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## TECHNICAL INFORMATION

# USG\* SHEATHING



\*T. M. Reg. U. S. Pat. Off.

July, 1952



## United States Gypsum

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# USG\* SHEATHING

## DESCRIPTION

USG Sheathing is a fireproof gypsum sheathing material. It is made in large unit sheets 2'x8'x $\frac{1}{2}$ " with a new type water-resistant "asphalted" gypsum core enclosed in a specially treated, water-repellent, heavy black paper. The long edges are V-tongued and grooved.

## FUNCTION AND UTILITY

**Fireproof**—The gypsum core is incombustible and will not communicate high temperatures until completely calcined—a slow process.

**Resistance to Weather and Moisture**—The gypsum in the core is thoroughly inter-mixed with asphalt type emulsion. In addition, the tough paper covering is given a special water-repellent treatment. This combination provides an amazing resistance to weather. The ability to "weather all weather" makes possible open storage on the job and exposure on the framing during construction without appreciable loss of structural value. It does not warp or buckle.

**Vapor Permeability**—USG Sheathing has an average permeability of 27.3 perms.†

**Adds Structural Strength**—Wet or dry, USG Sheathing provides unusual lateral bracing to the frame. (See technical data.)

**Wind-Tight Joints**—The precision formed, interlocking V-tongue and groove edges snugly fitted, minimize wind infiltration.

### Economical

- Unit cost of material is low.
- Full dimension—no face loss.
- Building paper eliminated except where required by local building regulations.
- Minimum of waste—sheets fit standard 16" or 24" stud spacing.
- Up to 1000 sq. ft. can be applied by one man in eight hours.

## LIMITATIONS OF USE

### 1. Maximum Stud Spacing

USG Sheathing is designed for use on stud centers up to 24" for exterior finishes of wood siding, brick veneer, stucco, wood shingles over wood furring strips or asbestos cement shingles applied with the USG SHADOW-LOCK attachment system.

### 2. Attachment of Exterior Finishes

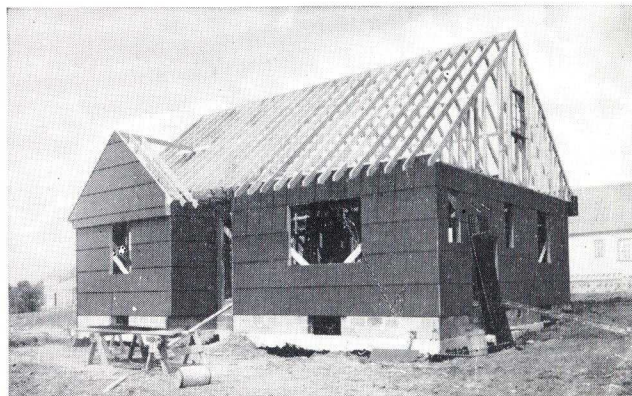
Wood siding, mesh reinforcement, nailing strips, wall ties, etc., shall be secured to the framing members by nailing through the USG Sheathing.

"USG," "GLATEX" and "ORIENTAL" are registered trademarks owned by United States Gypsum and used by it to distinguish its products. "USG" identifies the particular gypsum board sheathing, "GLATEX" identifies the particular siding shingles and "ORIENTAL" identifies the particular colored stucco finish, manufactured only by United States Gypsum.

\*Trademark Reg. U. S. Pat. Off.

†One perm equals 1 grain per sq. ft. per hour per inch of mercury vapor pressure difference.

AGS-1 United States Gypsum Company



USG Sheathing being applied to wood frame house

## TECHNICAL DATA

### 1. STRENGTH TO RESIST LATERAL DISTORTION

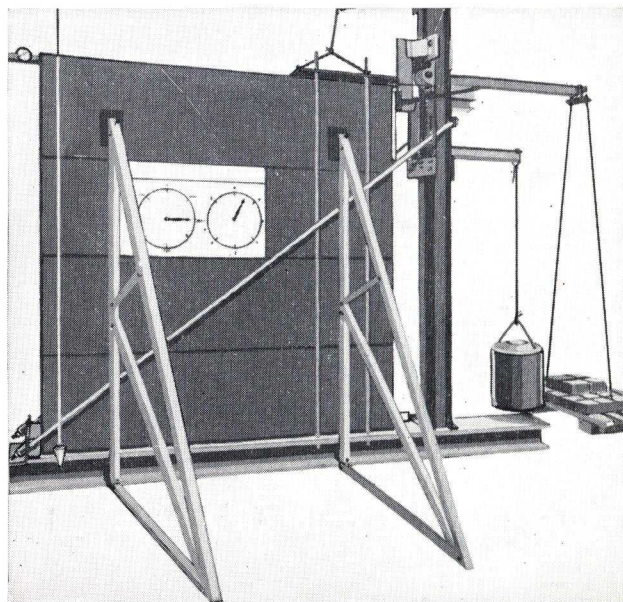
Comparative tests have been conducted in USG Research Laboratories and attested by Phil C. Huntly, Consulting Engineer. Tested dry, USG Sheathing applied to an 8'x8' panel of 2"x4" framing on 16" centers had a lateral distortion of .498 inch under a racking load of 1850 lbs.

A similar panel was subjected to the equivalent of 5½ years of average United States rainfall in a giant "weatherometer" and with the same load of 1850 lbs. the distortion was only 1.125 inches.

Under this same load a similar frame sheathed with 1"x8" dry wood sheathing resulted in a distortion of 10.312 inches.

### 2. INSULATION

Thermal conductance is 2.86 and thermal resistance is 0.35, both for  $\frac{1}{2}$ " thickness.

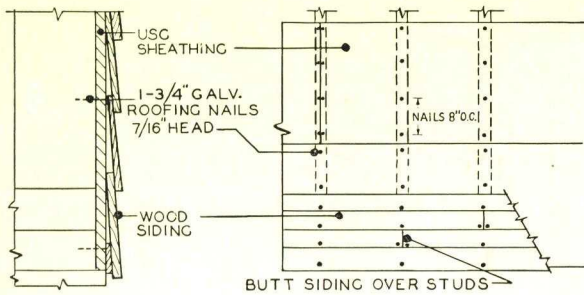


USG Sheathing Panel in Lateral Distortion Machine  
Load of 1850 lbs. applied at upper right hand corner of 8'x8' Test Panel  
Lateral distortion on Dry Panel—.498 inch  
Lateral distortion on Wet Panel—1.125 inches

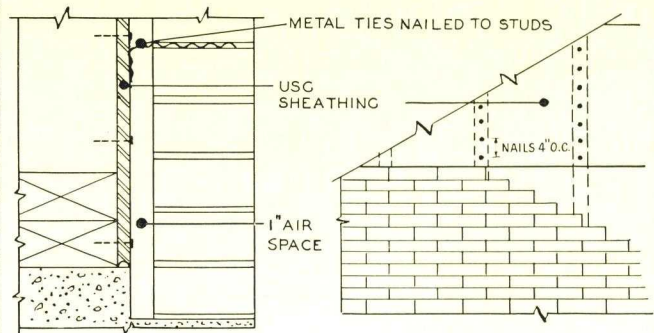


# USG SHEATHING

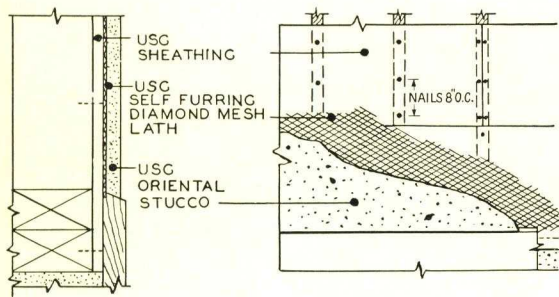
## WOOD SIDING



## BRICK VENEER

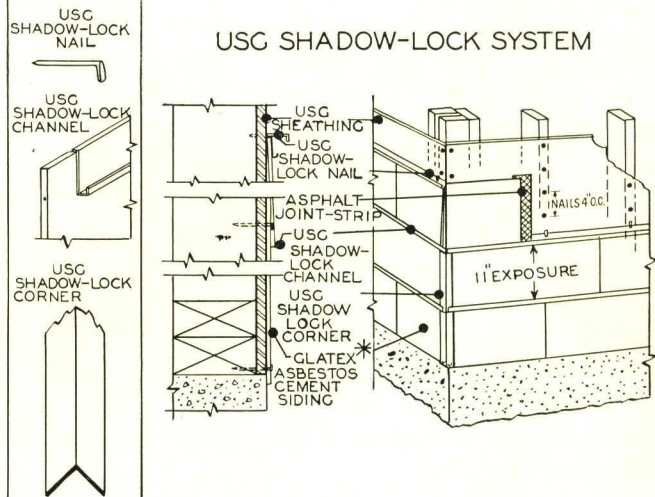


## ORIENTAL \* STUCCO

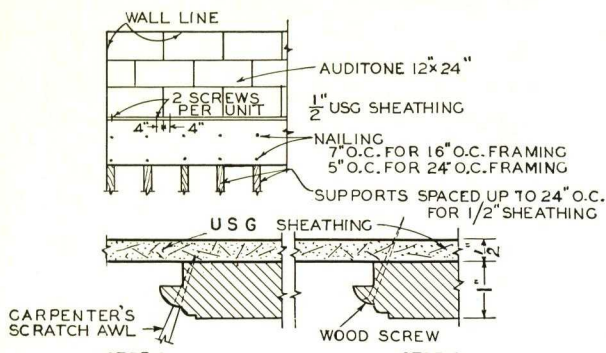


\* T. M. REG. U.S. PAT. OFF.

## USG SHADOW-LOCK SYSTEM



## "T" AND "G" SLOTTED AUDITONE ATTACHMENT



**STEP 1**  
PUNCH 2 HOLES PER UNIT IN TONGUE.

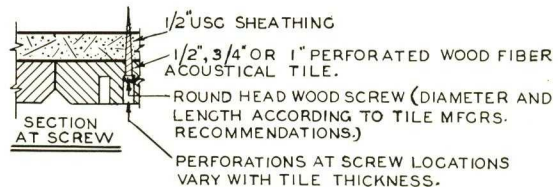
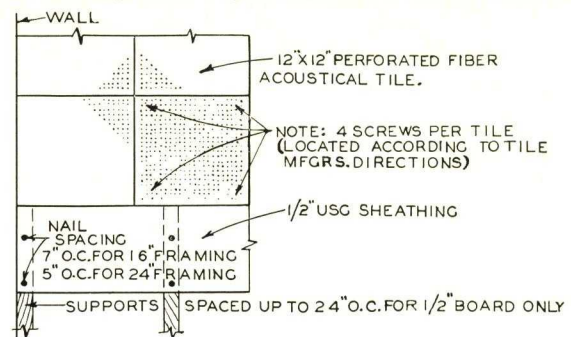
**STEP 2**  
USE YANKEE OR POWER DRIVEN SCREW DRIVER FOR RAPID INSTALLATION.

TYPE SCREW—NO. 5 OR NO. 6 WOOD SCREW WITH PHILLIP RECESSED HEAD.

LENGTH— $\frac{1}{2}$ " FOR AUDITONE "B" ON  $\frac{1}{2}$ " USG SHEATHING.  
 $\frac{1}{4}$ " FOR AUDITONE "C" ON  $\frac{1}{2}$ " USG SHEATHING.

**NOTE** WHERE METAL SUSPENSION OF GYPSUM SHEATHING IS REQUIRED, THE POMEROY SYSTEM OR THE JACKSON SYSTEM LISTED IN SWEETS FILE MAY BE USED WITH  $\frac{1}{2}$ " $\times$ 2'-0" $\times$ 8'-0" USG SHEATHING

## PERFORATED WOOD FIBER ACOUSTICAL TILE ATTACHMENT



**NOTE:** WHERE METAL SUSPENSION OF GYPSUM BOARD IS REQUIRED, THE POMEROY SYSTEM OR THE JACKSON SYSTEM LISTED IN SWEETS FILE MAY BE USED WITH  $\frac{1}{2}$ " $\times$ 2'-0" $\times$ 8'-0" USG SHEATHING.

# USG SHEATHING

## SPECIFICATIONS FOR USG SHEATHING

### SCOPE

Unless otherwise shown on plans, all exterior walls shall be sheathed according to these specifications.

### MATERIALS

**Sheathing** shall be USG Sheathing as manufactured by the United States Gypsum Company,  $\frac{1}{2}$ " x 24" x 8'0".

**Nails** shall be galvanized,  $\frac{7}{8}$ " head diameter,  $1\frac{3}{4}$ " long roofing nails, having No. 11 gauge barbed shanks.

### APPLICATION

Apply USG Sheathing with the long dimension across the supports and with the groove edge down, interlocking the tongue and groove edges. Ends of sheets shall abut over centers of supports, and all end joints shall be staggered. Fit snugly around all window and door openings. Secure sheathing to studs with nails spaced approximately 4" on centers, 7 nails per 24" sheathing width per support except where exterior finish is secured to the frame with nails driven through the sheathing and into the studs, in which case nails shall be spaced approximately 8" on center 4 nails per 24" sheathing width per stud.

Starter nails shall be not less than  $\frac{3}{8}$ " from edges or ends of sheathing.

### OPTIONAL INCLUSIONS

#### 1. Use of Wood Siding Over USG Sheathing

Apply siding directly over USG Sheathing, securing it with nails driven through sheathing and into studs. Nails shall have a minimum penetration of  $1\frac{1}{4}$ " into the studs. End joints of siding shall be over centers of studs.

#### 2. Use of Masonry Veneer Over USG Sheathing

Masonry ties shall be attached with nails driven through the sheathing and into the studs, using nails of sufficient length to penetrate  $1\frac{1}{4}$ " into the studs. (At least 6d common nails.) Ties shall be spaced vertically to conform with coursing of masonry veneer.

**3. Use of Stucco over USG Sheathing**—Stucco may be applied over USG Sheathing by the use of self-furring 3.4 lb. USG Diamond mesh lath nailed with large headed nails of sufficient length to provide at least  $1\frac{1}{4}$ " penetration into studs. See Sweet's catalog or AIA file 20-B-1.

#### 4. Use of Asbestos-Cement Siding Over USG Sheathing

USG SHADOW-LOCK Attachment System is a new method for attaching asbestos cement siding directly over USG Sheathing with precision made aluminum channels and corner pieces. This method of attachment creates a deeper and more beautiful shadow line than obtainable with usual application.

## SPECIFICATIONS FOR USG SHADOW-LOCK ATTACHMENT SYSTEM (Short Form)

### SCOPE

Unless otherwise shown on plans, straight edge asbestos cement siding shingles shall be applied to all exterior walls over gypsum sheathing and held in place by means of the USG SHADOW-LOCK Attachment System.

### MATERIALS

**Channels** shall be USG SHADOW-LOCK Channels 8' long and 1" wide as manufactured by the United States Gypsum Company.

**Corners** shall be USG SHADOW-LOCK Corners  $11\frac{1}{2}$ " long as manufactured by the United States Gypsum Company.

**Nails** shall be USG SHADOW-LOCK Nails 12 gauge galvanized  $1\frac{3}{4}$ " long, with a diamond point and  $\frac{5}{8}$ " hook head.

### APPLICATION

The channels, corners and straight edge asbestos shingles shall be applied and secured in strict accordance with the recommendations of the manufacturer of the attachment system.

#### 5. Use of Wood Fiber Acoustical Tiles Over USG Sheathing

USG Sheathing makes an excellent base to which acoustical tile may be either adhesively or mechanically attached. If the tile is to be adhesively attached, the recommendations of the manufacturer of the tile and adhesive should be followed. The USG Sheathing, however, should be secured as described in the illustrations on preceding page.

### NOTE TO ARCHITECT

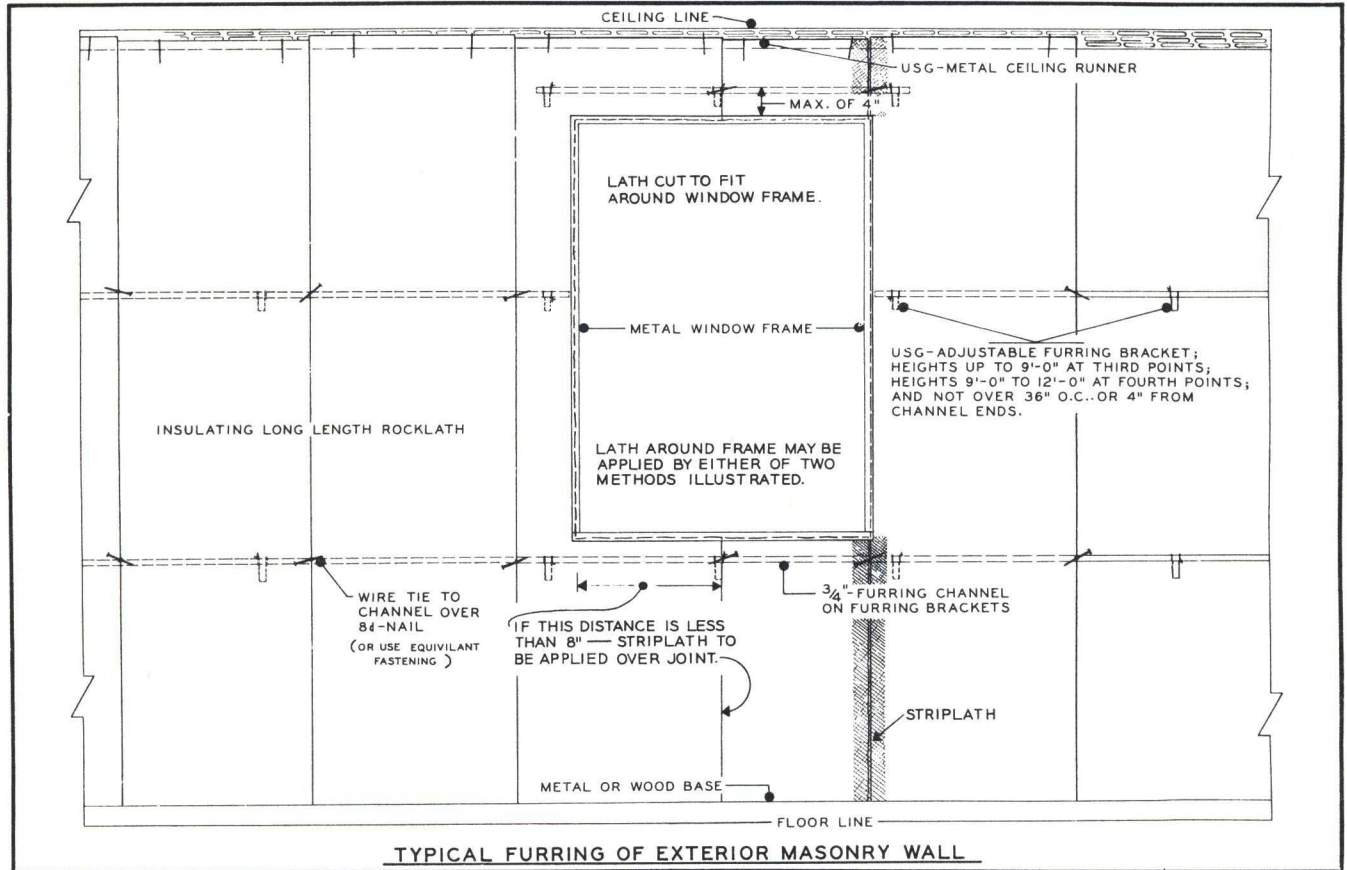
#### 1. Federal and A.S.T.M. Specifications

USG Sheathing complies with Federal Specifications for Gypsum Sheathing Board, SS-S-276 and A.S.T.M. (American Society for Testing Materials) Standard Specifications, A.S.T.M. Designation: C79-50 for core-treated, water repellent gypsum sheathing.



# SPECIFICATIONS FOR EXTERIOR WALL FURRING

(Using Long Length Insulating ROCKLATH\*)



## MATERIALS

**Furring Brackets** — Shall be U. S. G. Adjustable Wall Furring Brackets formed of 18 gauge galvanized steel with serrated edges.

**Channels** — Shall be  $\frac{3}{4}$ " USG cold rolled channels.

**Ceiling Runner** — Shall be USG Metal Ceiling Runner,  $\frac{3}{4}$ "x $2\frac{3}{8}$ ", perforated with three rows of slots for attachment clips.

**Attachment Clips** — Shall be USG Ceiling Runner Clips.

**Floor Runner** — Shall be single USG Flush Metal Base  $2\frac{1}{2}$ " high (or shall be  $1\frac{5}{8}$ "x2" wood runner, milled according to detail. Wood to be select stock and resistant to splitting)

**Floor Clips** — Shall be USG single type Floor Clips (for USG Metal Base only).

**Lath** — Shall be Insulating Long Length Rocklath,  $\frac{3}{8}$ " thick, 24" wide, by ceiling height lengths as required, (this lath has aluminum foil applied to the back side).

**Priming** — Metal or wood runners to be factory or field primed before setting.

## APPLICATION

**Single metal base** — Shall be attached to rough floor by nailing clips not over 24" on center. Snap the side plate over the clips, cutting and bending at corners as required. Fill the back of the side plate with recommended grout and form a V-groove as grout stiffens and before it sets, providing a  $\frac{3}{4}$ " ground for plastering. (Alternate: Wood runner shall be attached to the rough floor by nailing with cut nails or concrete stub nails in the center groove or through alternate outside edges not over 16" on center.)

**Ceiling Runner** — Attach ceiling runner to the construction above as required, locating it by plumbing up from the floor runner.

(Alternate: Where ceiling runner not required: Install furring brackets not over 4" from ends and 36" on center horizontally approximately 4" below top of furred space and attach channel as specified below).

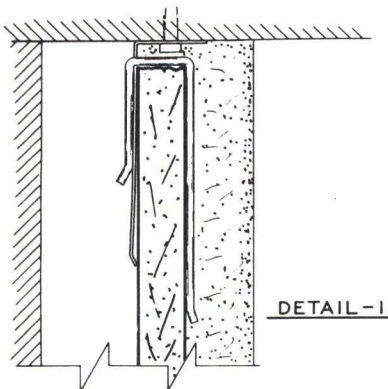
**Furring** — Attach furring brackets to the masonry walls not over 4" from columns or other abutting construction and not over 36" on center horizontally, and at third points vertically for furred walls up to 9'-0" high (quarter points for furred walls from 9'-0" to 12'-0" high) and as required above and below windows, using one 2" cut nail in top hole of bracket in mortar joints of brick, clay tile, or cement block or in the field of lightweight aggregate blocks, or  $\frac{5}{8}$ " concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete. Furring channels shall be laid horizontally on the furring brackets with the legs down, plumbed to a line with the ceiling runner and base, and wire tied to the bracket with a double strand of 18 gauge tie wire. Excess bracket length shall be bent down.

**Lathing** — The gypsum lath shall be applied with the long length vertical, butted lightly, with the foil facing the furred space, by setting bottom of lath in the groove of the base or 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 slight clearance around window frames, where vertical joints in the lath extend directly from window jambs, or are cut-in less than 8" from corner of frame, apply a 3" strip of metal lath over the joint.

## PLASTERING

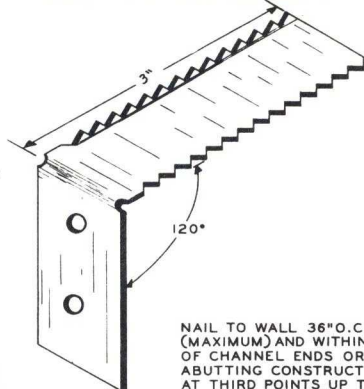
Gypsum plastering shall be as specified elsewhere, using scratch, brown and finish to a full  $\frac{3}{4}$ " over face of lath. Cut basecoat plaster with edge of trowel along margin of metal window frame.

# UNITED STATES GYPSUM COMPANY

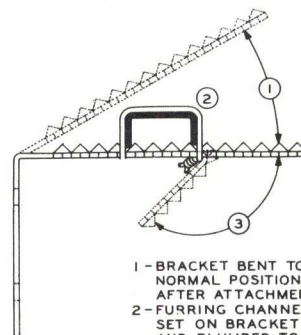


DETAIL-1

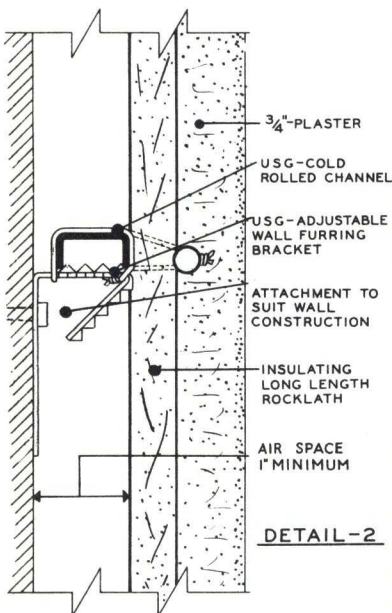
# USG-ADJUSTABLE WALL FURRING BRACKET



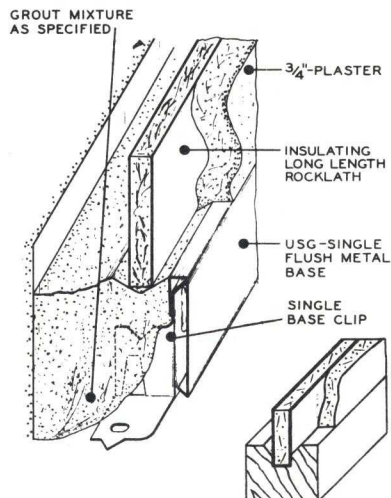
NAIL TO WALL 36" O.C.  
(MAXIMUM) AND WITHIN 4"  
OF CHANNEL ENDS OR  
ABUTTING CONSTRUCTION  
AT THIRD POINTS UP TO  
9'-0" AND AT FOURTH  
POINTS FROM 9'-0" TO  
12'-0" PLACE ABOVE AND  
BELOW WINDOWS AS  
REQUIRED



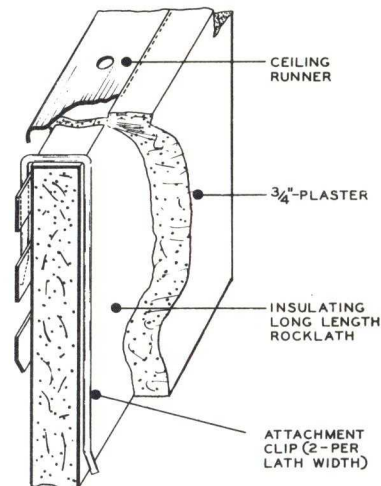
1-BRACKET BENT TO  
NORMAL POSITION  
AFTER ATTACHMENT.  
2-FURRING CHANNEL  
SET ON BRACKET  
AND PLUMBED TO  
REQUIRED FURRING  
LINE (1"-AIR SPACE  
MINIMUM) AND WIRE  
TIED TO BRACKET.  
3-EXCESS LENGTH BENT  
DOWN AND BACK.



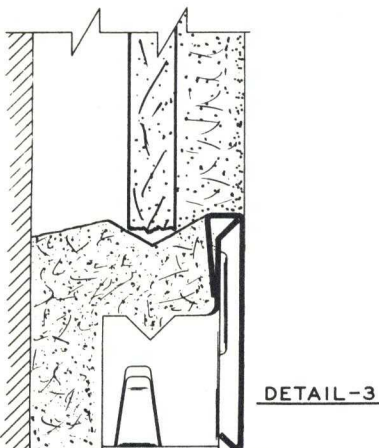
DETAIL-2



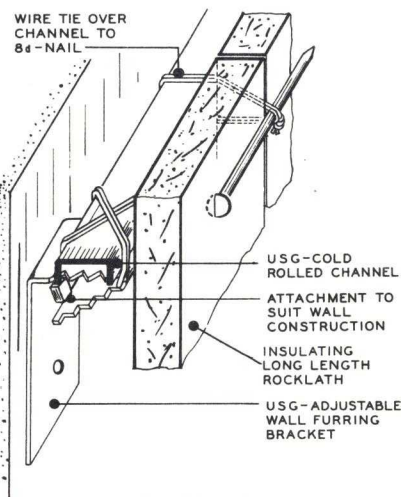
DETAIL-3



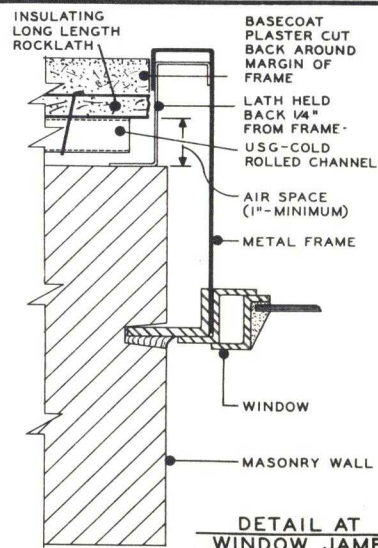
DETAIL-1



DETAIL-3



DETAIL-2



DETAIL AT  
WINDOW JAMB

HEAD AND APRON DETAIL SIMILAR

## SECTION THROUGH FURRED WALL