

PLAINTIFF'S EXHIBIT

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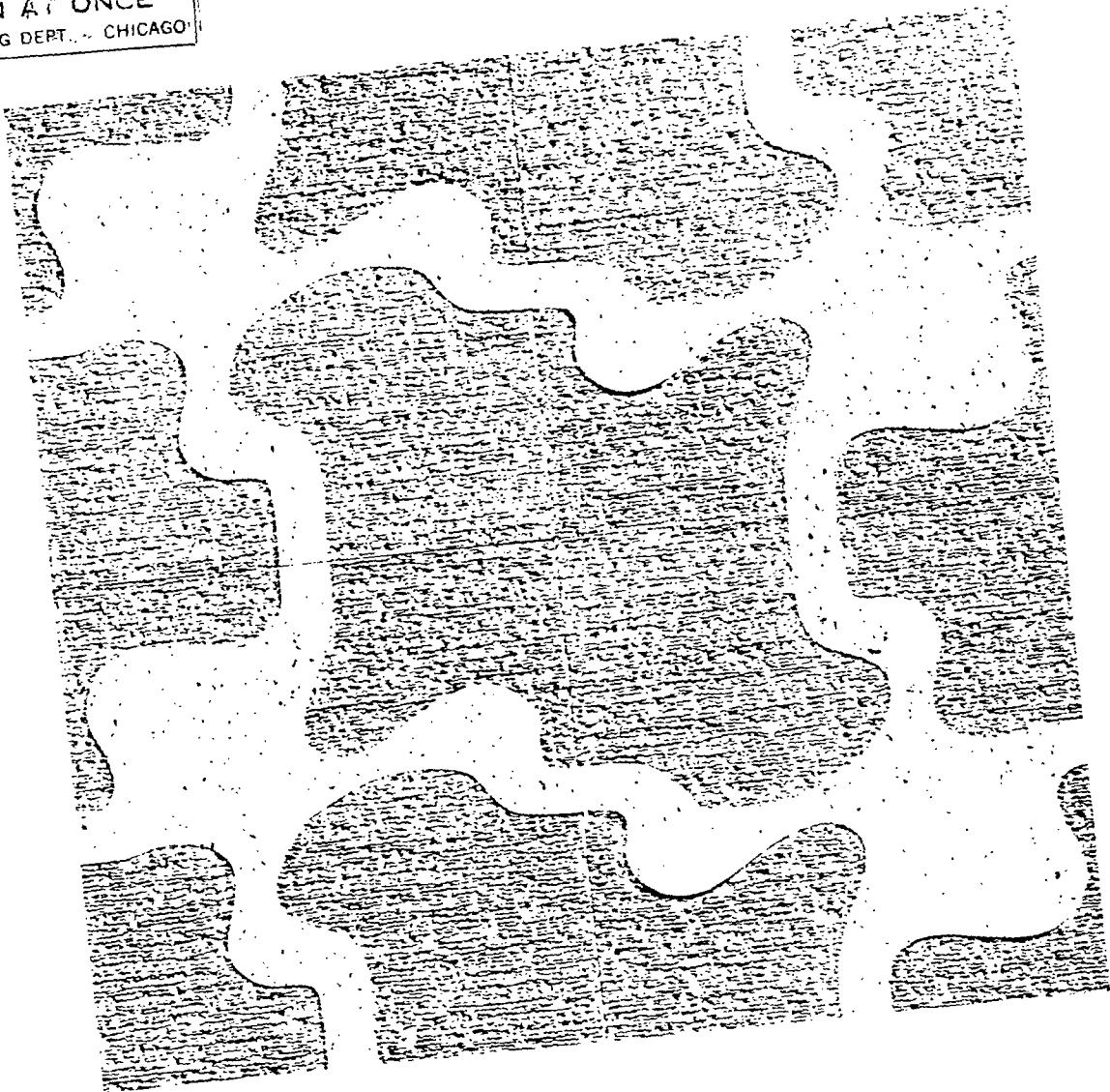
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the seven functions of a modern ceiling



Structure

Sound Absorption

Sound Isolation

Fire Protection

Beauty

Comfort

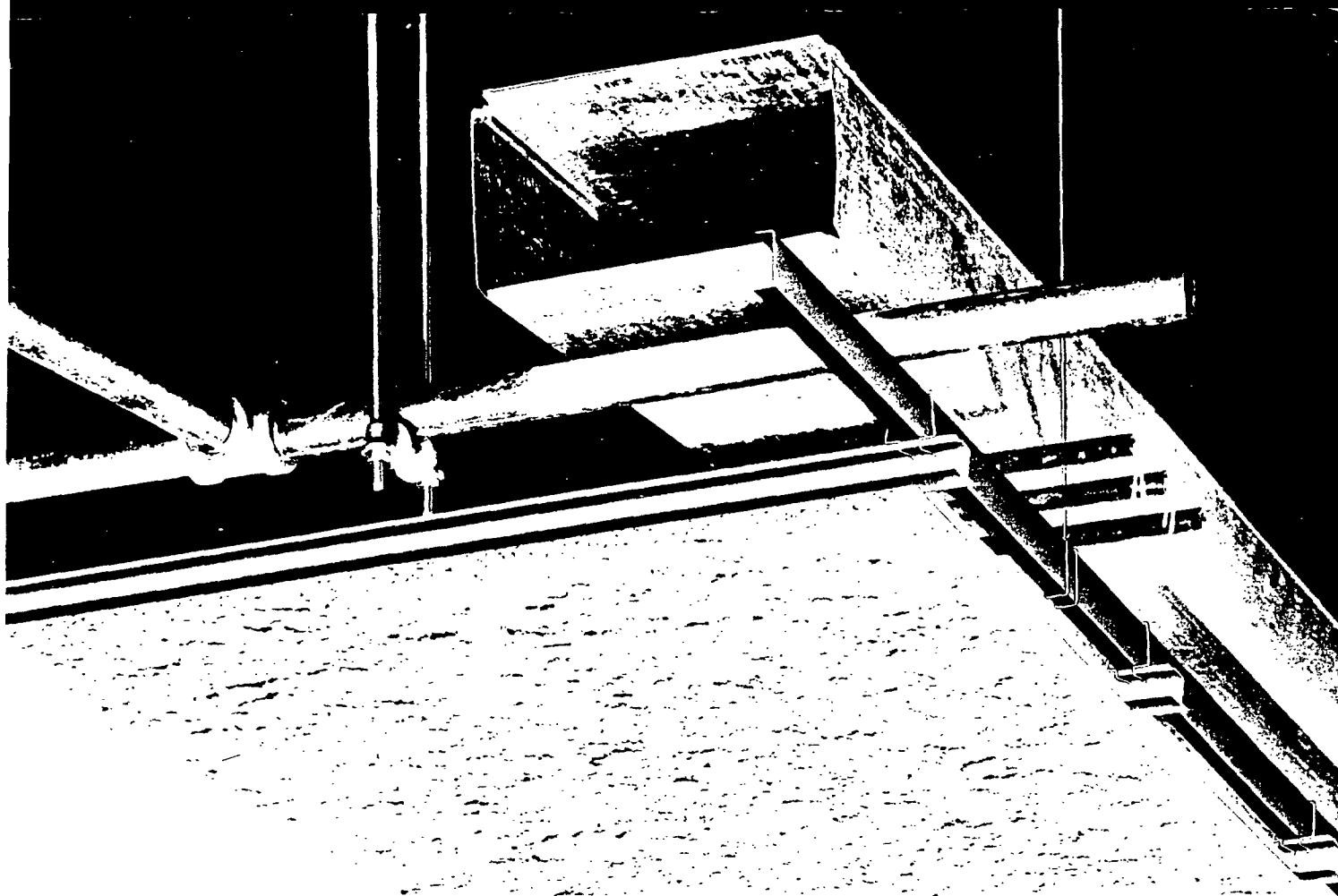
Economy

The ceiling is the most important surface in any room.

When you specify an Acoustone® tile ceiling, you can be sure that this important room surface will provide the vital functions of a truly modern ceiling.

Just how Acoustone ceilings provide these seven functions is described with installation diagrams on the pages that follow. These answers to the question "What should a ceiling do?" represent practical solutions to the vexing old sound control problems.

BB022 0521



What should a ceiling do?

good structure is one of the 7 functions of a modern ceiling

Pictured above is ACOUSTONE Mineral Acoustical Tile suspended by the U.S.G. Concealed Z-Spline System. This sound control system is one of several specially designed to accommodate lighting fixtures, air-conditioning and heating ducts and outlets, piping and wiring for other above-the-ceiling facilities. Such systems provide the simplicity of design that permits easy access, quick adjustments and repairs . . . the durability to resist normal building stresses.

For full information, or a free showing of the 16mm. color and sound film, "More than Meets the Eye," contact your nearby ACOUSTONE Tile Contractor or write Dept. AF-81, 300 West Adams Street, Chicago 6, Illinois. Additional information in Sweet's Catalog, Section 11a/Uni.

7 functions
structure
sound absorption
sound isolation
fire protection
beauty
comfort
economy



SOUND CONTROL IS
A JOB FOR EXPERTS

ACOUSTONE*

UNITED STATES GYPSUM



the greatest name in building



1. Structure

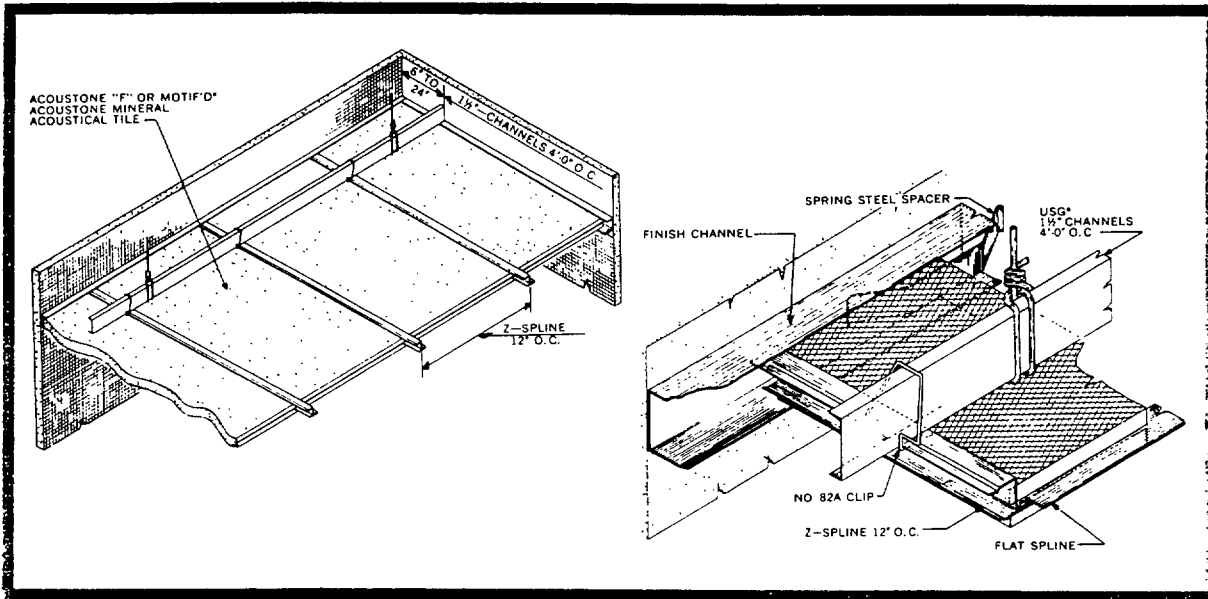
The ceiling is not just a room surface. It is part of the structure. In it, on it, and behind it are the facilities—lighting fixtures, air conditioning ducts and outlets, piping and wiring, to name but a few—that make possible functions essential to comfort and productivity. So the design of a ceiling must provide for these services in the best possible way at minimum cost.

Its construction must be strong enough to resist normal building stress, adaptable enough to accommodate changing use requirements, and simple enough to permit building maintenance men to effect such changes quickly and easily.

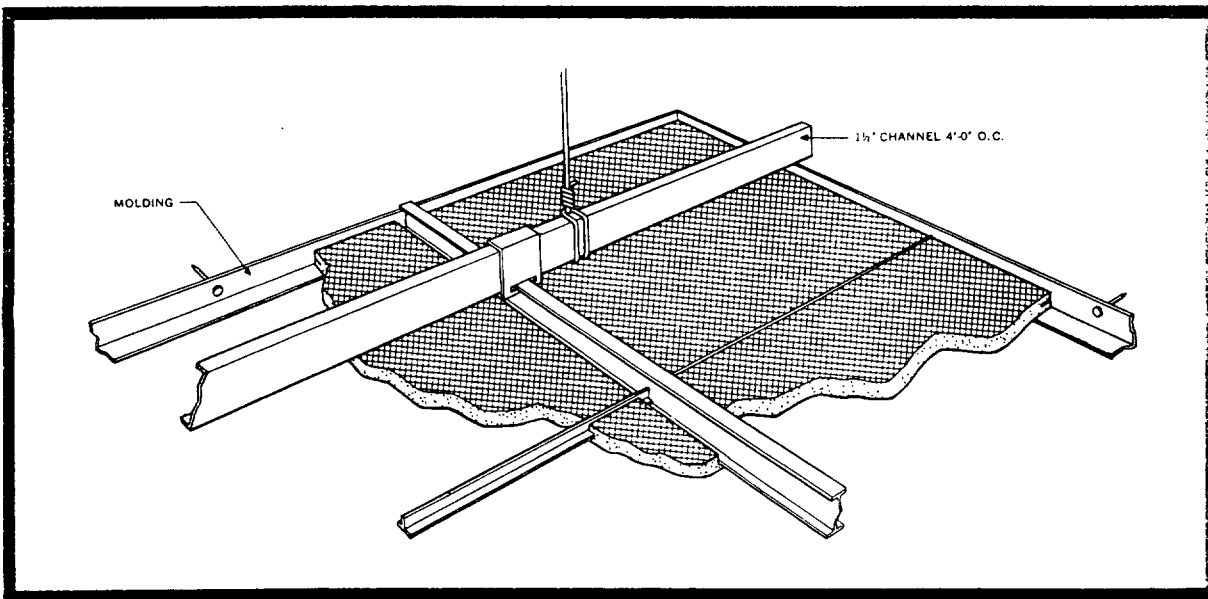
In designing the members used in acoustical ceiling construction, *sag* or *deflection* is usually the limiting factor. A figure of 1/240 of span is most often used to define the acceptable maximum permissible deflections.

But, since acoustical tile is generally very light in weight, the weight load imposed by lights or other fixtures is usually more important to consider than that of the tile.

Local building codes and established construction practices frequently determine the size of the suspension members and the spacing of the hangers. Generally, No. 8 or No. 9 galvanized wires, four feet on centers in both directions, suspend 1½" lathing channels to provide a basic grillage. To these channels are clipped "splines," rolled metal members which support the tile, and often the lights or other fixtures. Cross splines perpendicular to the main splines are usually used to support the opposite edges of the tile and to resist air-passage through the joints. The direct suspension systems eliminate the use of 1½" channels and are hung directly from the supports.



THIS! Tile and supports are blended into a tight, integrated diaphragm. Provision is made at the perimeter for expansion, contraction and normal building movement.



NOT THIS! Tile has been "hung on" supports where it will shift under the stress of expansion, contraction and common tensions of normal building movement.



the best in acoustical design

Good ceiling systems are uncomplicated, using a minimum number of parts and employing standard building materials whenever possible.

this is a job for experts

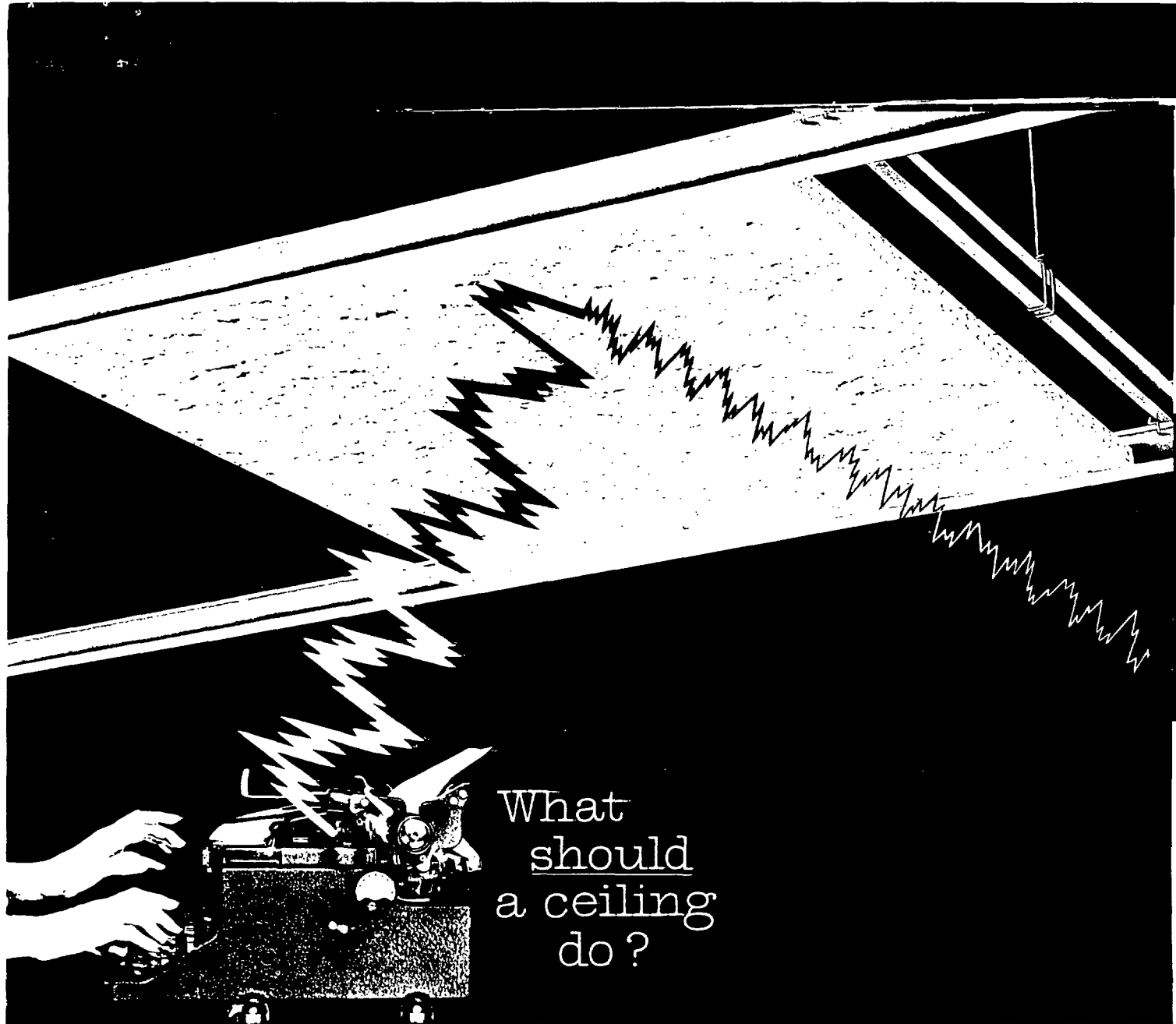


Insist on the installation that fits the needs of the job best... and trained acoustical crews skilled in its execution. You can be sure of both with United States Gypsum ceiling systems.

Check list of good ceiling construction

A soundly-built ceiling provides for:

- 1.** Structural support for services
- 2.** Resistance to sag
- 3.** Resistance to breathing or air travel
- 4.** Resistance to uplift forces
- 5.** Resistance to expansion, contraction and normal building movement
- 6.** Easy replacement of damaged tiles
- 7.** Easy change and revision to meet new use requirements of the building



CEILING:
SOUND ABSORPTION

What
should
a ceiling
do?

sound absorption is one of the 7 functions of a modern ceiling

To eliminate "unwanted sound" and to control "wanted sound" are functions of good ceiling construction. Reducing high sound levels and eliminating annoying sound reflections can be accomplished by using ACOUSTONE Mineral Acoustical Tile.

ACOUSTONE suspended with U.S.G.'s E-Z-S System is pictured here. This system is one of several U.S.G. Sound Control Ceiling Systems specially designed to provide practical solutions to a wide variety of sound problems.

For a free showing of "More than Meets the Eye," U.S.G.'s 16 mm color sound film about good ceiling construction, contact your nearby ACOUSTONE Tile Contractor or write Dept. AF-82, 300 W. Adams St., Chicago 6, Ill. Additional information in Sweet's Catalog, Section 11a/Uni.

7 functions
structure
sound absorption
sound isolation
fire protection
beauty
comfort
economy



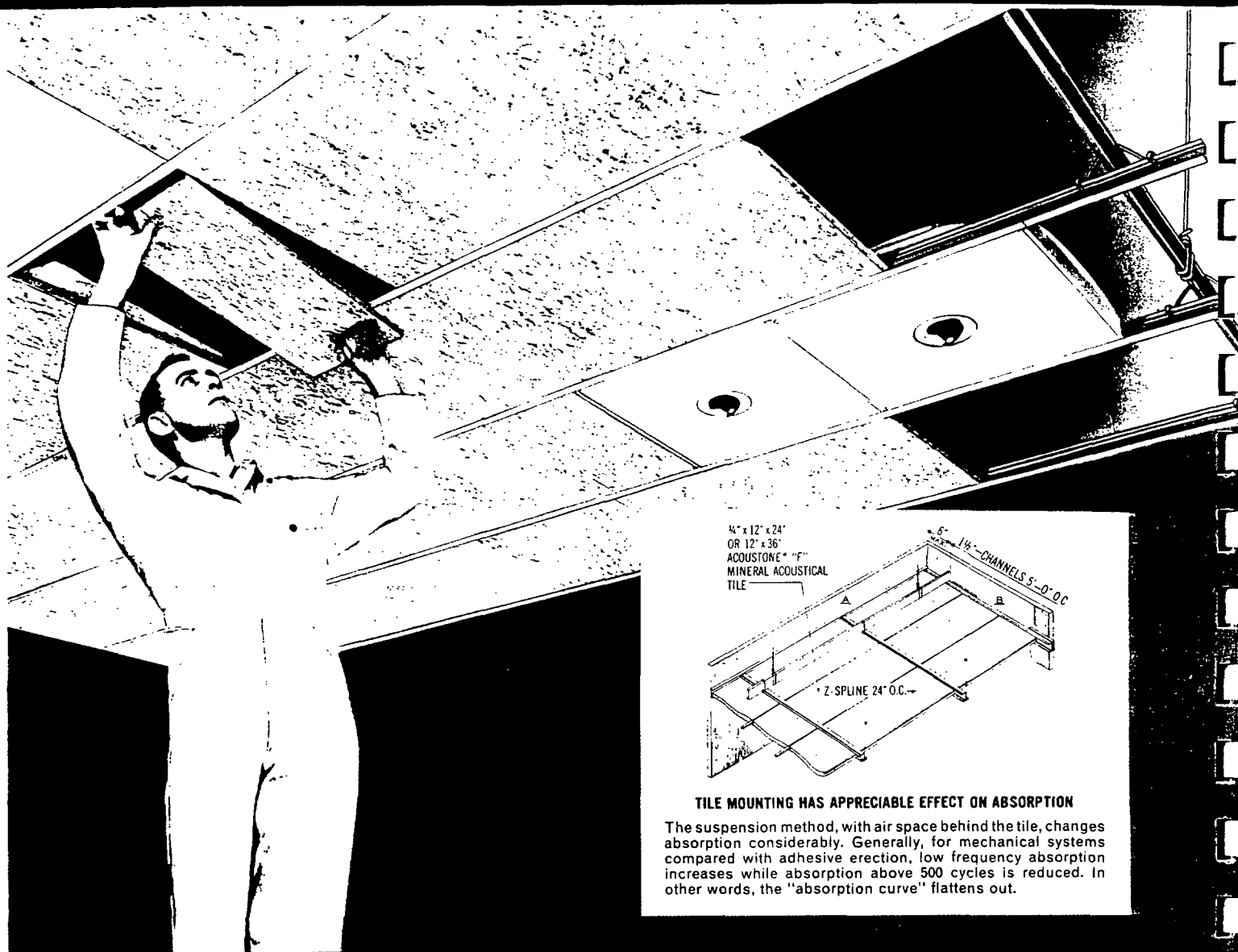
ACOUSTONE*
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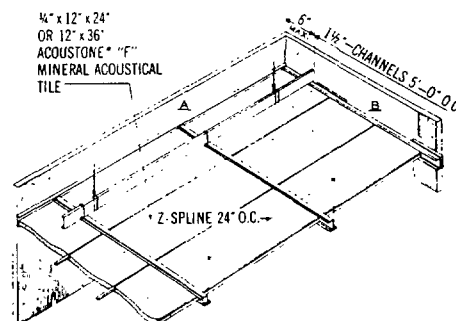


SOUND CONTROL IS
A JOB FOR EXPERTS

BB022 0526



$\frac{1}{4}$ " x 12" x 24"
 OR 12" x 36"
 ACOUSTONE "F"
 MINERAL ACOUSTICAL
 TILE



TILE MOUNTING HAS APPRECIABLE EFFECT ON ABSORPTION

The suspension method, with air space behind the tile, changes absorption considerably. Generally, for mechanical systems compared with adhesive erection, low frequency absorption increases while absorption above 500 cycles is reduced. In other words, the "absorption curve" flattens out.

2. Sound Absorption

A simplified definition of sound is: "A vibration or pressure variation in a medium." The medium is usually air, but it can also be a solid or liquid. Sound sets molecules vibrating, bumping against each other, thus creating spherical waves that move outward from the source like the ripples that are caused by a stone which has been dropped into a pool.

Noise is simply unwanted sound. More than a mere annoyance or discomfort, it is often a saboteur of efficiency. It makes communication difficult, sometimes impossible; it can reach levels where it is actually dangerous. The various intensities of sound are measured in decibels, units of pressure which can be understood most easily by analyzing decibel ranges on the loudness scale for various familiar sounds. For example: a very quiet bedroom registers about 30 db., a punch-press operation about 105 db. and normal conversation usually ranges between 60 and 70 decibels.

Sound absorption is necessary for the control of noise, but no matter how much absorbent material is put into a room, the sound level will never drop below the level of the source itself. In other words, the ceiling can't "reach out" and soak up sound at the source, it can only absorb the sound that reaches it. Actually, since there is always some reverberation when sound is reflected from the walls, the sound level in a room is inevitably higher than the sound level at the source.

Sound does create a minute amount of energy which, like all energy, can never be destroyed. So when we sound condition a room, what we are actually doing is converting sound waves into another form of energy, the most common conversion being from sound to heat.

Nearly all sound-absorption materials—acoustical tile, plasters, blankets, etc.—use this conversion principle. Classified as "Porous" materials, they contain many fissures or other openings. Sound waves vibrating

within these openings lose their annoying qualities as their energy is converted into a minute amount of heat.

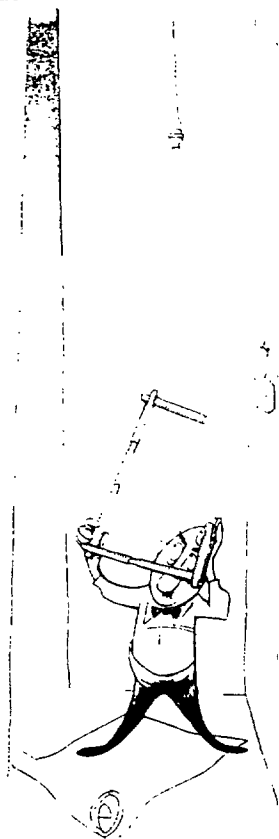
How effectively sound-absorbents are doing their job is expressed in "absorption coefficients" and "noise reduction coefficients." The coefficient for absorption is expressed by a percentage of unity (or a sabin), which represents a square foot of a plane surface with perfect absorption. The "absorption coefficient" of any material is determined by the ratio of effectiveness of a square foot of it at a particular frequency, or cycles per second.

Normally, tile are tested at 125, 250, 500, 1,000, 2,000 and 4,000 cycles per second. If we take an average of the four middle frequencies (250 to 2,000) we have the "noise reduction coefficient." The figure is not an absolute one and the term is rather anomalous, but it

does give us a surprisingly good gauge for comparing the performance characteristics of similar products.

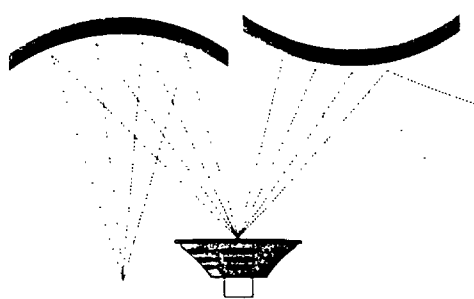
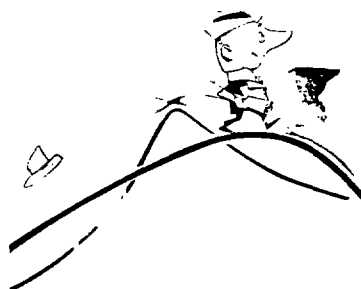
Generally, a noise reduction coefficient of .65 to .75 is adequate, providing the sound absorption coefficients do not vary significantly over the sound range of 125 to 4,000 cycles.

Most absorbents can be maintained by ordinary methods—cleaning, washing or painting. But, it is wise to check specifications to see *exactly* how tile must be cleaned or painted. For example, can it be brush-painted? One other important point to remember: sound absorbents soak up sound like a blotter, but they do not prevent the travel of sound through them. The *isolation* of sound requires special acoustical treatment. This major problem of architectural acoustics, and the treatment, will be discussed in our next bulletin.



**IN NARROW ROOMS,
CONSIDER THE WALLS**

The dimensions of the room are a prime consideration in planning effective sound control. If the room is as high as it is long or wide, consider wall treatment with acoustical tile in addition to, or in place of, ceiling treatment; it usually does a more effective job of controlling excessive reverberation within the room.



**CONVEX IS BETTER
THAN CONCAVE**

Convex curves tend to disperse sound evenly throughout the room. Concave surfaces, on the other hand, often focus sound unpleasantly and make treatment almost impossible.

Sometimes a large concave wall may be broken into several convex curves. To help avoid trouble spots, call in an acoustical engineer before completing plans.

DON'T BUY THE PEAK—BUY THE CURVE

Engineers can reduce the whole complicated story of acoustic performance of tile to a single simple line, which can serve as an excellent guide in acoustics. It shows that many tile that look alike are not at all alike in ability to reduce disturbing noise.

When the graph drawn for one tile makes a sharp peak it means that the tile is absorbing noise at one certain pitch, but doing very little about quieting noise at other frequencies that are also disturbing. So look for a "sound absorption curve" that shows a gradual smooth rising plateau, because this means good listening throughout the hearing range.



**THE BLOTTER WILL ABSORB IT... BUT IT
TAKES A COVER TO SEAL IT**

While acoustical tiles on the ceiling absorb sound, they won't keep out the sound of people walking overhead; nor will they prevent travel through ceilings into adjacent rooms. Special isolation construction will minimize that noise. Each job has its individual aspects, so treatment must vary from job to job.



the best in acoustical design

An acoustical job begins with expert analysis and mathematical calculation of a hearing condition and need.

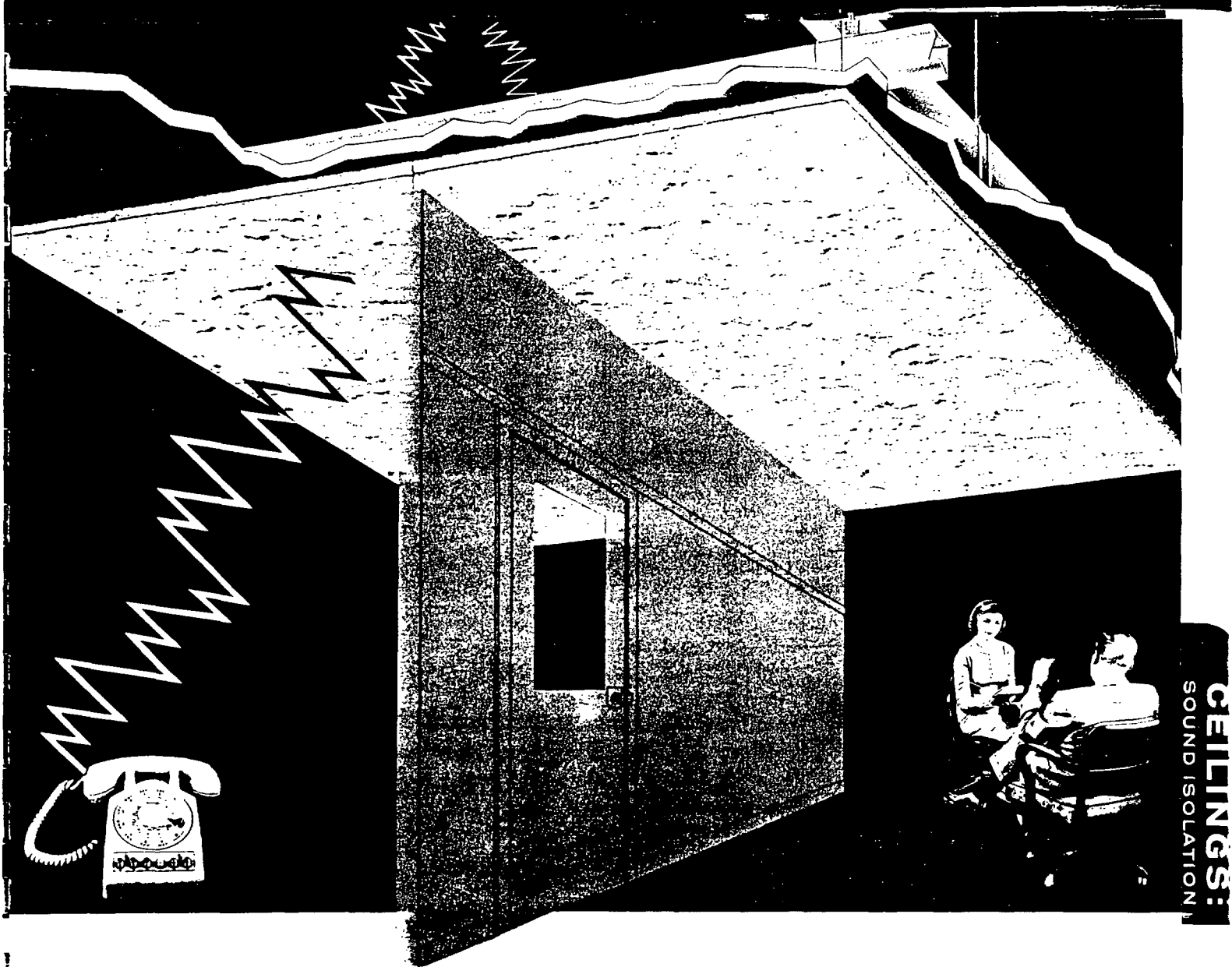
this is a job for experts



Insist on the installation that fits the needs of the job best, and on trained acoustical crews skilled in its execution. You can be sure of both with United States Gypsum ceiling systems.

Some rules of thumb for effective absorption of sound

1. Never put tile on a surface that is needed for useful reflections.
2. Place tile on any surface that can be expected to produce annoying echoes or focus sound unpleasantly.
3. Generally, for noise reduction, cover the ceiling, unless the floor is carpeted or the room is "loaded" with draperies and heavily upholstered furniture.
4. In long, narrow, or very high rooms, consider using tile on the walls.
5. In any type of auditorium, tile on the ceiling may not be the answer; check with your acoustical engineer first.
6. Generally, the construction of the building determines the mounting method; check specifications carefully for the mounting that is best suited for the job.
7. The amount of treatment is determined by the absorbent material already in the room, plus the size of the room to be sound conditioned.



CEILING:
SOUND ISOLATION

What should a ceiling do?

sound isolation *is one of the 7 functions of a modern ceiling*

Good acoustical ceiling construction does not end with the control of sound *within* a room. Unwanted sound from adjacent areas can be reduced effectively and economically by using an ACOUSTONE Mineral Acoustical Tile System.

ACOUSTONE adhered to fireproof U.S.G. Z-BOARD and suspended on U.S.G. Nailing Channels is pictured above. This system is one of several U.S.G. Sound Control Systems specifically designed to provide practical solutions to a wide variety of sound problems.

For a free showing of "More than Meets the Eye," U.S.G.'s 16 mm color sound film about good ceiling construction, contact your nearby ACOUSTONE Tile Contractor, or write Dept. AF-83, 300 W. Adams St., Chicago 6, Ill. Additional information in Sweet's Catalog, Section 11a Uni.

structure
sound absorption
sound isolation
fire protection
beauty
comfort
economy



SOUND CONTROL IS
A JOB FOR EXPERTS

ACOUSTONE*
MINERAL ACOUSTICAL TILE

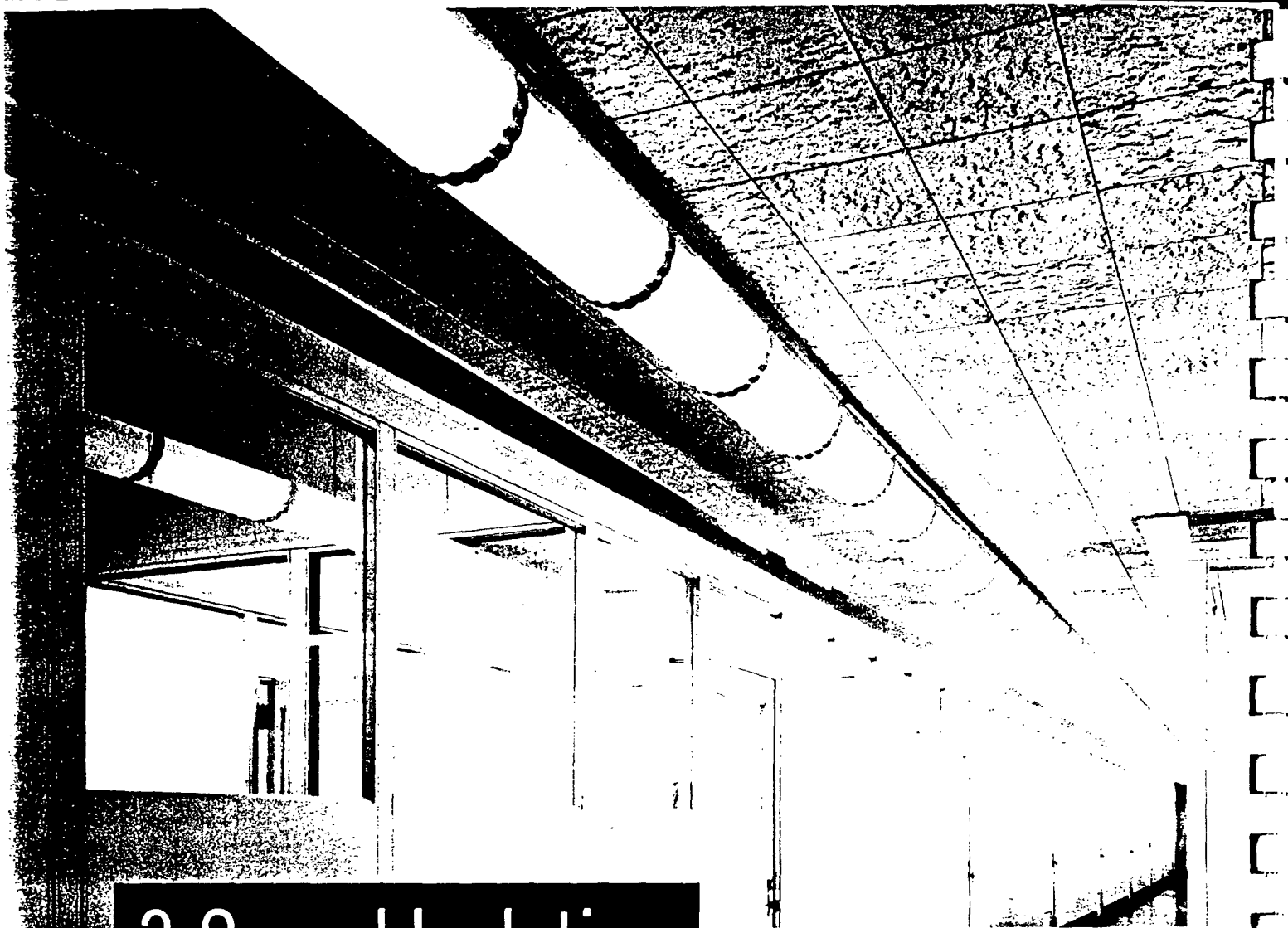


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3. Sound Isolation

Besides controlling sound *within* a room, a major problem of architectural acoustics is the escape of sound *from* a room or other area. The treatment for this particular sound problem is called *sound isolation*. Sound isolation, as the name implies, means the creation of "islands of privacy" from which external sounds are excluded.

Much of the energy of sound waves is absorbed by acoustical ceilings; but enough energy remains to pass *through* porous ceiling constructions to cause trouble in adjacent areas. "Structure-borne" sounds cause similar problems when noise from improperly insulated floors is transmitted *through* the floor and into the room below. Sound waves striking walls can cause them to act as a diaphragm and transmit sound to adjacent areas.

Sound also travels *through* direct openings such as doors, windows, ventilating ducts, etc. Termed "air-borne transmission," such sound-travel can cause the most serious problems. Loss of sound through a *single square inch* of open space, for instance, equals the total loss through *100 square feet* of a 40 db. wall.

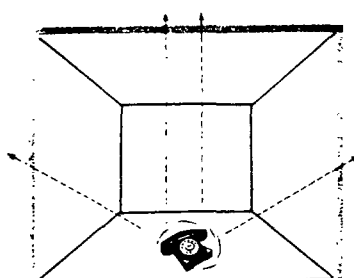
Acoustical tile isn't the answer to these problems of sound isolation. Because they are light and porous, most

acoustical tiles are good sound absorbers; but for the same reason, they are not very satisfactory as isolators. For example, a normal ceiling of acoustical tile, by absorbing acoustic energy, reduces the sound level in a room six to 10 db. The rest of the acoustic energy must be handled by other parts of the construction. A good wall, with a reduction value of about 40 db., will help considerably. But, since sound will travel up through the ceiling, over the top, and down through the ceiling into an adjacent area, it is necessary that the ceiling's performance be on a par with the efficiency of the wall. To be this efficient, its normal value of 7 to 20 db. must be increased to at least 35 db. by means of a solid backing, such as gypsum board.

Loss of sound through openings, on the other hand, may be stopped by sound-insulative doors, sound-absorbing baffles and sound-absorbing materials in ducts and outlets.

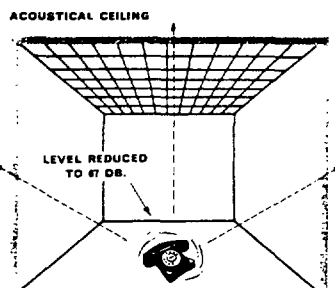
The most important thing to remember is that each system for the treatment of sound transmission should be regarded as a type of construction, rather than a group of materials. Because each problem in controlling sound-travel has its individual aspects, installations must vary from job to job; each requires expert analysis beforehand.

Sound Isolation: a matter of good construction!



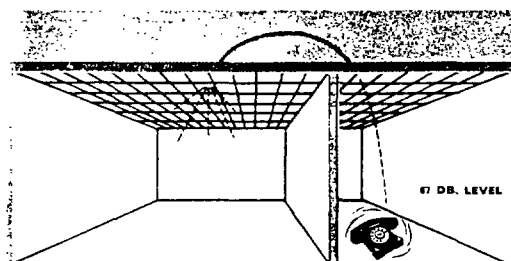
Bare Room

Sound emerges from room at a level of 75 db., minus the transmission loss through the walls and ceiling. The transmission loss is determined by the wall and the method of ceiling construction.



With Acoustical Ceiling

The sound level is reduced 8 db., and emerges at 67 db., minus the transmission loss through the walls and ceiling. So the walls and ceiling still have a big job to do in reducing noise within the room.



With Suspended Acoustical Ceiling

Sound travels through the ceiling, over the top, and down through the ceiling into the adjacent office. Therefore, the ceiling must provide isolation comparable to that of the wall. Tile must have a solid backing, such as gypsum board, to give a total reduction value for the ceiling construction equal to that of the wall.



The blotter will absorb it . . . but it takes a cover to seal it!

Blotters are mighty handy things to have around, but they can't seal a bottle of ink quite the way a cap can. Similarly, while acoustical tiles on the ceiling absorb sound, they won't keep out the sound of people walking overhead. To do this will require special isolation construction to minimize noise in the room.

Sound Transmission

Sound transmission is controlled primarily by increasing the weight and/or the stiffness of the wall or ceiling. Since the isolation of sound depends primarily on this mass (or weight), lightweight sound-absorption materials do not affect noise-transmission significantly. For the same reason, thermal insulating materials are relatively ineffective in stopping the transmission of sound.

Transmission Loss of Wall	Hearing Condition	Rating
30 db. or less	Normal speech can be understood quite easily and distinctly through the wall.	Poor
30 to 35 db.	Loud speech can be understood fairly well. Normal speech cannot be easily understood.	Fair
35 to 40 db.	Loud speech can be heard, but is hardly intelligible. Normal speech can be heard only faintly, if at all.	Good
40 to 45 db.	Loud speech can be faintly heard but not understood. Normal speech is inaudible.	Very good
45 db. or greater	Very loud sounds, such as loud singing, brass musical instruments, or a radio at full volume, can be heard only faintly or not at all.	Excellent



the best in acoustical design

Good ceiling systems are uncomplicated, using a minimum number of parts and employing standard building materials whenever possible.



this is a job for experts

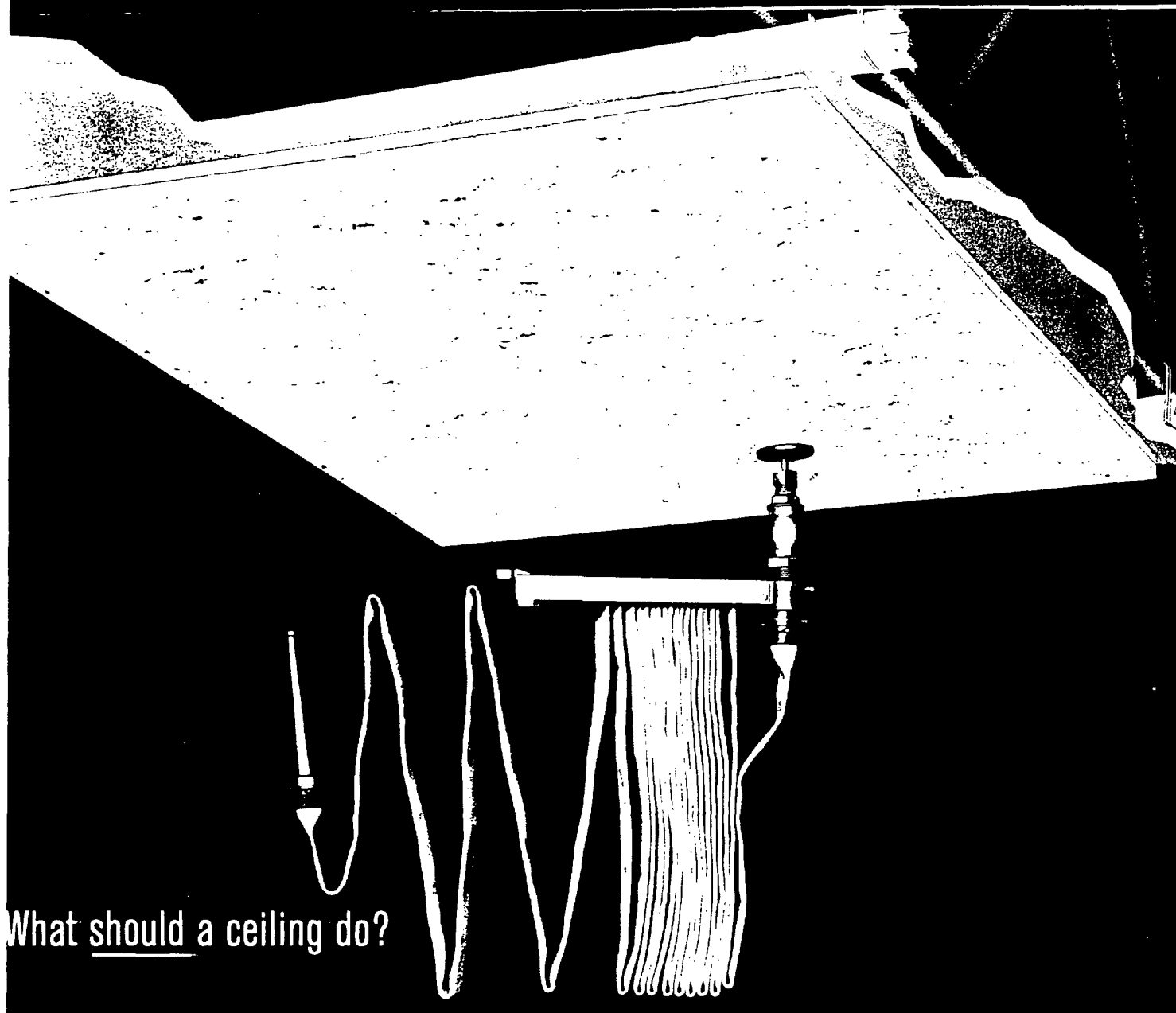


Insist on the installation that fits the needs of the job best, and on trained acoustical crews skilled in its execution. You can be sure of both with United States Gypsum ceiling systems.



Some rules of thumb for effective isolation of sound

1. Acoustical absorbents are normally poor sound isolators. Sound can travel through an acoustical ceiling to adjacent areas.
2. Sound will travel through *any* opening—however small. Provisions should be made to seal any cracks or openings in a construction for effective isolation.
3. Avoid construction such as ducts or tubes, which act as speaking tubes to transmit sound from one area to another.
4. Wall and ceiling constructions should be "balanced" to provide approximately the same amount of sound transmission loss through each construction.
5. Massive materials make the best sound isolators. Add mass, such as gypsum board, to porous materials to decrease sound transmission.
6. Sound isolation is a two-sided problem. Outside sounds must be kept out and inside sounds kept in.
7. Where requirements of sound isolation are highly critical, check with your acoustical engineer.



What should a ceiling do?

fire protection is one of the 7 functions of a modern ceiling

A one-hour fire rating can be obtained on a construction incorporating the new ACOUSTONE Ceiling System such as shown above. Perfected by U.S.G., this system includes incombustible ACOUSTONE tile adhered to fireproof 5/8" BAXBORD* FIRECODE 60 gypsum backing board, attached to U.S.G. Nailing Channels. While providing excellent fire resistance, this ACOUSTONE Ceiling System saves money by reducing the cost of protecting the structure against fire.

For full information, or a free showing of the 16 mm. color and sound film, "More than Meets the Eye," contact your nearby ACOUSTONE Tile Contractor, or write Dept. AF-84, 300 W. Adams St., Chicago 6, Illinois. Additional information is in Sweet's Catalog, Section 11a Uni.

ACOUSTONE*
MINERAL ACOUSTICAL TILE



UNITED STATES GYPSUM The greatest name in building

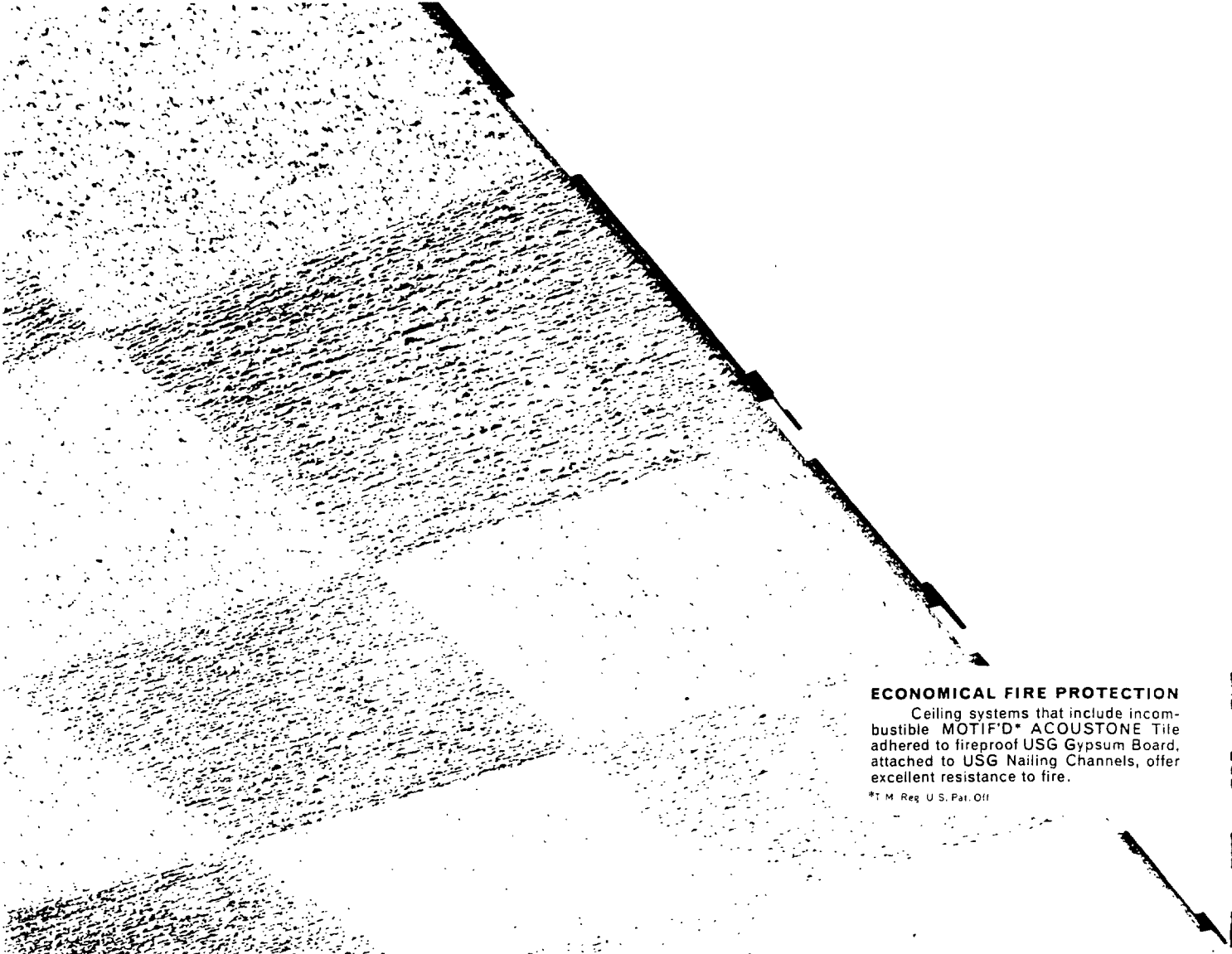
structure
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SOUND CONTROL IS
A JOB FOR EXPERTS

CEILING:
FIRE PROTECTION

BB022 0534



ECONOMICAL FIRE PROTECTION

Ceiling systems that include incombustible MOTIF'D* ACOUSTONE Tile adhered to fireproof USG Gypsum Board, attached to USG Nailing Channels, offer excellent resistance to fire.

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

4. Fire Protection

Building code requirements for fire resistance ratings apply to all the major components of a building's construction, and can vary from one-hour protection to four-hour protection in the same structure.

Fire resistance ratings are based on the *over-all* construction; they are not generally affected by interior finish materials. For example, incombustible acoustical tiles are often applied to a ceiling construction such as metal lath and plaster, or a gypsum board base — structures with excellent fire protective ratings. The addition of tile, however, does not affect a change in the rating, *no matter how incombustible the tile.*

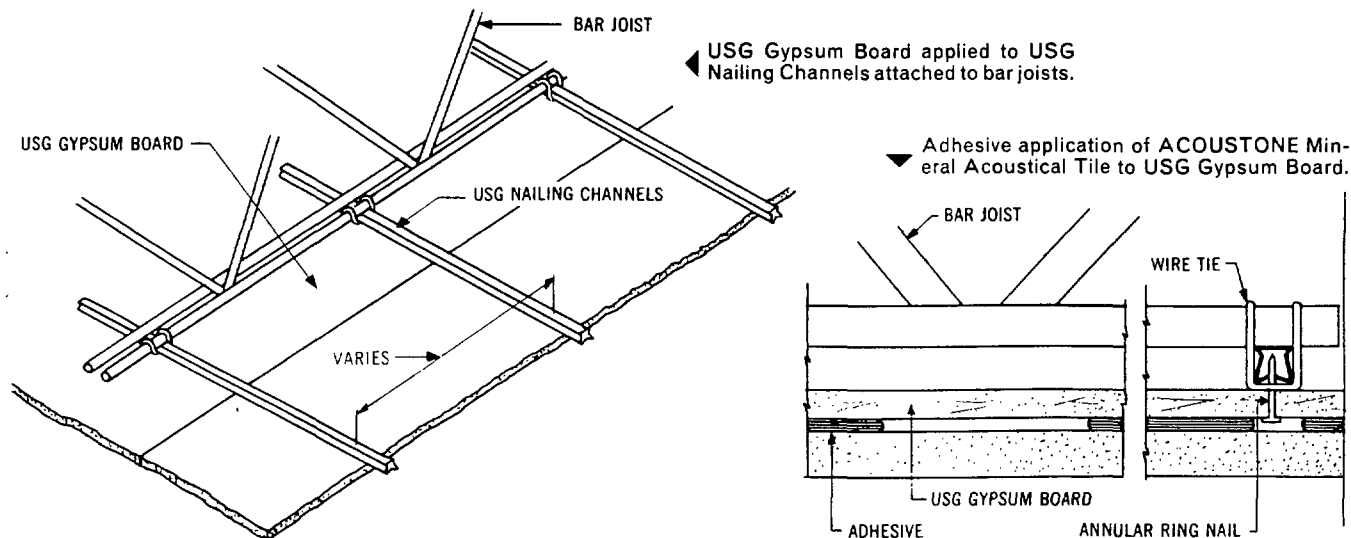
While incombustible materials for interior finishes do not affect the fire rating of a construction, they are vitally important to the safety of the building's occu-

pants. The significance of these materials to fire safety is recognized by fire insurance and code-writing authorities and the Federal Government, and has led to the development of testing procedures to classify the flame-resistance and fire hazard characteristics of interior finish materials.

The Acoustical Materials Association has adopted the Government's system of specifications (SSA-118-b), in which acoustical materials are classified by letter designations from "A" through "D". Classification is not broken down to specifics, but materials classified as "A" are usually considered incombustible; those classified as "D", combustible; while acoustical products designated "B" and "C" are generally regarded as having intermediate flame resistance.

USG® GYPSUM BOARD BASES for ACOUSTICAL CEILINGS

USG Gypsum Boards offer the ultimate in acoustical ceiling bases from the standpoint of FIRE PROTECTION and increased SOUND ATTENUATION through ceilings. The **SPECIFICATION TABLE** below lists the types of USG Gypsum Boards available for your use. For construction details on fire resistance ratings, consult the **FIRE RESISTANCE RATINGS TABLE** at the bottom of this page.



APPLICATION TO USG NAILING CHANNELS ATTACHED TO BAR JOISTS:

SPECIFICATIONS

NOTE • Nailing channel spacings, nail spacings and sizes are governed by gypsum board types.

Gypsum Board Type	Nailing Channel Spacing c to c	Max. Spacing	Annular Nail Size
½" BAXBORD*	16"	7"	⅝" head, 1⅞" long 11 gauge
½" Z-BOARD	20"—24"	7"	⅝" head, 1⅞" long 11 gauge
½" SHEETROCK* FIRECODE	20"—24"	7"	⅝" head, 1⅞" long 11 gauge
⅝" BAXBORD FIRECODE	20"—24"	7"	⅝" head, 1¼" long 11 gauge

FLOOR OR ROOF AND CEILING CONSTRUCTIONS:

FIRE RESISTANCE RATINGS

NOTE • Recommended joist and nailing channel spacings, nail spacings and sizes are governed by the fire test specifications.
• Tests conducted by Underwriters' Laboratories according to A.S.T.M. specifications. Details on request.

Framing & Gypsum Board Types	Nail Spacing	Nail Type and Size	U.L. Design No. and Rating
Steel Joists 24" c to c and nailing channels 16" c to c			
⅝" BAXBORD FIRECODE	6"	Annular, 11 Ga., ⅝" head, 1 ¼" long	Design No. 5—1 Hr.
½" SHEETROCK FIRECODE applied over ⅝" BAXBORD FIRECODE	7"	Annular, 11 Ga., ⅝" head, 1 ¾" long	Design No. 2—1½ Hr.
	9"	Annular, 11 Ga., ⅝" head, 1 ¼" long	
Wood Joists 16" c to c			
½" SHEETROCK FIRECODE	6"	5 d. cooler type	Design No. 1—45 Min.
⅝" SHEETROCK FIRECODE	6"	6 d. cooler type	Design No. 1—1 Hr.

TEST CONSTRUCTION DETAILS:

1. Open web steel joist-concrete floor construction faced as indicated. Gypsum board joints taped or untaped.
2. Wood joist constructions have rough and finish floor, with SHEETROCK FIRECODE ceiling nailed to joists. SHEETROCK wall board joints taped.
3. Fire test ratings are not dependent upon acoustical tile interior finish.



the best in acoustical design

Good ceiling systems are uncomplicated, using a minimum number of parts and employing standard building materials whenever possible.



this is a job for experts



Insist on the installation that fits the need of the job best, and on trained acoustical crews skilled in its execution. You're sure of both with United States Gypsum ceiling systems.



United States Gypsum
The Greatest Name in Building

SC-287

Some rules of thumb for effective fire protection

1. Fire resistance ratings are based on over-all construction and generally are not dependent upon an acoustical tile interior finish.
2. In general, even adhesive application of incombustible acoustical tile will not add materially to the fire resistance rating of a construction.
3. Acoustical ceiling systems can provide rated fire resistance in constructions including a base of lath and plaster or gypsum board.
4. Fire resistance can be obtained economically with the proper combination of construction system, gypsum board and acoustical tile. (See page 3.)
5. Where building code requirements exceed 1½ hours or a complex ceiling structure is involved, a fire rated construction with a lath and plaster base is recommended. (Data upon request.)
6. While fire ratings generally are not dependent upon the acoustical tile, incombustible acoustical materials are vitally important to the safety of the building's occupants. Flame spread or combustibility ratings of interior finish materials are applied to acoustical tile. For example, ACOUSTONE carries Underwriters Label rating of 10 to 15 feet and SS-A-118b Class A.
7. Fire resistant ceiling constructions give additional benefits in sound isolation, prevention of breathing, and an excellent base for adhesive application of acoustical tile.

BB022 0537



What
should
a ceiling
do?

Reproduction of 16th Century Hindu "Bala Krishna"

Beauty is one of the 7 functions of a modern ceiling

A beautiful ceiling plays a dominant role in helping you bring drama and visual interest to any room. FANTASIA MOTIF'D* ACOUSTONE Acoustical Tile shown above is only one of many striking new patterns developed by U. S. G. to complement the decor of any room, and thus offer you maximum flexibility of design; *it's the beautiful way to quiet a room.*

For full information, or a free showing of the 16 mm. color and sound film, "More than Meets the Eye," contact your nearby ACOUSTONE Tile Contractor, or write Dept. AF-85, 300 W. Adams St., Chicago 6, Illinois. Additional information is in Sweet's Catalog, Section 11a/Uni.

7 functions
structure
sound absorption
sound isolation
fire protection
beauty
comfort
economy



SOUND CONTROL IS
A JOB FOR EXPERTS

ACOUSTONE*
MINERAL ACOUSTICAL TILE



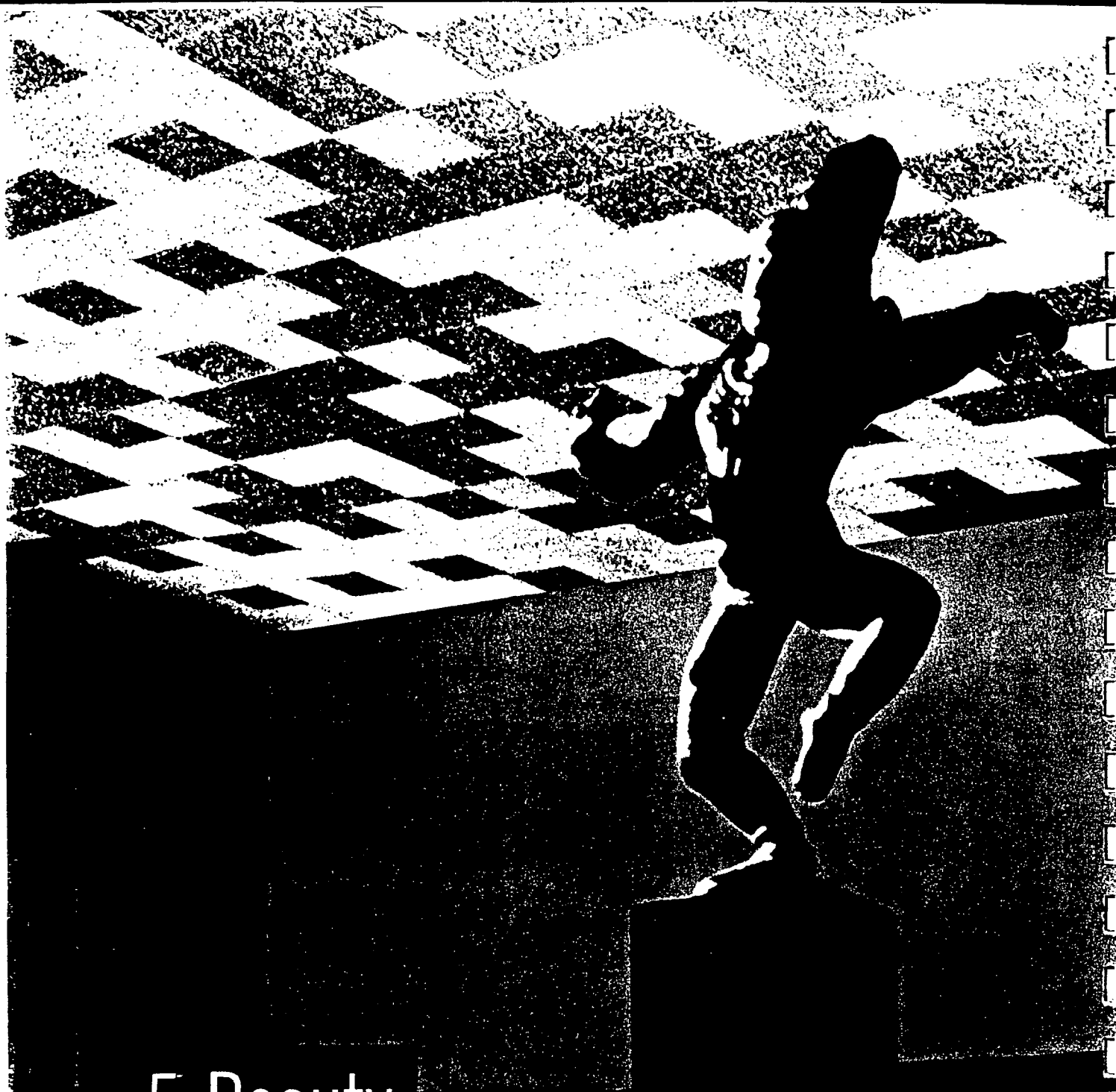
UNITED STATES GYPSUM

The greatest name in building

*U. S. Pat. Off.

BB022 0538

CEILING:
BEAUTY



5. Beauty

Mosaic MOTIF'D ACOUSTONE shown above

The good taste, creative talent and contemporary spirit that distinguish the best of modern architecture are apparent today in the design of many acoustical ceiling tiles. With the wide range of tile patterns, an architect or designer can create a variety of effects that perfectly complement the decor of any

room. These tiles, combined with the right kind of ceiling construction and materials, produce ceilings with an over-all effect of beauty and functional efficiency. These ceilings may be cleaned easily, and painted repeatedly, without loss of their acoustical properties or distinctive beauty.

BB022 0539

ACOUSTONE*

MINERAL ACOUSTICAL TILE

the beautiful way to quiet a room...

**MOTIF'D
ACOUSTONE
PATTERNS OFFER
OUTSTANDING
FREEDOM OF DESIGN**

STRIATED

LINEA

GROSGRAIN

GALAXY

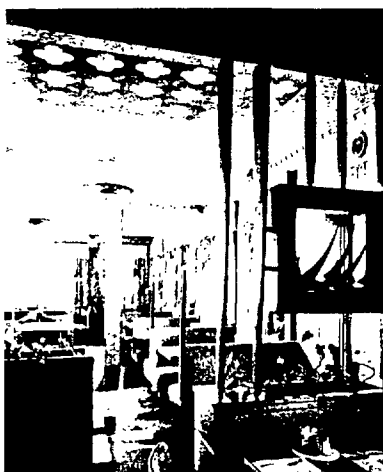
TEXTURA

MEDALLION

GEORGIAN

To the left, and in the room photos below, are some of the distinctive patterns in MOTIF'D* ACOUSTONE developed by United States Gypsum to help spark the creative imagination of today's architects. Made by a special patented process, these unusual acoustical tiles offer complete flexibility of design—producing modern ceilings of unique beauty and charm.

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



Clover Leaf MOTIF'D ACOUSTONE provides beauty and relaxation in this Howard Johnson Restaurant, Roxbury, Mass.



Fissured ACOUSTONE tile helps create a pleasant, efficient atmosphere for employees and customers in the Central State Bank, Oklahoma City, Oklahoma.

Medallion and Outline MOTIF'D ACOUSTONE combine to give majesty and sweep to the great ceiling of beautiful St. Helenas Church in the city of Philadelphia.



**CEILING:
BEAUTY**

BB022 0540



the best in acoustical design

Good ceiling systems are uncomplicated, using a minimum number of parts and, wherever possible, employing standard building materials.



this is a job for experts



Insist on the installation that fits the needs of the job best, and on trained acoustical crews skilled in its execution. You're sure of both with United States Gypsum ceiling systems.



United States Gypsum
The Greatest Name in Building

Some rules of thumb for effective beauty conditioning

1. Acoustical ceiling tiles should combine the lasting beauty and functional efficiency that distinguish the best in architecture and design.
2. The acoustical ceiling should be durable and provide resistance to expansion, contraction and normal building movement.
3. The acoustical ceiling should be adaptable, conforming to ceiling requirements and contours without sacrificing finished appearance.
4. Acoustical tiles should withstand repeated painting and cleaning with minimum loss of initial appearance and sound-control qualities.
5. Acoustical tiles should be of standard and uniform manufacture to match existing installations when replacements and additions are required.
6. Acoustical tiles should resist the effects of temperature and humidity changes; the ceiling system should provide positive anchorage for these acoustical tiles.
7. Uniform ceiling color should be maintained by using acoustical tiles and systems that resist "breathings" or uneven discoloring.

What
should
a ceiling
do?



Comfort is one of the 7 functions of a modern ceiling

In planning a comfortable and productive environment, a vital consideration is the ceiling – the most important surface in the room.

ACOUSTONE Ceiling Systems by U.S.G. help you create this atmosphere of comfort – and achievement – by combining inspiring beauty with functional lighting; by accommodating all the above-ceiling facilities that bring heat, light and air to the room; and, above all, by an outstanding capacity to control distracting, unwanted sound.

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structure
sound absorption
sound isolation
fire protection
beauty
comfort
economy



SOUND CONTROL IS
A JOB FOR EXPERTS

ACOUSTONE*
MINERAL ACOUSTICAL TILE



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6. Comfort

A quiet, comfortable environment pays off in large staff offices like this clerical area. The ACOUSTONE acoustical tile used here provides a more productive environment for greater efficiency—fewer errors.

The ceiling is the major factor in providing the attractive and comfortable surroundings so vital to a productive environment in any room.

The function of a ceiling in furnishing these pleasant surroundings involves much more than the presence of a *beautiful* overhead surface. Ceiling beauty, important as it is to a truly comfortable environment, must be combined with the right kind of construction in order to deliver full value. Careful consideration must be given to the need for the ducts, wires and fixtures required for such room services as heating, lighting, and air-conditioning—all vital to comfort and health.

The ceiling is also the most important single area involved in the control of sound. It has been proved that employees turn out more *and better* work when distracting sounds are controlled. The right ceiling tile will control sound *within* a room; the right ceiling construction will help keep unwanted sounds from *entering* the room.

Most important, selection of ceiling tile should be made with long-term utility in mind. The tile selected should maintain its beauty, sound-absorption and light-reflection qualities even after it has been subjected to repeated cleaning and painting.

U. S. G. acoustical tiles
add quiet and comfort
to room environment!



Ready accessibility to the space above the ceiling is an important part of the ceiling's construction. Repairs to room facilities vital to room comfort—many of these located above the ceiling—must be made quickly and easily.

This dress shop selected a beautiful Striated MOTIF'D* ACOUSTONE mineral tile ceiling for the comfort of its customers and employees.

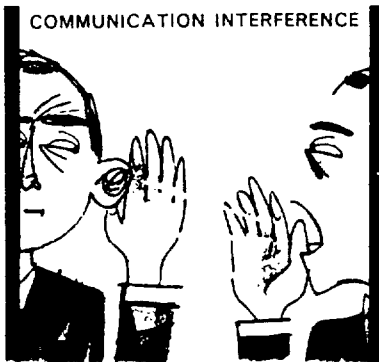
ACOUSTONE* CEILINGS STIFLE NOISE... MINIMIZE THESE THREATS
TO A COMFORTABLE, PRODUCTIVE ENVIRONMENT

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

ANNOYANCE



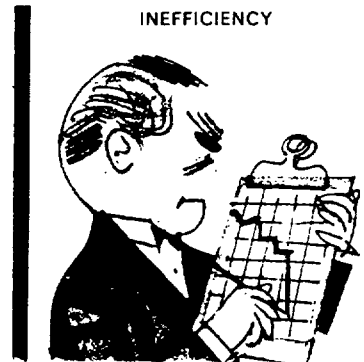
COMMUNICATION INTERFERENCE



FATIGUE



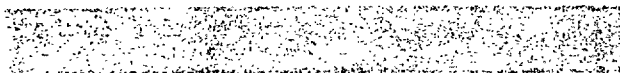
INEFFICIENCY





the best in acoustical design

Good ceiling systems are uncomplicated, using a minimum number of parts and employing standard building materials.



this is a job for experts



Insist on the installation that best fits the needs of the job and on trained acoustical crews skilled in its execution. You're sure of both with United States Gypsum ceiling systems.



United States Gypsum
The Greatest Name in Building

Some rules of thumb for providing an efficient, comfortable environment

1. Consider the ceiling as the major factor in providing the attractive, comfortable surroundings vital to productive environment in a room.
2. Acoustical tile should maintain its beauty, sound absorption and light reflection qualities after repeated cleaning and painting.
3. Transmission of unwanted sound from adjacent areas may be reduced effectively and economically with a ceiling construction which includes material such as gypsum board.
4. The ceiling construction should accommodate lighting fixtures, air conditioning and heating ducts, piping and other vital above-the-ceiling services.
5. The design of an acoustical ceiling should provide for easy change and revision to meet new use requirements of the building.
6. The ceiling construction should permit ready accessibility to the space above the ceiling for repairs to room facilities.
7. Acoustical tile should be selected for beauty that will create a pleasant atmosphere and productive environment.

What
should
a ceiling
do?



Economy is one of the 7 functions of a modern ceiling

True economy, achieved by careful choice of methods, materials and construction, is a *vital* function of a modern ceiling.

You're sure of this kind of economy when you specify an ACOUSTONE Ceiling System, such as the U.S.G. Direct Suspension System shown above with LINEA MOTIF'D* ACOUSTONE tile. This is one of several specially designed ceiling constructions which can eliminate separate outlays for fire protection, sound-conditioning and other vital room services. What's more, savings from ACOUSTONE usually increase over the years by reducing the cost of ceiling maintenance.

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ACOUSTONE*
MINERAL ACOUSTICAL TILE



UNITED STATES GYPSUM

structure
sound absorption
sound isolation
fire protection
beauty
comfort
economy



SOUND CONTROL IS
A JOB FOR EXPERTS



7. Economy

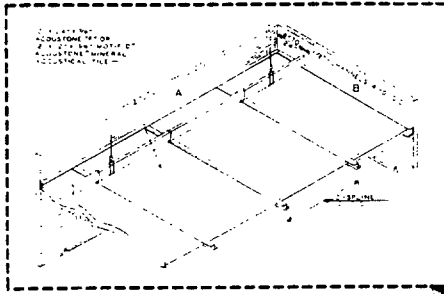
The careful selection of methods and materials can save considerable time and expense in the construction of a ceiling, and can result in greater over-all economy over the years. Using quality materials and planning for the incorporation of *all* the elements that control the room environment—*on, in, and behind* the ceiling—is sound economy that eliminates unnecessary expense later.

For instance, applying mineral tile to a ceiling construction that is highly fire resistant—such as fireproof gypsum board, or lath and plaster—will provide immediate fire protection and eliminate excessive fire protection costs later. This construction may even result in reduced fire insurance premiums for the entire structure.

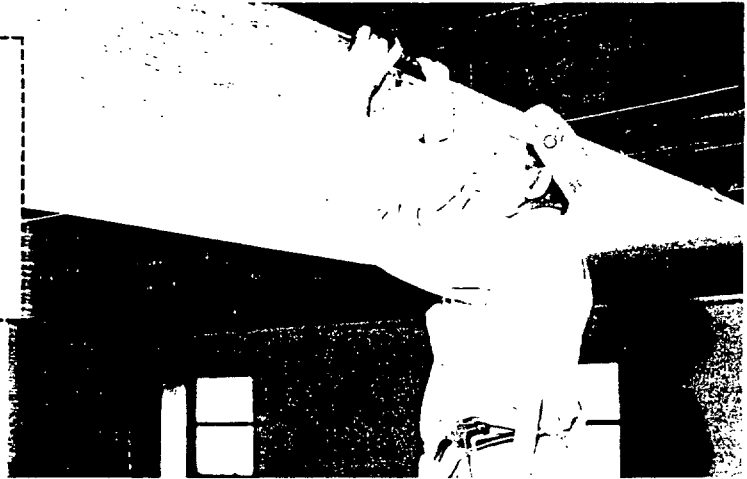
Sound-conditioning, too, requires careful planning if the greatest economy is to be realized. Consider not only

acoustical tile that will absorb sound *within* the room, but also the specialized construction necessary to keep noise *out*. The right ceiling construction will also provide excellent thermal insulation, thus reducing heating and air conditioning costs.

Use of tile with a pre-decorated surface will save money by eliminating the need for painting. The right choice of tile will also result in considerable savings in maintenance; for example, care should be taken to avoid low-density or highly porous tile that will absorb paint and excessive dirt. A quality tile will reduce costly cleaning problems; it will also maintain sound-absorbing and light-reflecting effectiveness through the years. The selection of quality tile will also reflect the high standards of a company's products and services, and will more than pay for itself in long-term satisfaction to the owners and users of the building.

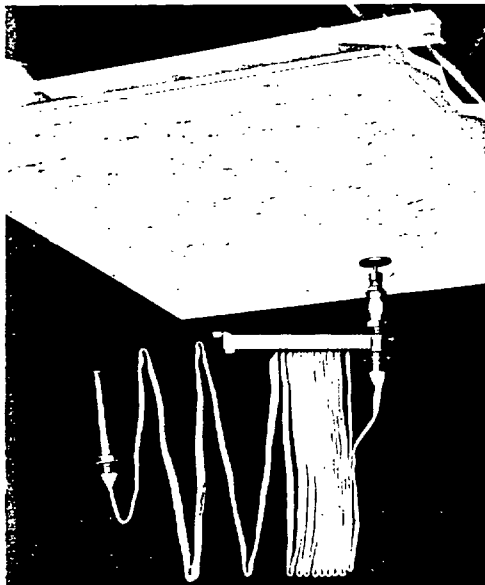


Acoustical Tile Suspended on Concealed Z-Spline Directly Attached to 1 1/2" Channels. Good construction like this provides excellent thermal insulation, and reduces heating and air conditioning costs.



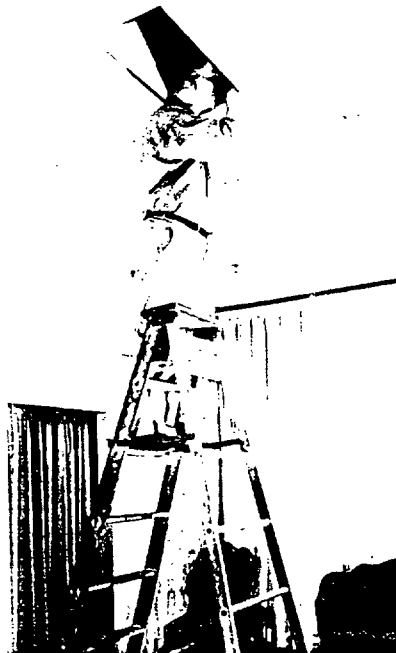
CEILING:
ECONOMY

Long-range economy is based on
good construction, quality materials



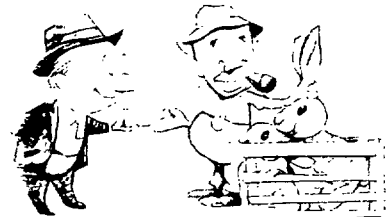
Acoustical Tile Adhered to Gypsum Board. A one-hour fire rating can be obtained on a construction incorporating the ceiling system shown above. This system includes incombustible ACOUSTONE tile adhered to fireproof 3/4" BAXBOARD* FIRECODE gypsum backing board attached to U.S.G. Nailing Channels.

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



Acoustical Tile, Exposed Z-Spline Suspended. To the usual advantages of a suspended ceiling, the new 1 1/4" exposed Z-spline suspension system for acoustical mineral tile adds accessibility to the space above the ceiling; any necessary adjustments can be made quickly and inexpensively.

It's not the initial cost



..... It's the UPKEEP



It's Not the Initial Cost... It's the UPKEEP. Better installations may cost a little more to begin with—yet save money in the long run. The difference in original cost of a sound control job is often small in comparison with the difference in long-range costs for the maintenance of a ceiling—another reason why it pays to select a ceiling system carefully.

BB022 0548



the best in acoustical design

Good ceiling systems are uncomplicated, using a minimum number of parts and, wherever possible, employing standard building materials.

this is a job for experts



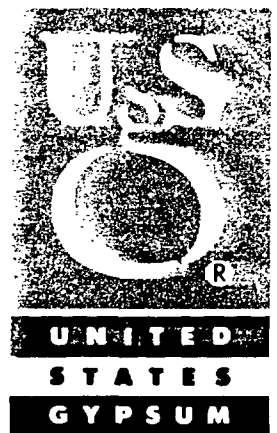
Insist on the installation that fits the needs of the job best, and on trained acoustical crews skilled in its execution. You're sure of both with United States Gypsum ceiling systems.



United States Gypsum
The Greatest Name in Building

Some rules of thumb for economical ceiling construction

1. The difference in original cost of a sound control job is often small in comparison with the difference in long-range maintenance costs.
2. Economical protection against fire can be obtained with a ceiling construction which includes incombustible tile adhered to a base of gypsum board.
3. Heating and air conditioning costs should be reduced by using acoustical tiles with high thermal insulating properties.
4. Acoustical tile should be selected that will take years of use and repeated painting without appreciable loss of initial appearance or acoustical qualities.
5. The use of low density or highly porous tiles that absorb paint and excessive dirt should be avoided.
6. Ready accessibility to the space above the ceiling should be provided for fast economical adjustments to services.
7. Furnish an over-all construction design that accommodates air conditioning, heating ducts, piping, fixtures and other services.



the greatest name in building