-inch furring or R-1 Resilient Clips. Use a B-2 BRIDJOINT Corner Clip in place of R-2 Resilient Corner Clip. If walls are resilient and ceilings nail on, nail furring strip to the studs at the ceiling line. Do not use nails in corner angles.

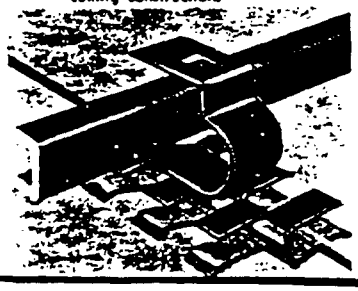
**CAUTION**

Perforated ROCKLATH is not recommended for use on ceilings when applied with resilient clips.

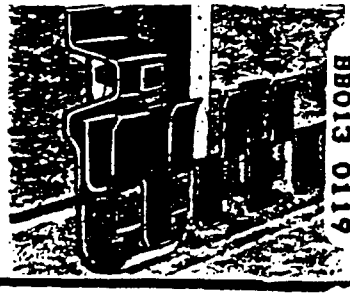
**Plastering**—plaster to ½-inch grounds with sand or perlite aggregates. On ceiling work use *only* plain ROCKLATH and apply plaster in three coats (do not "scratch-double-back"). Where one hour fire rated wood stud partition is required, plaster to ½-inch grounds with gypsum-perlite plaster proportioned 100 pounds gypsum plaster to 2½ cubic feet perlite (scratch and brown coats).

**Estimating Quantities**—R-1, R-3, R-5 clips—Estimate 5½ to 6 per square yard. R-2 clips—1 for each 16 inches of corner angles (or 75% of total lineal feet of corner angles). R-1 and R-2 combined, 6 per square yard.

R-3 for ¾ inch steel furring channels, in ceiling construction.



R-5 for masonry or solid concrete construction.



BB013 0119

# BRACE-TITE Lathing Systems

## DESCRIPTION

The BRACE-TITE Lathing System attaches ROCKLATH plaster base to standard metal grillage (¾-inch cold rolled channels not over 16 inches o.c.). This system is also used as a base for direct application of acoustical tile.

## ADVANTAGES

**Versatile**—may be used for plastered ceilings or for acoustical tile base without plaster.

**Strong**—gives support across the full width of ROCKLATH. Clip provides spring tension to the center.

**Easy to Erect**—requires no special tools. Maximum spacing of ¾" channels 16" o.c.

**Two-Coat Plastering**—permits use of scratch double-back method over plain or perforated ROCKLATH. Plaster thickness is ½-inch.

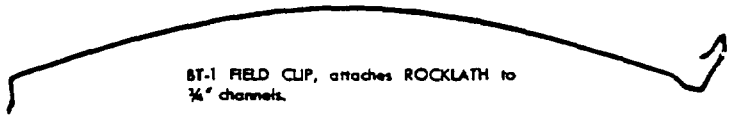
**Fireproof**—fire resistive ratings of one to four hours are obtainable.

## DIRECTIONS FOR LATHING AND PLASTERING

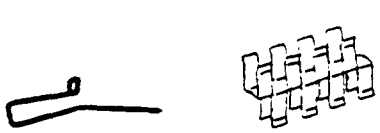
**Lathing**—1. Place starter clip over ¾-inch channel at juncture of channel and side wall. (*Note: If hot rolled channels are used, hand crimp clips to fit snugly over channel legs*).

2. Place ROCKLATH plaster base on top of starter clip loop and at right angles to channel. Engage BRACE-TITE field clip over channel and hook it into starter clip loop.

On first course of lath, crimp field



BT-1 FIELD CLIP, attaches ROCKLATH to ¾" channels.



BT-1 STARTER CLIP, use at beginning of channel run.

B-1 BRIDJOINT CLIP, use at each ROCKLATH corner.



B-1A BRIDJOINT CLIP, use at each ROCKLATH corner.



BT-A FIELD CLIP, attaches ROCKLATH to ¾" channels.



BB013 0120

clip wire to accommodate slack caused by starter clip loop projecting from wall. (See B.) Use B-1 BRIDJOINT clip at each end joint of lath on first course only.

End joints should be staggered and fall between channels. Use a B-1 BRIDJOINT clip on both sides of lath end joints, *See* (*C*). Upon completing a course of ROCKLATH, slip a B-1 BRIDJOINT clip over each end joint so that it is firmly supported.

**3.** After first course of ROCKLATH is completed, no further crimping of wire is necessary. Succeeding courses are rapidly applied by looping each field clip over channel and inserting hook into eye of preceding field clip.

Complete last course by cutting ROCKLATH to fit remaining space. Hang field clip over channel end, insert hook end under preceding clip, pull back and snip off excess length.

**BRACE-TITE Acoustical Lathing system.** Place the full loop end of BRACE-TITE Acoustical clip over end of each ¾ inch channel at juncture of channel and wall. ROCKLATH plaster base shall be applied at right angles to channels, and the half loop end of the field clip snapped over the ¾ inch channel. Succeeding courses shall be applied in same manner using B1-A BRIDJOINT clips (prongs flat on tile side) in lieu of the B-1 clips used for plastering.

***Plastering***—apply gypsum plaster in two or three coats ½-inch thick, using sand or perlite as aggregate. If one hour fire rating is required, apply gypsum-perlite plaster proportioned

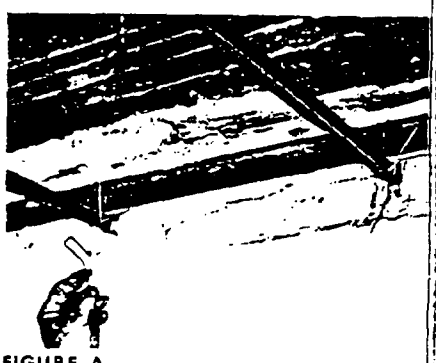


FIGURE A

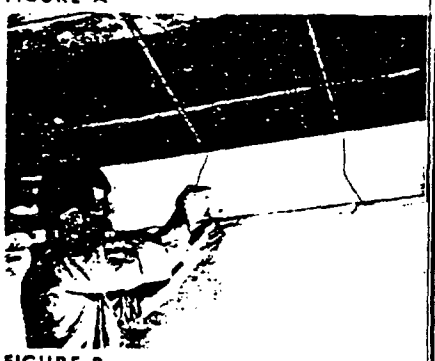


FIGURE B

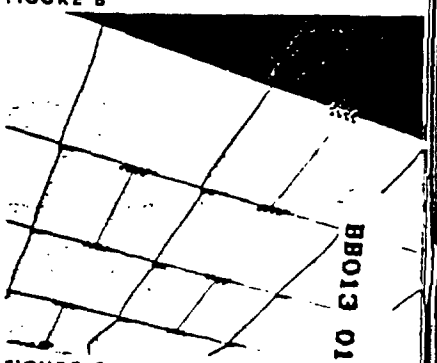


FIGURE C

BB013 0121

100 lbs. : 2½ cu. ft., ⅜-inch thick over perforated ROCKLATH.

**Estimating Quantities**—for ¾-inch channels, 16 inches o.c.: one BT-1 Starter Clip for each channel abutting a vertical plane and at any interruption of channel. 5½ to 6 BT-1 or BT-A Field Clips per yard. 3½ to 4 B-1 or B-1A BRIDJOINT Field Clips per yard.

For ¾-inch channels, 12 inches o.c.: BT-1 Starter Clips, same as before. 7½ to 8 BT-1 or BT-A Field Clips per yard. B-1 or B-1A BRIDJOINT Field Clips, same as for 16-inch spacing.



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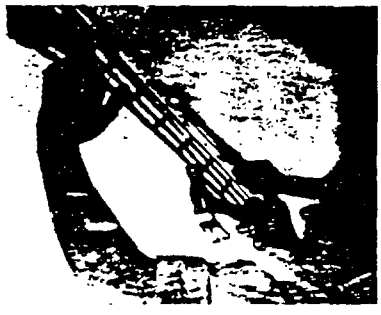

# 2-IN. SOLID ROCKLATH and Plaster Partition

## DESCRIPTION

A studless non load-bearing partition consisting of ½-inch V-edge, Long Length ROCKLATH plaster base, held vertically by floor and ceiling runners, up to 12 feet in height, and plastered on both sides.

## ADVANTAGES

**Save Space**—Saves 40 to 60 per cent of space occupied by conventional partitions. In every five lineal feet a 2" partition creates one extra square foot of usable space over a 4½" partition.

**Lightweight**—only 16 pounds with gypsum-sand plaster and 9 pounds with gypsum-perlite per square foot of finished partition (25% to 40% lighter than commonly used masonry partitions).

**Strong**—official impact test records show that a 60 pound weight traveling through a full arc fall of 4 feet failed to produce a discernible crack on a full size partition after three successive blows.

**One Hour Fire Rating**—with gypsum plaster sanded 1:1 for scratch and 1:2 for brown coat or gypsum-perlite proportioned 100 lbs. to 2 cu. ft. on scratch coat and 3 cu. ft. on brown coat. Where one hour fire rating is not required, plaster may be sanded 1:2 for scratch and 1:3 for brown coat.

## DIRECTIONS FOR LATHING AND PLASTERING

**Floor Runner**—USG Metal base or wood runner. Indicate positions of floor runners with chalk lines.

When USG Metal base is used, metal floor clips should be nailed approximately 24 inches o.c. Snap metal base side plates over shoulders of the clips.

Wood runner should be milled 1⅝ x 2 inches from select stock resistant to splitting.

**Ceiling Runners**—Apply USG L-shape ceiling runner using ½-inch

BB013 0123






concrete stub nails or power driven nails approximately 24 inches apart. Nail to a line plumbed up from center line of floor runner. If ceiling is suspended type, wire-tie L-shape runner to lath.

**Grouting**—Fill metal base with gypsum grout using uniform V-groove. Recommended grout mixtures: 100 lbs. gypsum plaster to 2½ cu. ft. of perlite, or 250 lbs. of sand.

All metal door bucks shall be grouted, providing uniform V-groove prior to erection of lath.

**Lathing**—Cut Long Length Rock-LATH to allow a minimum of ¼-inch and a maximum of 1¼ inches top clearance. Set in V-grooved base section with top edge against vertical flange of ceiling runner. Edges should be plumb and butting. To hold lath to ceiling runner, snap two USG Ceiling Runner Clips through the top or center row of slots.

Lath is cut and fit *closely* around conduits, outlet boxes and steel door buck struts. One side of opening is covered with metal lath strips backed with No. 30 asphalt felt (usually 3 to 5 inches wide) applied with hand stapling machines.

Partitions (up to 9 feet high) are then horizontally braced in the following manner, see photo below:







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(1) Punch hole in center of each lath slightly below mid-point for bracing clip; (2) insert bracing clip; (3) spring a partition length ¾-inch cold rolled channel into bracing clip with channel legs pointing *down;* (4) insert remaining bracing clips and spring channel into place; (5) wire-tie channel ends at abutting partition angles to cornerite; (6) partitions 9 to 12 feet high require two horizontal braces at third points installed as described above; (7) wedge vertical brace (usually wood 1x4's or 1½"x1½" angle iron) between floor and ceiling every 6 feet and wire-tie to horizontal channel.

**Plastering**—Apply a full ⅜-inch thick scratch coat of plaster with maximum of 3 hour set, to each side of the lath. In no case should application of scratch coat to second side of lath be delayed longer than the setting time of the scratch coat applied to the first side. Scratch lightly in horizontal direction only.

*Let scratch coat set a minimum of 16 hours before browning.*

Apply the brown coat as follows: (1) After the scratch coats have set firmly and have partially dried, the brown coat should be applied to the *unbraced* side, bringing it out to within ⅛-inch of ground dimension for finish coat. (2) When this brown coat has set firmly, (not less than 3 hours) remove braces *carefully* from opposite side and apply brown coa to that side in similar manner.

BB013 0125

# EXTERIOR WALL FURRING System

## DESCRIPTION

A simple practical system for furring exterior masonry walls using USG Adjustable Wall Furring Brackets, ¾-inch channels and Long Length Insulating ROCKLATH (⅜-inch thick by 24-inch x ceiling height).

## ADVANTAGES

**USG Furring Bracket**—Heavy gauge galvanized steel with serrated edge which holds channel firmly in place. Permits proper wall alignment.

**Adjustable**—uneven walls can be furred quickly to true, even surface without expensive, time consuming "shimming."

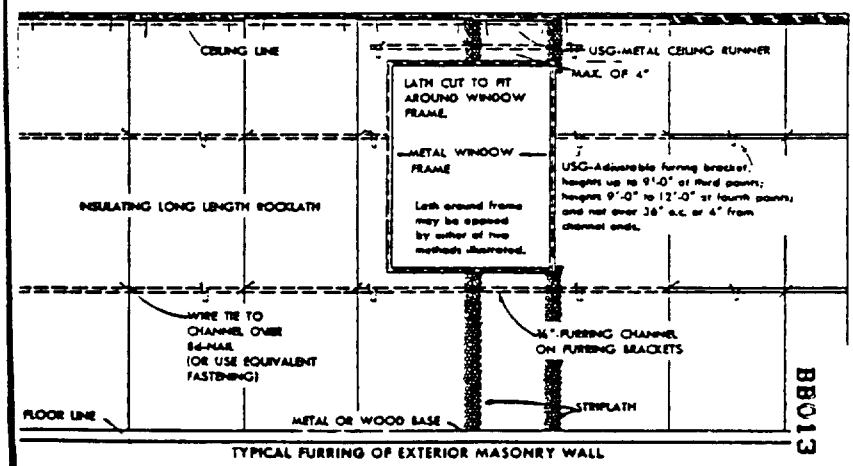
**Low Cost**—large 2 ft. wide ceiling high sheets of long length ROCKLATH plaster base go up quickly. Uniformly even plaster base saves plastering material and labor.

**Vapor Barrier**—provides inexpensive and efficient safeguard against condensation within the wall.

**Insulation**—offers the equivalent of ½-inch of fiber insulation board when erected with the required ¾" minimum air space between exterior wall and lath.

## DIRECTIONS FOR LATHING AND PLASTERING

**Application of Metal or Wood Floor Runner**—Nail single metal base clips to rough floor not over 24 inches o.c. Snap the sideplate over the clips. Fill the back of the base with grout and form a V-groove as grout stiffens and before it sets providing a ¾-inch




TYPICAL FURRING OF EXTERIOR MASONRY WALL



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ground for plastering. *Alternate.* A milled wood runner may be attached to the rough floor by nailing with cut nails or concrete stub nails in the center groove.

**Application of Ceiling Runner**—Attach L-shaped ceiling runner to the construction above as required, locating it by plumbing up from the floor runner. Where furring does not extend to the construction above, install horizontal furring channel 4" to 6" below top of lath.

**Application of Furring**—for furred walls up to 9 feet high, locate furring brackets to the masonry walls not over 4 inches from columns or other abutting construction. Locate brackets at third points vertically and not over 36 inches o.c. horizontally.

For walls from 9 to 12 feet, locate brackets vertically at quarter points. Set brackets in mortar joints or use 2-inch cut nail to attach bracket to mortar joints of brick, clay tile or cement block, or in the field of lightweight aggregate blocks. Use one $\frac{5}{8}$-inch concrete stub nail or one power driven nail per bracket on monolithic concrete. Lay $\frac{3}{4}$-inch furring channels horizontally on the furring brackets with the legs down, plumbed in line with the base. Wire tie to the bracket with a double strand of 18 gauge tie wire. Bend down excess bracket length.

**Lathing**—Apply gypsum lath with the long length vertical, butted lightly with the foil facing the furred space. Set bottom of lath in the groove of base grout, clipping top of lath to the ceiling runner and wire-tying (over a nail) at the edges to intermediate horizontal channel furring. Cut and fit gypsum lath to allow $\frac{1}{4}$" clearance around window frames. Apply a 3-inch strip of metal lath over each ROCKLATH Plaster Base joint under window.

**Plastering**—Apply scratch, brown and finish coats to a full $\frac{3}{4}$-inch over face of lath. Cut plaster base coat with the edge of the trowel along margin of metal window frames.

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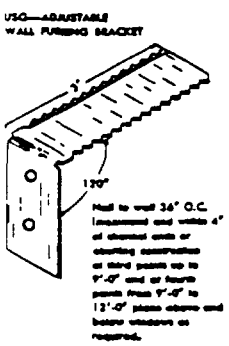
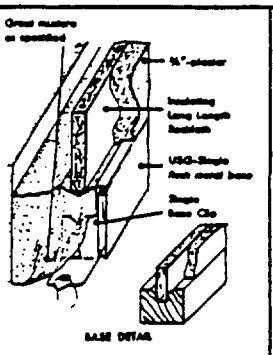
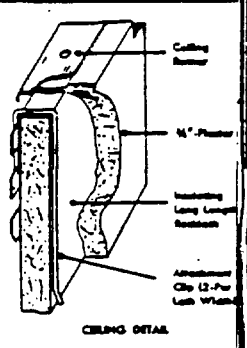
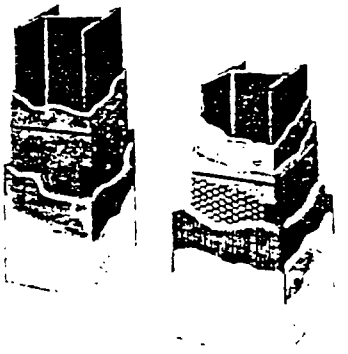


# FIREPROOFING STEEL COLUMNS with ROCKLATH and PLASTER

**1, 1½, 2, 3 AND 4 HOUR FIRE RATINGS**



## DESCRIPTION

ROCKLATH Plaster Base wired in place against structural steel column, and plastered with gypsum cement plaster and sand or perlite aggregate in proportions and thickness required to give fire rating desired. In certain higher ratings, 20 gauge galvanized 1-inch hexagonal mesh wire fabric is used in addition to the ROCKLATH.

## ADVANTAGES

**Fireproof**—column fire ratings of 1, 1½, 2, 3 or 4 hours are obtained.
**Lightweight**—6 pounds per square foot of completed surface area for 1 hour protection to 11 pounds for 4 hour protection.
**Low Cost**—Standard materials used. Easily attached, economy of plastering over gypsum lath.

**1-1½ Hour Rating**—⅜"—16"x48" Perforated ROCKLATH, cut as required, is applied vertically against the column and fastened with a double strand of 18 gauge tie wire approximately 2" from the ends and 15" o.c. 1-A bead, set at each corner, establishes ½" plaster grounds for 1 hour and ⅝" grounds for 1½ hour ratings. Apply gypsum-sand plaster proportioned 1:2½ and any finish coat.

**A 2 Hour Rating** is obtained by lathing in the same manner as indicated above except that the 1-A bead must be set to establish 1" plaster grounds over the lath and gypsum-perlite plaster, proportioned 100:2½ must be used.

**3 Hour Rating**—Lath the same as for 1 hour rating except set 1-A bead to provide 1¾" grounds by snipping expanded flanges 12" o.c., bending back and stapling to ROCKLATH. Apply Gypsum-Perlite plaster proportioned 100 lbs.: 2 cu. ft. for scratch coat and 100 lbs.: 3 cu. ft. for brown coat. Use any standard finish coat.

**4 Hour Rating**—Apply a double thickness of ½" long length ROCKLATH Plaster Base cut as required, vertically against the column and fastened with double strand of 18 gauge tie wire about 4" from top and bottom and 24" o.c. Wrap 1" hexagonal 20 gauge galvanized wire fabric over the lath and set 1-A bead to establish 1½" grounds. Apply gypsum-perlite plaster proportioned 100 lbs.: 2 cu. ft. for first ¾" of thickness and 100 lbs.: 3 cu. ft. for second ¾". Use any standard finish coat.



BB013 0128

# TRUSSTEEL STUD ROCKLATH

## Partition Assembly

### DESCRIPTION

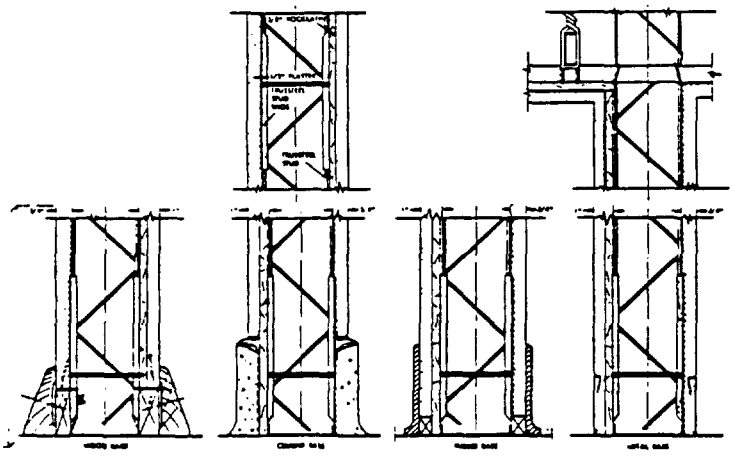
A non-load-bearing partition of TRUSSTEEL Studs, ROCKLATH Plaster Base with TRUS-LOK Clip attachment, and plaster. Over-all thicknesses: 4½", 5¼", 6", and 8", depending on stud width.

### ADVANTAGES

**Flexible**—The open web design of the TRUSSTEEL Stud allows encasement of small pipes, conduits, heat controls, and small ducts horizontally and vertically without weakening the partition structurally by chasing. Web members are easily cut for larger pipes or ducts.

**Versatile**—2½", 3¼", 4", and 6" TRUSSTEEL Studs provide wall thicknesses to meet job requirements.

**Strong**—Strength of studs is derived from strategic use of metal in a truss design—not from bulk weight. The partition assembly of TRUSSTEEL Studs, ROCKLATH plaster base, and plaster has more than adequate strength for building construction practices and is nationally accepted by building code authorities.



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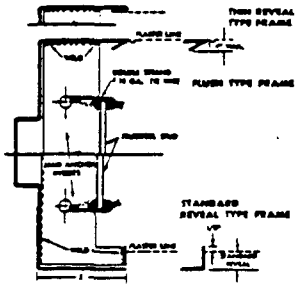

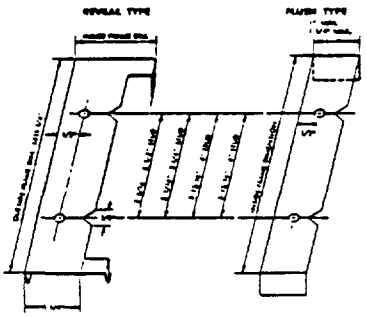

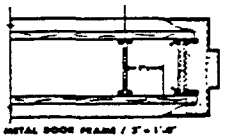

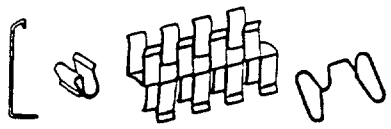

**Lightweight**—This partition assembly weighs approximately 10 lbs. per square foot when plastered with perlite aggregate plaster, and approximately 15 lbs. per square foot with sand aggregate plaster, in any TRUSSTEEL Stud width.

**Fire Resistant**—Built of incombustible materials. One hour fire rating is obtained when perforated ROCKLATH plaster base is used and plastered with gypsum-sand plaster 1:1, 1:2, or with STRUCTO-LITE plaster or gypsum perlite 100:2½.

**Sound Reduction**—This partition assembly has good resistance to sound transmission, attaining average sound transmission loss ratings of 48 decibels with sand aggregate plaster, and 44 decibels with perlite aggregate plaster, in tests at a nationally recognized laboratory.

**Economical**—Material costs are low, job erection fast—provides installation economies for mechanical trades.

## DIRECTIONS FOR LATHING AND PLASTERING

**Lathing**—install TRUSSTEEL studs not over 16 inches o.c. (*See pages 80-81* for details.)

Studs shall be located approximately 2" from all door buck jambs, abutting partitions, or other construction. With steel bucks, an additional anchorage stud is required at each jamb. All corners shall be framed with a stud approximately 2" from each side of the internal angle. Securely wire-tie studs adjacent to door bucks to the jamb anchors.

Start lath application at the bottom with long dimension of ROCKLATH at right angles to the stud. The first course of lath shall be set in



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TL-2 Starter Clips spaced approximately 16" on center along the runner track and secured to the studs by TL-1 Field Clips hooked around the stud and over the top of the lath. The end joints of the ROCKLATH shall occur between studs, staggered in alternate courses, and joined together at the corners with B-1 BRIDJOINT Clips. Where wood grounds are wire-tied to the studs the lath shall be held in place by driving a nail into the ground at each stud, with the nail head held tight against the lath and projecting up from the ground ¾ of an inch.

Succeeding courses of ROCKLATH shall be attached by inserting the lath into the top portion of the TL-1 Field Clips of the preceding course and securing the top edge of the lath to the studs with TL-1 Field Clips. The top course of lath shall be cut to the width required, B-1 Clips placed on the previous course of lath in each stud space and the lath secured to the runner track with a TL-3 Finisher Clip driven into the lath, or shall be secured by wire-tying through the lath around the stud or stud shoes with a double strand of tie-wire twisted tight over a nail on the face of the lath. In the case where ceilings are lathed the last course of lath shall be cut to fit as required and held in place with cornerite stapled to the ROCKLATH and wire-tied or stapled to the ceiling lath.

The course of lath immediately over metal frames shall be set in a groove provided in the grout, if grout is used, or shall be set in TL-3 Clips clipped to the runner track, or shall be wire-tied to the studs over a nail on the face of the lath.

Where ceilings are lathed, the last course of lath shall be cut to fit as required and held in place with cornerite stapled to ROCKLATH and wire-tied to metal lath.

Cornerite shall be used on all internal angles, and corner bead at external corners, by stapling to ROCKLATH plaster base. Metal lath reinforcement over frame corners shall be 13½" x 19" pieces or 9" x 48" strips of 2.5 lb. self-furring metal lath stapled to the ROCKLATH.

Metal door frames shall be securely anchored to the floor by two power driven anchors or equivalent attachment through a clip at each jamb. Jamb anchor clips shall be welded in each jamb at top, 12" down from top, 27" from top and 18" from bottom. Use runner track at head of buck to receive studs over opening, runner to turn up 4" each side at the jambs and wire-tied to studs used as door frame struts, or use a ¾" horizontal channel extending to third stud each side of frame approximately 4" above frame to which studs are tied and grout in over frame.

Secure studs to jamb anchor clips by engaging in notches and wire-tying securely in place, using double strand of 18-gauge tie wire.

If wood door bucks are used call for rough bucks of same width as

BB013 0131

studs, and of not less than 1⅝" stock with the jambs running to underside of construction above and well anchored top and bottom.

For stair rails, lavatories, etc., bolts welded or locked to channels, angles, or plates shall be anchored to studs prior to lathing.

For cabinets, 1" wood grounds may be tied to studs prior to lathing or 8-A picture mould may be tied over ROCKLATH to studs.

**Plastering**—plaster to ½-inch grounds using gypsum-sand or gypsum-perlite plaster. Plaster may be applied in two or three coats. Grouting steel frames with plaster prior to lathing is recommended.

**Estimating Quantities**—for studs spaced 16 inches o.c.: TL-2 Starter clips, two for each TRUSSTEEL Stud; TL-1 Field Clip, 5½ to 6 clips per square yard each side; B-1 BRIDJOINT Field Clip, 3½ to 4 per square yard each side. Figure Two TL-3 Finisher Clips per stud if lath goes to underside of concrete slab, otherwise figure wire tieing or cornerite depending on conditions.



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*Specialized Lathing and Plastering Systems*

# Metal Lathing Systems


| | PAGE |
|---|---|
| Metal Lath Resilient Lathing System | 76 |
| 2-Inch Solid USG Metal Lath Partition | 78 |
| TRUSSTEEL Stud Metal Lath Partition | 80 |
| Metal Base | 84 |


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# METAL LATH RESILIENT Lathing System

**DESCRIPTION**

A system composed of metal lath, steel furring members and spring clips that provides a floating attachment of plastered surfaces to structural members.

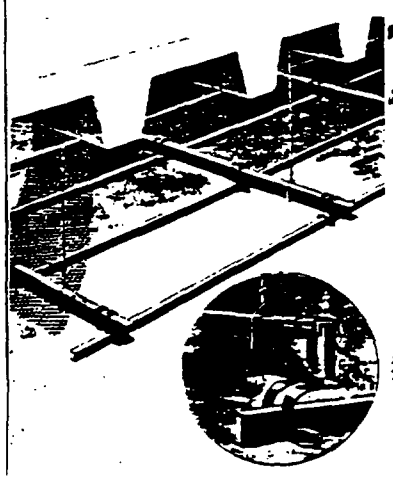
**ADVANTAGES**

It offers greatly increased protection against plaster cracking due to structural movement, and a considerable reduction in the transmission of sound through walls and ceilings. It is adaptable to wood supports, suspended ceilings, hollow partitions, and masonry or concrete surfaces.

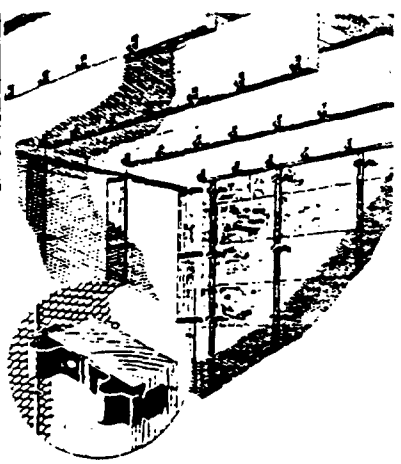
**ESTIMATING QUANTITIES**

**No. 100 Clip,** runner channels 3'-0" o.c., furring channels 12 inches o.c. 340 clips per 100 sq. yds.; furring channels 16 inches o.c., 264 clips per 100 sq. yds.

**No. 200 Clip,** walls (clip spacing 16



**Suspended Ceiling**—Showing application of No. 100 Clip for suspended ceiling construction. The clip provides resilient attachment of furring channel to runner channel by replacing use of the tie wire. Easy to erect.



**Wood Frame Construction**—Showing application of No. 200 Clip on wood studs and joists and on wood furring on masonry walls. Clips provide resilient attachment of metal lath and protect plaster finish.



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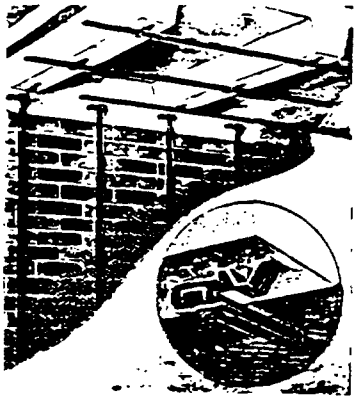
inches o.c. along studs spaced 16 in. o.c.), 610 clips per 100 sq. yds. Ceilings (clip spacing 12 inches o.c. along joist spaced 16" o.c.), 744 clips per 100 sq. yds.

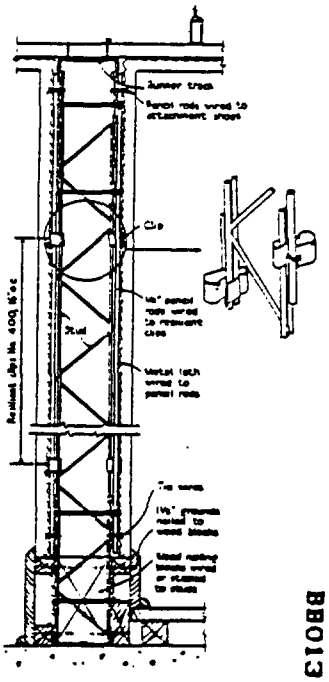
**No. 400 Clips,** TRUSSTEEL Studs, 16 in. o.c., clips spaced 12 inches o.c., 780 clips per 100 sq. yds. Spacing 16 inches o.c., 600 clips per 100 sq. yds.

**No. 500 Clip**

| Spacing of furring Channels, o.c. | Spacing of Clips | Quantity of Clips per 100 sq. yds. |
|---|---|---|
| 12 inches | 24 inches | 496 |
| 16 inches | 18 inches | 504 |
| 24 inches | 12 inches | 496 |



**Masonry Surfaces**—Showing use of No. 500 Clip on ceiling under concrete joist and on masonry walls. Clip is also used on other masonry surfaces. Provides furring and resilient attachment of metal lath.



CLIP No. 400
TRUSSTEEL STUD PARTITION

**TRUSSTEEL Stud Partition**—Showing use of No. 400 Clips spaced 16 inches along studs. A ¼" pencil rod is wired into the notch on outside flange of clip to provide resilient furring member for metal lath.

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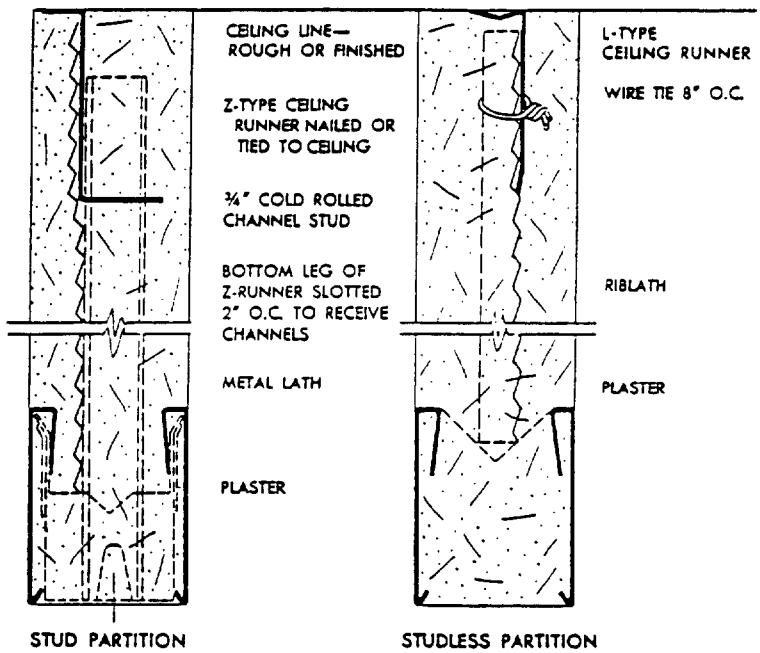


# 2-IN. SOLID USG METAL LATH

## and Plaster Partition

**DESCRIPTION**

A non-load bearing partition that finishes to an overall thickness of 2 in. May be erected using ¾ in. channel studs with Diamond Mesh metal lath or with ⅜ in. Riblath without channel studs.

**ADVANTAGES**

**Saves Space**—saves 40% to 60% of the space usually occupied by conventional partition.

**One Hour Fire Rating**—when plastered with sanded plaster mixed 1:2, 1:2 for scratch and brown coats.

**Highly Crack Resistant**

**Good Sound Transmission Rating**—38 average decibel transmission loss.

**Lightweight**—only 18 lbs. per partition square foot with gypsum-sand plaster.

**DIRECTIONS FOR ERECTING**

**Stud Partition**—Snap partition line



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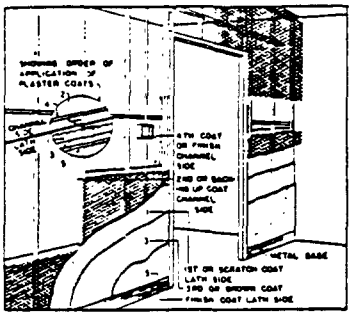
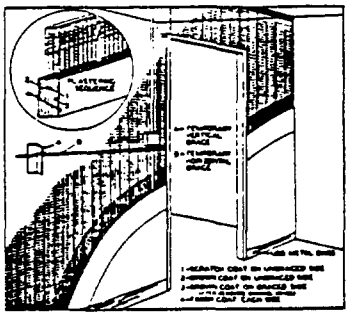
on floor and ceiling . . . Fasten Z-type ceiling runner to ceiling . . . Attach double base clips, 16" o.c., to structural floor with concrete stub nails. (*See page 84*) . . . Insert ¾ in. channels into floor clips and fasten to ceiling . . . Wire-tie Diamond Mesh lath in conventional manner . . . Snap on metal base side plates and grout base.

**Studless Partition**—Snap partition lines at floor and ceiling . . . Fasten



L-type ceiling runner to structural ceiling or furred-down ceiling . . . Attach double base clips, 24" o.c., to structural floor with concrete stub nails, snap side plates in place and grout, leaving V-groove to receive ⅜ in. Riblath . . . Erect ceiling height ⅜ in. Riblath vertically by dropping into grouting groove and wire-tying top to L-type ceiling runner not over 8 in. o.c. . . . Metal door bucks shall be provided with clips along jamb and wire-tie the ⅜ in. Riblath to these clips . . . Where wood bucks are used, wire-tie the lath to USG L-type ceiling runner nailed to the bucks . . . Provide temporary bracing by placing ¾ in. channel horizontally near mid-height of partition for partitions up to 9'-0" height. Partitions 9' to 12'-0" high require two horizontal braces at third points tie to lath 24 in. o.c. Place a vertical 1½ in. angle brace not over 6 ft. o.c. to hold the lath in position until brown coat on side opposite bracing has set.



**DIRECTIONS FOR PLASTERING**

**2 In. Solid Metal Lath Partitions**—Apply scratch-coat to side opposite braces or channels, allow to set and partially dry . . . metal door frame shall be slushed full with plaster . . . On studless partition apply brown-coat to side opposite braces and allow to set before removing braces. Apply brown coat to previously braced side bringing it out to finish grounds. On stud partition, apply back-up coat on channel side to full grounds. Apply brown coat to lath side. Apply finish coats to both sides.

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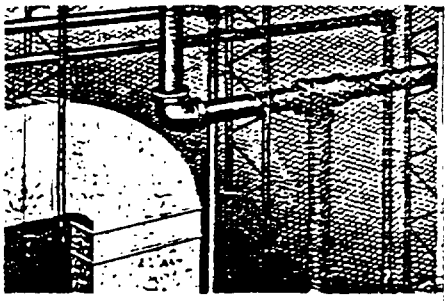
# TRUSSTEEL STUD METAL LATH

## and Plaster Partition



### DESCRIPTION

This truss design stud permits the erection of hollow, non-load bearing partitions in which ducts and pipes can be easily fitted and concealed.

### ADVANTAGES

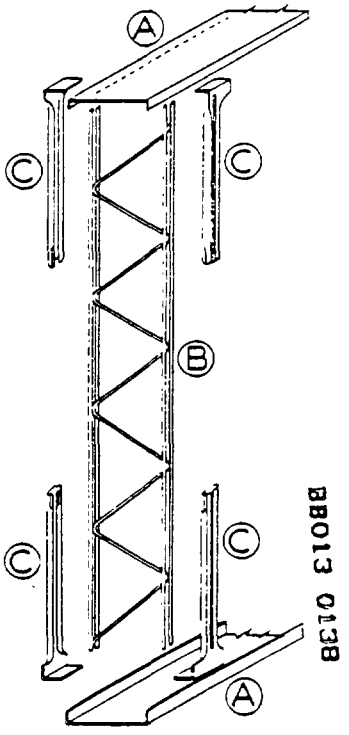
**Lightweight**—Finished partition weighs 13 to 17 lbs. per square foot.

**One hour fire rating**—when plastered with gypsum—sand mixed 1:2, 1:2.

**Strong**—Withstands up to 30% greater transverse loads than 1½ in. steel channels.

**Economical**—Requires no special tools or structural framing, goes up fast. Can be used with metal lath or ROCKLATH plaster base.

**This system is available in the following sizes:** Stud lengths, 7 to 20 ft.; stud widths, 2½, 3¼, 4 and 6 in. It contains the following parts as shown in sketch at right: **(A)** 22 gauge top and bottom runner tracks; **(B)** 7 gauge rod studs spot welded. **(C)** Shoes for attaching studs to runners. These shoes allow an adjustment up to 3 in.

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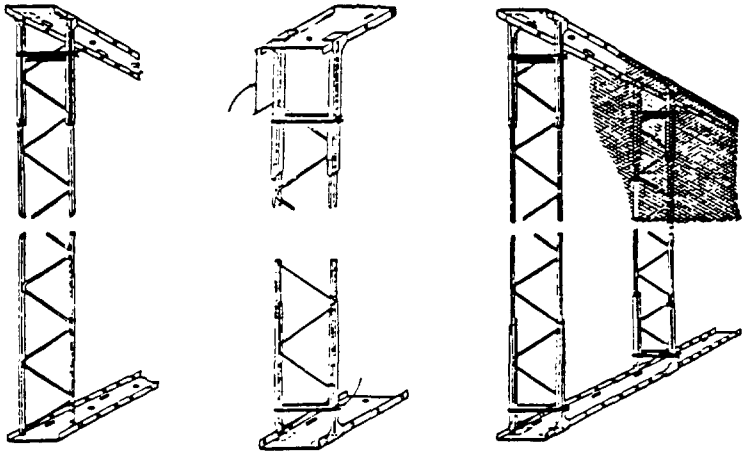

## STEP BY STEP ERECTION

Runner track is aligned and attached to concrete floor and ceiling with stub nails at 2 ft. intervals, or wired to suspended ceiling every 24".

Studs are secured to runner track by means of two snap-on attachment shoes at top and bottom by *inserting flange between runner* track and floor or ceiling.

Leg of shoe is then snapped over side of stud and wire tied.

Metal lath is applied to both sides of studs with 18 gauge galvanized tie wire.

## RECOMMENDED STUD SPACING

| Type of Lath | TRUSSTEEL Stud Spacing |
|---|---|
| 2.5 lb. Diamond Mesh Lath | 12 inches |
| 3.4 lb. Diamond Mesh Lath | 16 inches |
| 2.75 lb. 1/8" Riblath | 16 inches |
| 3.4 lb. 1/8" Riblath | 19 inches |
| 3.4 lb. 3/8" Riblath | 24 inches |
| 4.0 lb. 3/8" Riblath | 24 inches |
| 3/8" ROCKLATH Plaster Base | 16 inches |

## FINISHED PARTITION THICKNESS AND LIMITING HEIGHTS

| Stud Width | Finished Wall Thickness Metal Lath and Plaster—Normal Grounds | Maximum Partition Height Studs 24" | 19" | 16" |
|---|---|---|---|---|
| 2½" | 4" | 9' | 14' | 15' |
| 3¼" | 4⅜" | 13' | 18' | 21' |
| 4" | 5½" | 16' | 20' | 22' |
| 6" | 7½" | 20' | 24' | |

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## GENERAL DATA FOR PARTITIONS

| Construction | Total Weight lbs. per sq. ft. | Plaster and Aggregate |
|---|---|---|
| 3" Hollow PYROBAR Tile plastered two sides | 21 | Gypsum sand 1:3, 1:2 |
| 4" Hollow PYROBAR plastered one side | 20 | Gypsum sand 1:3, 1:2 |
| 4" Hollow PYROBAR plastered two sides | 25 | Gypsum sand 1:3, 1:2 |
| 2" Solid ROCKLATH | 16 | Gypsum sand 1:2, 1:3 |
| Same | 10 | Gypsum-perlite 100:2, 100:3 |
| 2" SOLID Metal Lath (studs) | 18 | Gypsum sand 1:2, 1:2 |
| Same (studless) | 18 | Gypsum perlite 1:2, 1:2 |
| TRUSSTEEL stud—metal lath | 19 | Gypsum sand 1:2, 1:3 |
| TRUSSTEEL stud—ROCKLATH | 15 | STRUCTO-LITE or Gypsum Sand 1:2 perforated ROCKLATH |

## GENERAL PLASTER BASE DATA FOR CEILINGS

| Construction | Plaster and Aggregate |
|---|---|
| Steel joists—metal lath | ¾" gypsum sand 1:2, 1:3 |
| Same | ¾" gypsum perlite 100:2, 100:3 |
| Same | 1" gypsum perlite 100:2, 100:3 |
| 2½" reinforced concrete slab on riblath | |
| Steel joist construction with metal lath furred or suspended | ¾" gypsum sand 1:2, 1:3 |
| Same | ¾" gypsum perlite 100:2, 100:3 |
| Same | 1" gypsum perlite 100:2, 100:3 |
| ⅜" Perforated ROCKLATH attached by BRACE-TITE system—channels 16" on centers | ⅜" STRUCTO LITE Plaster or gypsum perlite 100:2, 100:3 |
| Same as above plus 14 gauge diagonal wires through clips | ½" STRUCTO LITE or gypsum perlite 100:2½ |
| Same as above except channels 12" on centers and 14 gauge diagonal wire through clips | ½" STRUCTO LITE or gypsum perlite 100:2½ |
| ⅜" Perforated ROCKLATH attached by BRACE-TITE system—channels 12" on centers and 20 gauge hex. mesh | 1" STRUCTO LITE or gypsum perlite 100:2½ |



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| Thickness | Fire Ratings Reference | Sound Transmission Loss Ratings | Limiting Height |
|---|---|---|---|
| 4 ¼" | 3 hours | 39 decibels | 13 feet |
| 4 ⅜" | 3 hours | | 17' |
| 5 ¼" | 4 hours | 43 d.b. | 17' |
| 2" | ¾ hour | 37 d.b. | 12' |
| 2" | 1 hour | 37 d.b. | 12' |
| 2" | 1 hour | 38 d.b. | 14' |
| 2" | 1 hour | 37 (est.) | 8'4" |
| 4¼ to 7¾" | 1 hour | 40 | 14 to 20' Depending on width. |
| 4½ to 8" | 1 hour | 44 to 48 | |

| | Fire Rating Reference |
|---|---|
| | 2 hours<br>3 hours<br>4 hours |
| | 2 hours<br>3 hours<br>4 hours |
| | 1 hour |
| | 2 hours |
| | 3 hours |
| | 4 hours |

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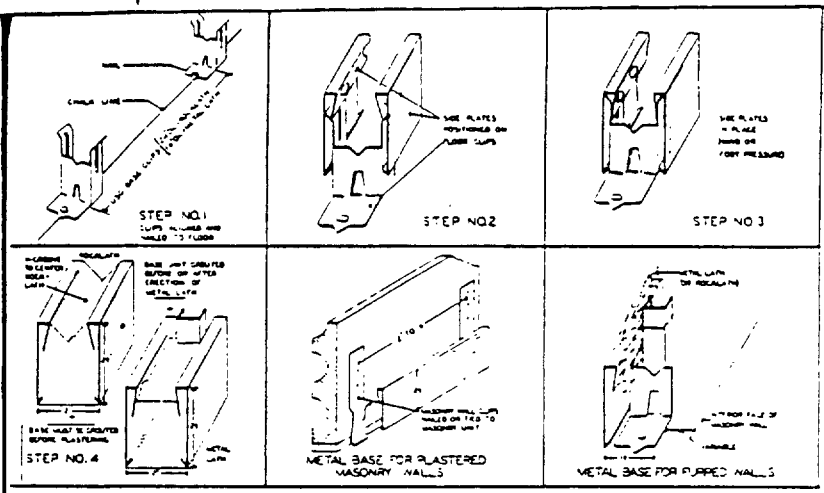



STEP BY STEP ERECTION

# USG METAL BASE

## DIRECTIONS

A "plastered-in" metal base system for partitions and walls, composed of floor clips or masonry wall clips and steel side plates. May be used with metal lath or ROCKLATH plaster bases or masonry plaster bases. Side plates: 18 gauge steel, 10 feet long by 2½ inches high.

## ADVANTAGES

**Easy Application**—Snap-on attachment feature permits faster installation with automatic and independent adjustment on any rough or finished floor.

**Versatile**—Internal and external corners can readily be formed on the job for any condition with USG notching tool.

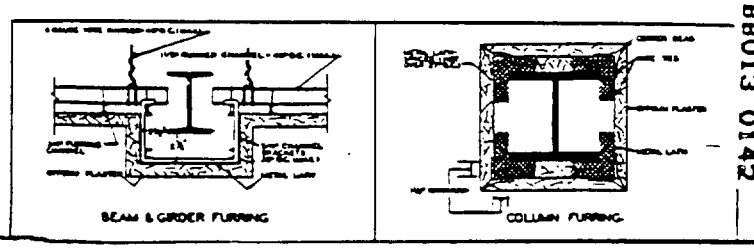
**Safety**—Adds no combustible materials to the construction and protects base of the partition.

# USG METAL LATH

## For Column Fireproofing

This time proven system provides a 1, 2, 3, or 4 hour fire rating. It utilizes self-furring Diamond Mesh lath and accessories and typical metal lath construction.

**Grounds:** One hour—¾" gypsum sand 1:2, 1:3; two hours—1" gypsum-perlite 100:2, 100:3; three hours—1⅜" gypsum-perlite 100:2, 100:3; four hours—1¾" gypsum-perlite 100:2, 100:3.

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# USG READY-FORMED METAL ARCHES

## DESCRIPTION

USG Metal Arches are the practical and easy way to form symmetrical arched openings in either new construction or remodeling. Precision-made for doorways and recesses. Available in three styles, seven sizes for finished openings 20" to 70½". USG Metal Arches are made of galvanized steel, perforated for proper plaster keying.

## ADVANTAGES

**Versatile**—Choice of size or style. Easy to vary size and shape for any size openings and partitions of any thickness by combining sections in various combinations.

**Easy to erect**—ready to put in place as they come from the carton. There are no forms to make; no corner bead to bend or shape by hand. No special preparation of the rough opening is necessary.

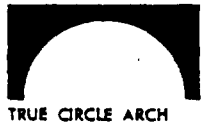
**Economical**—Since these arches combine plaster base, corner bead and plaster grounds, there's a saving in time, labor and materials.



GOTHIC ARCH
**No. 33—2' 7½" finished opening**
**No. 44—4' 1½" finished opening**

## DIRECTIONS FOR ERECTING

The arch sections fit perfectly over 2 x 4 studs and any type lath, or over masonry of similar width. For other partition thicknesses merely split arch soffit, overlapping for thin partitions and filling in gap with metal lath for thicker walls. Studs on each side of the arch should be spaced 1½ inches wider than the desired finished opening. Assemble the metal arch units on the door. Join the units, using connector pins. Strike exact center of the opening on header. Then insert the assembled metal arch in the opening over the lath. Nail in place, temporarily. Then level the arch and nail it securely in place with lath nails through the solid part of the flanges. Vertical corner beads are aligned to the metal arch with connector pins.



TRUE CIRCLE ARCH
**No. 11—10" radius**
**No. 22—15¾" radius**



ELLIPTICAL ARCH
**No. 36—3' 1½" finished opening**
**No. 55—5' 1½" finished opening**
**No. 66—5' 10½" finished opening**

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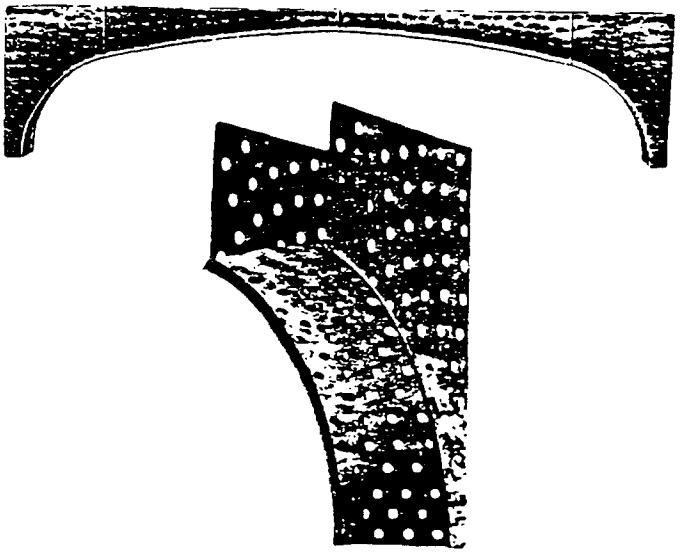

## Table of Erection Details

| Style of Arch | Width of Finished Opening | Dimension from Arch Base to Header | Spacing between Studs or Bucks (Rough Opening) |
|---|---|---|---|
| No. 11 | 20" | 10" | 21½" |
| No. 22 | 31½" | 15¾" | 33" |
| No. 33 | 31½" | 11⅜" | 33" |
| No. 36 | 37½" | 11" | 39" |
| No. 44 | 49½" | 12½" | 51" |
| No. 55 | 61½" | 13" | 62" |
| No. 66 | 70½" | 13" | 72" |

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# Plaster Problems

## Their Causes and Remedies

Basecoat and finish coat plasters are so closely interrelated that the treatment of problems pertaining to their use will be handled simultaneously in the following pages.

All RED TOP basecoat and finish coat plasters are carefully manufactured and thoroughly tested before shipment, and any troubles or problems experienced in their use are normally found to be caused by job conditions.

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## INTRODUCTION

As a general rule, most plaster problems result from the following conditions:

1. Atmospheric conditions.
2. Conditions due to set—fast or slow.
3. Improper heat and ventilation.
4. Improper application or thickness of basecoat or finish coat.
5. Improper proportioning of aggregate or improper mixing.
6. Improper workmanship.
7. Improper plaster base application.
8. Improper bond.
9. Poor aggregate (improper gradation, impurities, etc.).

Plaster problems are classified under the specific type of condition which exists. These problems are discussed in order under these following types and specialty products:

1. Plaster Cracks.
2. Weak, Soft Walls.
3. Bond Failures.
4. Set and Working Qualities.
5. Color, Surface Stains and Blemishes.
6. Acoustical Plaster Problems.
7. Cover Coat Finish Plaster Problems.

## PLASTER CRACKS

It should be understood in reviewing this broad subject that a plaster slab is *not* a delicate material and will take considerable abuse without cracking. It cracks only when some excessive external force is applied, or when some excessive internal strains are induced within it. The stresses, conducive to cracking, are normally caused by movement in the building frame, or other components of the building over which plaster is applied, or by variations in the atmosphere surrounding the plaster slab. Cracking of plaster occurs more readily where the plaster slab is weaker or thinner than standards permit, and if stresses are encountered before the plaster is dry and has attained full strength.

Proper plaster bases are important to prevent plaster cracking. They also must be sound—this is equally important in the foundations and in the structural framing. Structural weaknesses cannot be corrected in lath and plaster work.

One of the largest single factors causing plaster cracks is the lack of understanding the need for and use of proper heat and ventilation.

**Cracking of Partitions installed in line with the face of concrete columns and beams**—Reinforced concrete frame buildings and steel frame buildings with columns and beams encased in concrete may induce cracking of plaster in partitions when such partitions are located so that the plaster plane continues from the plaster base over the column and/or beam face, and is bonded to the concrete. This cracking can occur either at the joining of the concrete and the plaster base, or in the field of the partition, whether the plaster



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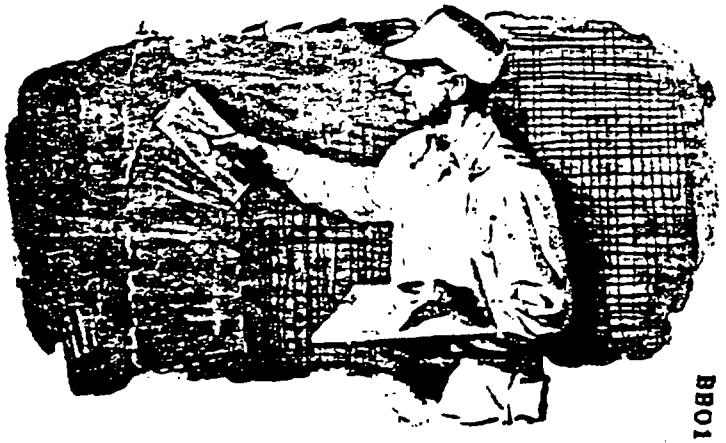
base is masonry, metal lath or gypsum lath. The cracking is caused by difference in movement between the concrete and the partition mass—the severity of cracking varying with the age of the concrete and the atmospheric conditions at the time of plastering. The cracking tendency will be reduced if the concrete has aged a year or more, or when building temperatures are moderate and stable for a reasonable time prior to plastering.

In normal construction, where plastering occurs four to eight months after the pouring of concrete, and is frequently done during colder and changeable temperature conditions, cracking may be minimized or eliminated by either, (1) relocating the partition to come several inches back from the column and/or beam face, or (2) if plaster base is installed in line with column and beam by applying heavy paper (No. 30 asphalt felt) over the concrete, lapping onto the plaster base about 1 inch, and then applying diamond mesh metal lath over the paper, scatter-nailing it 12" on center to the concrete, using stub nails, and fastening it to the edge of the plaster base by nailing to masonry, wire-tieing to metal lath, or stapling to gypsum lath. This avoids a bond of the plaster to the concrete, thus reducing stress due to movement of column or beam in relation to the partition mass.



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# PLASTER PROBLEMS AND REMEDIES

**Because of variations in market practices, aggregates, plaster bases, weather and workmanship, this chart has been prepared to assist in the understanding, diagnosis and treatment of job problems.**

## 1. CRACKS

| CONDITION | MATERIAL | CAUSE | REMEDY OR PREVENTION |
|---|---|---|---|
| 1. Connected vertical and horizontal cracks at somewhat regular intervals often in "stepped" pattern. | Plaster over any sheet lath, metal or gypsum. | Plaster too thin, insufficient plaster grounds. | Reinforce and patch. Apply to proper thickness. |
| | | Weak plaster. | See "Weak Soft Walls," Page |
| | | Stress from differential structural movement. | Reinforce and patch. |
| | | Lath not properly applied. | 1. Remove existing lath and plaster and then relath properly and replaster.<br>2. Where condition exists on ceilings and joists will support weight of new plastered ceiling, nail wood furring strips across joists on 16" centers with embedment of nails at least 1¼" into joists, then apply gypsum lath across nailing strips and replaster.<br>3. Nail self-furring 3.4 diamond mesh metal lath into joists, with embedment of nails at least 1¼" into joists, and replaster. |
| | Plaster over unit masonry | Structural movement of masonry units. | Cut out, reinforce and patch. Correct masonry construction. |
| 2. Cracks over and from corners of openings. | Plaster over brick, clay tile or cement block. | Lintel construction is poor. | Patch. Prevent by using proper frame and lintel construction with metal lath reinforcement. |
| | | Improper frame construction. | |
| | Plaster over lath bases. | Plaster too thin. | Patch. Apply to proper grounds. |
| | | Weak plaster. | See "Weak Soft Walls," Page |
| | | Foiture to use metal lath reinforcement. | Cut out, reinforce, and repair. |
| | | Expansion of wood frames. | Seal frames—Cut basecoat along grounds prior to set. |

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|---|---|---|---|
| 3. Fine cracks, random pattern, generally 1" to 3" apart.<br>"Shrinkage cracks"<br>"Crazing"<br>"Alligatoring"<br>"Chip Cracks" | Cracks in gauged lime putty finish over gypsum basecoat—any plaster base. | Insufficient gauging plaster—shrinkage of lime. | Trowel with spackling putty and apply USG Sealer. Prevent by using sufficient gauging plaster, water troweling sufficiently, or properly conditioning the basecoat before applying finish. |
| | | Insufficient troweling during set | |
| | | Basecoat too wet or too dry and too little or too much suction | |
| | Cracks in trowel finishes over gypsum basecoat—unit masonry plaster base. | Finish coat applied too thick. | Excessive thickness is conducive to shrinkage. Apply to thickness of 1/16" to not more than 1/8". |
| Fine cracks, irregular pattern, generally 6" to 14" apart.<br>"Map cracking" | | Improper timing of final troweling. | Final troweling too soon may result in shrinkage. Water trowel as final set takes place to provide dense, smooth surface. |
| | | Retempering of gauged lime putty finish coat on board. | Gauged lime putty should not be retempered once it has started its initial set on board; it should be discarded and new gauge made up. |
| | | Stress from differential movement of plaster base. | Apply USG Sealer. Prevent by changing plaster base to a type not subject to inducing such cracking. |
| | Cracks in trowel finishes—over gypsum basecoat—both bases | Plaster too thin, insufficient plaster grounds. | Patch. Apply to proper thickness. |
| | | Weak plaster. | Patch or remove and replace with proper mix. |
| 4. Cracks in random pattern usually less than 12" apart, Map, Shrinkage or Fissure cracking pattern. | Basecoat over masonry. | High suction of masonry base. | Wet masonry with water to reduce suction or trowel in a scratch coat and double back after a few minutes to fill out to grounds. |
| | | Under aggregating of basecoat. | Use 3 cu ft. of aggregate per 100 lbs. of gypsum. |
| | | Slow set. | Discontinue use of job added retarder and add accelerator if necessary to obtain proper job set. |
| | | As result of dry-out condition. | Spray walls either with water or alum solution to set basecoat plaster through to base. |
| | | | If bond to base is sound and cracks are open 1/16" or more fill by troweling across cracks with properly aggregated plaster. If fine cracks finish with highly gauged trowel finish or a float finish. If curled at edges and bond unsound remove and re-apply with proper plaster and method. |

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# PLASTER PROBLEMS AND REMEDIES

## 1. CRACKS

| CONDITION | MATERIAL | CAUSE | REMEDY OR PREVENTION |
|---|---|---|---|
| 5. Crack at wall or ceiling angles. | Plaster over gypsum lath. | Thin plaster. | Cut out and patch. Correct construction or application details. |
| | | Failure to use cornerite | |
| | Plaster over masonry. | Failure to wedge tile at ceiling, interlock or tie walls together or use cornerite. | Prevent by correct construction. |
| 6. Wall and ceiling cracks. Long crack at right angles to framing. | Gypsum lath on wood frame construction. | Thin plaster. | Use adequate dimension framing members. |
| | | Deflection of joists. | Control job temperature in a normal uniform range above 55°F. |
| | | Rapid thermal change or extreme thermal differential between face and back of plaster. | |
| Cracks at and parallel to framing members. | Metal lath on wood frame construction. | Thin plaster. Weak plaster. | Use a strong plaster mix. |
| | | Twisting of framing members. | Use well dried adequate dimension framing members. |
| Long cracks generally in direction of main runners. | Suspended metal lath or furred walls. | Extreme thermal differential. | Control job temperatures in a normal uniform range above 55°F. |
| Random cracking generally 12" to 36" apart. | Suspended metal lath or furred metal lath. | Weak plaster. | Control job temperatures in a normal uniform range above 55°F. Use a strong plaster mix. |
| | | Rapid thermal change. | |
| Vertical cracks. | Masonry blocks | Shrinkage of units. | Use cured units. |
| | Masonry or lath bases aligned with concrete. | Differential movement. | See Page . To minimize prevent bond of plaster to concrete. Realign partition location. |
| Random cracks emanating from openings. | [illegible] over any [illegible] base. | Stress created at corners of square or rectangular openings. | Patch. Prevent by furnishing adequate support for fixture, use high strength plaster, and trowel cut plaster from ground prior to set. |

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| mildew—like fuzz on surface, generally white but may be colored. Can be brushed off. | finish plaster over concrete, brick, cement block or clay tile. | units dry out, water soluble salts from the units or mortar joints leach out and are deposited on the plaster surface. | remove efflorescence, then seal with oil base sealer and paint.<br>2. On interior walls, eliminate source of moisture, then remove efflorescence and decorate.<br>3. On exterior walls, eliminate source of moisture, furr out, lath and plaster. |
| 2. Streaky discolorations. | Lime finishes gauged with gauging plaster or with Keenes Cement. | Lime and gauging plaster not thoroughly mixed. | Prevent by thorough mixing. Remedy by application of TEXOLITE Primer or TEXOLITE Vinyl Sealer—then paint. |
| | | Too much water used in troweling | Remedy same as above. |
| | | Efflorescence from masonry. | See condition No. 1, above. |
| | | Dirty tools or dirty water. | Wash tools and use clean water. Remedy by sealing and painting as above. |
| 3. Streaked—joinings show "Slobbers." | Gauged lime putty finish or gypsum trowel finish. | Improper joining technique or excessive troweling at joining. Improper troweling to leave "slobbers" on finish surface. | 1. Previously applied finish should be cut square for application of balance of finish.<br>2. Avoid excessive troweling at joining.<br>3. Scrape off "slobbers" before decoration.<br>4. Seal surface when plaster is dry. |
| 4. Light and dark spots due to causes other than "dry-out." | Float finish. | Improper floating or too much water used in floating. | Paint with TEXOLITE paint products to get uniform color. |
| | | Dampening basecoat by throwing water on with brush rather than hose with fine-spray nozzle. This causes spotty correction of suction. | Same as above. |
| | | Variable suction in basecoat | Dampen basecoat uniformly using hose and fine-spray adjustment to nozzle. |
| 5. "Pops"—peak-like projections which fall out making little craters or pits; often with fine radial cracks | Lime finish coat. | Unslaked lime in mortar which slakes and swells after it is applied.<br><br>Contamination by foreign matter. | Remove core of "pops" and patch. Prevent by proper soaking period with normal hydrated lime or by using double hydrated lime. |
| 6. Same as (5) above except pit is discolored tan or greenish tan. | Gypsum base coats and finishes. | Retarder spots. Lumpy or undissolved retarder added at job. Retarder lumps swell or "pop" when wet. | Cut out spots and patch. Prevented by screening retarder thru 40 mesh screen. |
| | | Contamination by foreign matter such as cinders, etc. | Eliminate source. |

# PLASTER PROBLEMS AND REMEDIES

| CONDITION | MATERIAL | CAUSE | REMEDY OR PREVENTION |
|---|---|---|---|
| 7. Blisters (do not confuse with (5) above). | Gauged lime putty finishes. | Base too green, insufficient suction; or too much water used in trowelling. | After finish has "set" trowel with very little water. Do not apply finish over green base coat. |
| | | Finish lime too plastic. | Cut putty with small amount fine white sand or increase amount of gauging plaster. |
| | Gypsum trowel finish | Base coat too wet when finish applied. | After finish begins to "set," trowel with very little water. |
| 8. Uneven color (not due to texture shadows). | Interior colored plaster finishes. | Uneven absorption of base coat, water used in finishing, or dirty box and tools, or variation in water content of successive batches. Failure to finish single areas to angles in one operation. | Prevented by following specifications. Remedied by painting with TEXOLITE paint. |
| | | Finish not dry. | Ventilate to dry wall properly |
| 9. Uneven color—light, or "flat" spots in light colors (See below). | Oil paint over gauged lime putty finish. | Painted too soon after plastering (alkali in lime saponifies paint); or pigment not limeproof | Paint with TEXOLITE Primer and TEXOLITE paint. |
| 10. Uneven color—dark colors. | Any colored paint over any plaster finish. | Color variation due to non-uniform absorption. Binder strikes in unevenly | Apply USG Sealer and repaint. |
| 11. Yellow, brown, or pink surface stains—"yellowing." | Any lime finish over any plaster base, generally occurs while surface is damp. | Contaminated sand. | Prevent by using clean sand. |
| | | Burning green wood in fireplace. | Improve draft to stop smoke. |
| | | Open gas heaters not vented to outside. | Vent heaters to outside. |
| | | Tarpaper back of plaster base. Creosote treated framing lumber, tar, or tar derivatives used around job. Sulphur or chemical fumes. | Use asphalt paper. Avoid source of air contamination. Seal with USG Sealer. Decorate. |

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| surfaces, occurring during hot, dry weather, usually near opening. | over any plaster base. | has removed water before plaster could set. | dry-out areas.<br>Prevention—Screen openings in hot, dry weather spray during set time if necessary. |
| 2. Soft, dark, damp surfaces occurring during damp weather. | Gypsum base coat over any plaster base. | Sweat-out. Too little ventilation allowed water to remain in wall after plaster set. Some of plaster has re-dissoved. | Remedy—Dry the walls with heat and ventilation.<br>Prevention—Heat and ventilate during plastering. If condition exists for too long a period there is no remedy. Remove and replaster. |
| 3. Soft (exactly as 2 above), but occurring in freezing weather. | Gypsum base coat over any plaster base. | Frozen plaster. | Close building, supply heat. When plaster has set, continue heat and ventilate. |
| 4. Soft, weak wall. Condition general—not spotty nor due to slow set. | Gypsum base coat over any plaster base. | Use of too much aggregate, or a fine, poorly graded aggregate. | No remedy. Prevent by use of aggregate that meets specifications for gradation and proportions. |
| 5. Weak plaster. | Gypsum basecoat | Extreme slow set (more than 8 hours). | Spray with alum water to accelerate set. Add accelerator to plaster mix to bring setting time within normal range. |
| 6. Soft, weak wall. | Gypsum trowel finish over any base coat. | Dry-out or retempered finish. | If dry-out treat as condition (1) above. Trowel well when set.<br>If retempered, no remedy except tear off and refinish. |
| 7. Soft, weak wall. | Gauged lime putty finish over any base. | Insufficient gauging with insufficient trowelling or retempered. | No remedy except to remove finish and replaster. |
| 1. Separating from plaster base. | Gypsum plaster over gypsum lath. | Too much aggregate, freezing, or addition of lime or Portland cement. | No remedy except to replaster. |
| | | Excessive delay in plaster application after mixing or excessive use of retarder resulting in extremely slow set. | |
| 2. Separating from plaster base. | Gypsum plaster over metal lath. | Too much aggregate. | Replaster with correct mix. |
| | | Low plaster strength. | |
| | | Freezing. | Thaw and allow to set and dry, or replaster. |
| 3. Separating from plaster base. | Gypsum plaster over masonry. | Excessive suction. | Dampen masonry surfaces |
| | | Masonry non-absorbent, has glazed surface. | No remedy. Prevent by hacking masonry surface. |
| | | Efflorescence. | Eliminate source of moisture, replaster. |
| | | Insufficient aggregate. | Remedy—Follow directions. |

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# PLASTER PROBLEMS AND REMEDIES

4. BOND FAILURE

| CONDITION | MATERIAL | CAUSE | REMEDY OR PREVENTION |
|---|---|---|---|
| 4. Separating from plaster base. | Gypsum plaster over concrete. | Use of ordinary gypsum plaster. | Remove and replaster with BONDCRETE, or use plaster bonding medium. |
| | Gypsum bond plaster over concrete. | Surface oily, too smooth, dirty, or efflorescing. | Remove plaster. Clean and roughen surface. Replaster. |
| | | Application of too thick a coat of BONDCRETE Plaster. | Do not exceed ¼" thickness on ceilings and ⅛" on side walls. |
| 5. Brown coat separating from scratch coat. | Gypsum basecoat plasters. | Weak scratch coat. | Prevent by proper amount of aggregate. |
| | | Failure to provide mechanical key in scratch coat. | Roughen scratch coat and replaster. |
| | | Dry-out of scratch coat. | Remedy—Spray scratch coat for thorough set before application of brown coat. |
| 6. Finish separating from brown coat. | Gauged lime putty finish over gypsum brown coat. | Brown coat too smooth, too dry, too wet or too weak; finish improperly applied; incomplete hydration of finish line. | Where brown coat is cause, strip off finish, correct condition of brown coat and replaster. Where finish is cause, refinish properly using IVORY double hydrated lime. |
| | | Frozen finish coat. | Remove and re-apply finish. |
| 7. Finish separating from brown coat. | Gypsum float and trowel finish over gypsum brown coat. | Brown coat too smooth. | Roughen brown coat. |
| | | Brown coat too dry. | Dampen brown coat until half green. |
| | | Brown coat too weak. | Strip down to lath and replaster. |
| | | Finish improperly applied. | Apply as directed. |
| | | Frozen finish coat. | Remove and re-apply finish. |
| 8. Finish separating from brown coat. | Colored interior finishes over brown coat. | Brown coat not broomed. | Roughen brown coat and refinish |
| | | Thin finish not ground in. | Finish following application directions. |
| | | Brown coat too weak. | Correct condition of base coat and refinish. (See 7 above). |
| | | Frozen finish coat. | Remove and re-apply finish. |

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| | over any plaster base. | plaster, over-sanding, sand too fine, or dirty sand | |
| | | Slow set due to error in manufacture. | Send samples to manufacturers' representative. |
| | | Slow set due to poor sand or poor water. | Obtain good sand and water or accelerate plaster. |
| | | Slow set due to excessive job use of retarder. | Avoid careless job use of retarder. |
| 2. Sets in box or sets on wall before it can be darbied or straightened. | Gypsum base coat over any base. | Quick set due to dirty water, tools and mixing equipment. | Use clean water, tools, equipment. |
| | | Mixing too long. | Reduce mixing time. |
| | | Quick set due to poor sand. | Use good washed sand or add retarder. |
| | | Quick set due to error in manufacture. | Add retarder. Send samples to manufacturers' representative. |
| | | Quick set due to machine mixing. | Add retarder. |
| 3. Works hard or "short." Will not spread. Does not carry proper amount of sand. | Gypsum base coat over any plaster base. | Aged or badly stored plaster. | Get fresh plaster, use equal parts fresh and aged plaster, or use less sand. |
| 4. Works hard or "short". Will not spread. | Gypsum base coat over any plaster base. | Over-aggregating. | Correct conditions by using proper proportioning. |
| 5. Tough and short working, rubbery or lumpy lime putty. | Gauged lime putty over gypsum base coat. | Old material partially carbonated, warehoused too long. | No remedy. Can be used for masons lime. |
| | | Improper soaking, aging, or slaking. | No remedy. Prevented by proper preparation. |
| | | Low temperatures. | Do not soak at temperatures below 40°F. |
| 6. Lack of uniformity in set. | Gauged lime putty over gypsum base coat. | Unusual temperatures. | Properly heat the building in cold weather min. 55°F. Use slow set gauging in hot weather. |
| | | Improper gauging. | Use proper type and amount of gauging plaster. |
| 7. Finish works hard. | Gypsum finishes over base coat. | Mixed too stiff. | Use more water. |
| | | Base too dry. | Apply to half green base. Spray dry base lightly and uniformly before finishing. |

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# 6. ACOUSTICAL PLASTER PROBLEMS

Acoustical plasters (SABINITE, USG HI-LITE and RED TOP AUDICOTE) are special finish coat plasters that require additional job precautions due to the special function which they perform—that of absorbing sound. By properly following manufacturer's mixing and application directions, an excellent attractive and efficient acoustical ceiling will result. However, job abuses in mixing and application can destroy the acoustical efficiency as well as the appearance of the job.

Indicated below are problems arising from improper use of acoustical plasters, their causes, remedies, and preventitive measures.

| CONDITION | SABINITE ACOUSTICAL PLASTER CAUSE | SABINITE ACOUSTICAL PLASTER REMEDY OR PREVENTION | USG HI-LITE ACOUSTICAL PLASTER CAUSE | USG HI-LITE ACOUSTICAL PLASTER REMEDY OR PREVENTION | RED TOP AUDICOTE ACOUSTICAL PLASTER CAUSE | RED TOP AUDICOTE ACOUSTICAL PLASTER REMEDY OR PREVENTION |
|---|---|---|---|---|---|---|
| Drop-outs and lack of bond. | 1. Improper basecoat. | 1. Not properly cross-raked. Lack of suction—basecoat too green. Basecoat too dry—excessive suction—spray lightly. | 1. Improper basecoat. | 1. Not properly cross-raked. Lack of suction—basecoat too wet. Excessive suction—spray lightly. | 1. Improper basecoat. | 1. Not properly cross-raked. Lack of of suction—basecoat too wet. |
| | 2. Over-mixing. | 2. No remedy—Dump mixed material. | 2. Over-mixing. | 2. No remedy—Dump mixed material. | 2. Mixing | 2. Improper water content. Insufficient mixing. |
| | 3. Under-mixing. | 3. Mix to proper mortar weight. | 3. Under-mixing. | 3. Mix to proper mortar weight. | 3. Appli-cation. | 3. Where applied by hand—failure to scratch in hard ⅛"—failure to double-up to a full ⅜" immediately behind scratching. |
| | | | 4. Appli-cation. | 4. Failure to scratch in hard ⅛"—failure to double-up to a full ⅜" immediately behind scratching. | | |
| Blisters. | 1. Basecoat too green. | 1. Provide proper heat and ventilation. | 1. Basecoat too green. | 1. Provide proper heat and ventilation. | 1. Basecoat too green. | 1. Provide proper heat and ventilation. |
| | 2. Over-mixing. | 2. No remedy—Dump mixed material. | 2. Over-mixing. | 2. No remedy—Dump mixed material. | 2. Appli-cation. | 2. Where applied by hand—failure to scratch hard ⅛" and failure to double-up immediately behind scratching. |

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| | | | 3. Application. | 3. Failure to scratch hard ⅛" and failure to double-up immediately behind scratching. | | |
| Weak, Soft Ceilings. | 1. Over-mixing. | 1. No remedy—scrape down to basecoat and re-apply. | 1. Over-mixing. | 1. No remedy—scrape down to basecoat and re-apply. | | |
| | 2. Sweat-out. | 2. No remedy—scrape down to basecoat and re-apply with correct heat and ventilation. | | | | |
| Joinings. | 1. Improper planning—plastering to a partially set edge. | 1. Provide sufficient scaffolding and men. Work in a continuous operation. Remedy—Cover with skim coat of material. | 1. Improper planning—plastering to a partially set edge. | 1. Provide sufficient scaffolding and men. Work in a continuous operation. Remedy—Cover with skim coat of material. | | |
| Trowel marks. | 1. Improper troweling. | 1. Final trowel in all directions. | | | | |
| | 2. Poor lighting. | 2. Supply same lighting as for finished job. | | | | |
| Slick spots in finish surface. | 1. Final troweling too soon. | 1. Cover with thin skim coat—trowel after water sheen has left surface. | | | | |
| Loss of sound absorption. | 1. Over-troweling. | 1. No remedy—trowel lightly on final troweling. | 1. Too thin application. | 1. Apply full ½" acoustical plaster. | 1. Too thin application. | 1. Apply full ½" acoustical plaster. |
| | 2. Final troweling too soon. | 2. Cover with skim coat—re-trowel. | 2. Improper painting. | See Painting Directions. | 2. Improper painting. | See Painting Directions. |
| | 3. Too thin application. | 3. Apply full ½" acoustical plaster. | 3. Stipple texture too light. | 3. Surface allowed to take up too much prior to stippling. Stipple as specified. | | |
| | 4. Improper painting. | 4. No remedy. | | | | |
| | 5. Water floating. | 5. Apply skim coat—refloat—use no water. | | | | |

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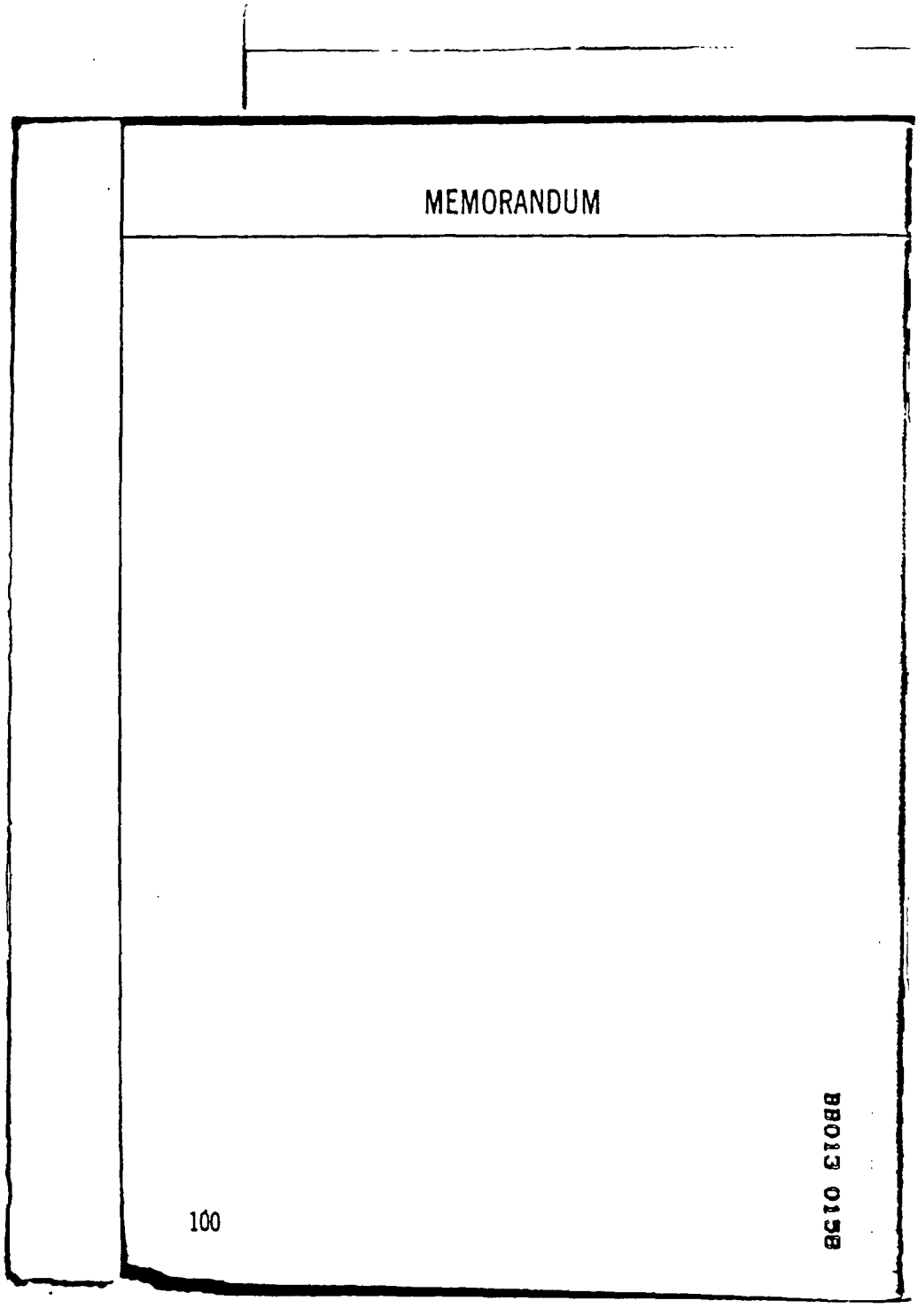
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# How To Inspect A Plaster Job

Approximately 80% of the visible wall surface in the average building is plaster. It is fundamental that all those involved in the plastering operation cooperate to obtain the best possible job. This section attempts to point the way to achieving such an objective—a *quality plaster job.*

Proper inspection of a lathing and plastering job requires a complete understanding of job details, schedules and specifications. All walls must be judged within the framework of the drawings and the specifications on which the contract is based. It is most important that these drawings and specifications be complete, accurate and easily interpreted.

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## SCHEDULE OF INSPECTION

**Job inspections should be made at the following stages:—**

**A.** When job is ready for lathing and plastering.

1. Determine that the brands and types of materials delivered to the job are in accordance with specifications and approvals granted.

2. Determine that proper storage facilities are provided for the materials. (*See page 36, paragraph 3.*)

**B.** When lathing has started but before plastering has begun.

**C.** When base coat plaster is being applied.

**D.** When finish coat is being applied.

**E.** When job is completed.

## PLASTER BASES

**A.** A plaster job is only as good as the base over which it is applied. Generally, plaster bases can be classified under these headings:

1. Suction Type—Gypsum lath and fiber insulating lath in which the water of the plaster mix carries gypsum into the porous surface, forming tiny keys which hold the plaster to the base.

2. Mechanical Type—Metal lath, in which the lath is embedded in the plaster and, in effect, forms a reinforced plaster slab.

3. Combination Type—Gypsum block, clay tile, other masonry and perforated gypsum lath, in which both suction and mechanical key combine to hold the plaster to the base.

**B.** The most commonly used bases, along with points that should be checked prior to base coat application are:

1. Unit Masonry (gypsum block, clay tile, porous brick or rough concrete block)

a. Has correct mortar been used for laying? (*See pages 17-19.*)

b. Are walls straight and true?

c. Are any structural cracks evident?

d. Have proper grounds been installed? (*See page 17.*)

2. Gypsum Lath

a. Has it been applied according to manufacturer's specifications. (*See page 16.*)

b. Have proper grounds been established, angles and corners reinforced? (*See page 16.*)

3. Metal Lath

a. Have specifications of manufacturer been followed for proper nailing or tieing? (*See pages 26-28.*)

b. If suspended, furred or contact work, have proper weights of lath and spacing supports been maintained. (*See pages 26-27.*)

c. Have proper grounds been provided?

4. Insulation Fiber Board Lath

a. Check for correct application.

b. Check for proper grounds, angle and corner reinforcement.

5. Monolithic Concrete

a. When bond plaster is used, has surface been prepared and material applied according to manufacturer's specifications? (*See page 38.*)



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## SUSPENDED GRILLAGE

Spacing of hangers and channels shall be in accordance with spacings recommended for the type of hanger and weight of metal lath used.

Runner or furring channels shall not be let into or be supported by abutting walls. Place runner channels within 6" of walls.

## GROUNDS

The thickness of base coat plaster is one of the most important elements of a good plaster job. To insure proper thickness, grounds should be properly set and followed. Grounds may be defined as wooden strips, corner beads (plumbed and straight), metal base screed, or metal casing beads applied at the perimeter of all openings and other locations. In addition to these, and especially on walls with no openings, and on ceilings, plaster screeds should be installed to insure plumb and level surfaces. Plaster screeds are either dots or continuous strips of plaster applied to required ground thickness to permit proper plumbing and leveling.

Grounds should be set to obtain the following minimum plaster thicknesses:

1. Over gypsum lath, and fiber insulating lath..... ½"
2. Over brick, clay tile, gypsum block, or other masonry..... ⅝"
3. Over metal lath, measured from face of lath..... ⅝"

## PLASTERING MATERIALS

The plastering materials generally in use today are gypsum cement plaster (*See page 33*), gypsum mill-mixed base coat plasters (*See pages 38 & 39*), hydrated finish limes (*See page 44*), gypsum gauging plaster (*See page 45*), sand (*See page 33*), vermiculite (*See page 34*), perlite (*See page 34*) and water (*See page 35*).

After determining what materials are specified for use on the job, reference to the pages indicated above will describe the nature of each material and point out precautions that should be taken for storing it before it is mixed into plaster.

## JOB CONDITIONS

**See pages 36-37**—This phase of the inspection is most important and, in many cases, will determine the success of the entire operation. An accurate check of the following points will prove well worthwhile:

**A.** Storage

1. Has material been properly stored on the job for maximum protection from weather and dampness?

**B.** Heating and Ventilation

1. Have proper heating and ventilation been provided?

*At no time* should any plastering be performed without proper heating and ventilation. A principal reason for this is that circulation of air at the right temperature is necessary to carry off the excess water in the plaster, helping to avoid "sweat-out" conditions.

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2. In enclosed areas where adequate normal ventilation through doors and windows is not provided, supplementary artificial ventilation *must* be provided.

3. In colder climates during the late fall, winter and early spring, the building should be heated in the normal range of 55 to 70 degrees for some time prior to plastering and maintained at a uniform temperature in this range during all plastering and after the completion of the plaster work.

### TWO COAT VERSUS THREE COAT WORK

**See page 36**—The architect's specifications and the plaster base will determine what plastering method will be used. There are two general ways of applying plaster:

1. Two-coat work.
2. Three-coat work.

Except over metal lath, long length gypsum lath, fiber insulation lath, and wood lath, either of these two methods with the plaster properly mixed and applied can be employed.

### MIXING

**See page 35**—A mechanical mixer is preferred to box mixing, because it is easier to assure that the plaster aggregate and water are more evenly mixed. Keep the mixer continually clean, which is *most* important, because partially set material is a powerful accelerator.

When mixing by hand, plaster and sand first should be mixed dry to a uniform color in a mixing box, and the water added and the plaster hoed into the water immediately and thoroughly mixed to a proper consistency. Remember a number 2 shovel generally used to add sand to the mix carries approximately 15 pounds. Therefore, a 1:1 mix would use 6 to 7 number 2 shovels to 100 pounds of gypsum plaster. A 1:2 mix is 12 to 14 shovels, and 1:3 mix is 18 to 21 shovels.

When perlite or vermiculite aggregate is used instead of sand, remember the proportioning is *weight* of gypsum to *volume* of aggregate. (*See page 33* for proper mixing proportions.)

### SCRATCH COAT

Section on "Plaster Bases"—(page 9) stated that there are three general types of plaster base: suction type, mechanical type, and a combination of both. Let's approach the actual application with this in mind and, as a result, know what to look for to help assure a good job.

**A.** Application over *Suction Type*

1. Is the base properly applied and ready for plaster? (*See pages 16.*)
2. Is the correct aggregate being used in the proper proportion? (*See pages 32-35.*)
3. Is the building properly heated and/or ventilated, as suggested under Section on "Job Conditions."
4. Is scratch coat being applied to correct thickness and left in proper condition to receive the brown coat? (*See page 36.*)



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**B.** Application over *Mechanical Type*
Observance of the same precautions as indicated above should be checked, and it is recommended that fibered plaster be used, as fiber prevents the passage of excessive mortar through the keys and holds plaster to lath until set.

**C.** Application over *Combination Type*
The same requirements as apply in (A) above should be followed.

### BROWN COAT

Once the scratch coat has set and is partially dry (usually overnight is sufficient), the brown or second coat is applied. Of course, precaution must be taken by the inspector to assure himself that the plaster is being prepared with the proper aggregate correctly proportioned. (*See pages 33 & 34.*) This coat of plaster, together with the scratch coat, forms the backbone of the plastered wall or ceiling, and it is important to see that it is applied to full grounds. All brown coat work should be left *rough* under the rod or darby to provide "tooth" for the finish coat. The use of excessive water in rodding or darbying the brown coat, which leaves the surface smooth and slick, *is not good practice.*

### SET OF BASE COAT PLASTER

The proper setting time for base coat plasters is generally from 2 to 4 hours after mixing, and this should be checked for close conformity on both the scratch coat and the brown coat operation. The danger of "quick set" plaster is that there will not be sufficient time to get the plaster from the mixer to the walls without retempering on the mortar board, and such retempering will produce a plaster of lower than normal strength. The correction for "quick set" is to add the proper amount of retarder in solution with water at the mixer.

If plaster does not set for 5 to 6 hours, no harm will be done to the resulting plaster surfaces, but a "slow set" of the plaster (generally one taking more than 6 hours) should be avoided by adding accelerator in a dry state at the mixer, as such plaster may be subject to a "dry out" (*See page 95*), particularly in hot, dry weather, and will have a lower than normal strength when finally set.

The setting of base coat plaster is indicated by the hardening of the plaster and by a darkening of the surface as the set takes place. The portion of the plaster which has set but has not yet thoroughly dried will be darker in color than the unset portion of the plaster. This accounts for the mottled effect in base coat plaster which appears as the set is taking place.

### FINISH COAT

In addition to gypsum-lime putty trowel finish (*See page 44*), the most common types of finishes are Keene's cement-lime putty finish (*See page 46*), prepared gypsum trowel finish (*See page 47*), gypsum-sand float fin-

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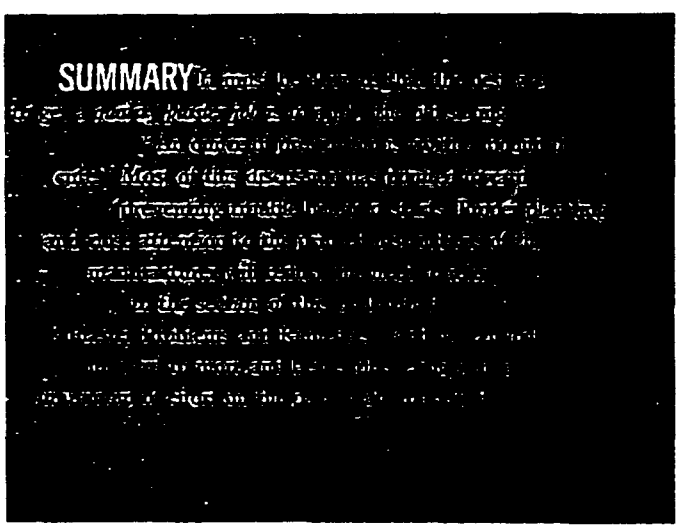
ee page 47), ORIENTAL Interior
(See page 49), USG Acoustical
ers. (See page 51).
nerally, all finish coats are ap-
to a properly prepared base
of gypsum plaster (See page 43).
mixing and application of fin-
ats, it is most important that
ecommendations of the manu-
facturer be followed. These recommendations, along with mixing directions, are printed on each bag and can also be found in the finish plaster section of this book. (See page 43). The visible success of the job is now at stake, and the required measures should be taken to finish correctly.

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