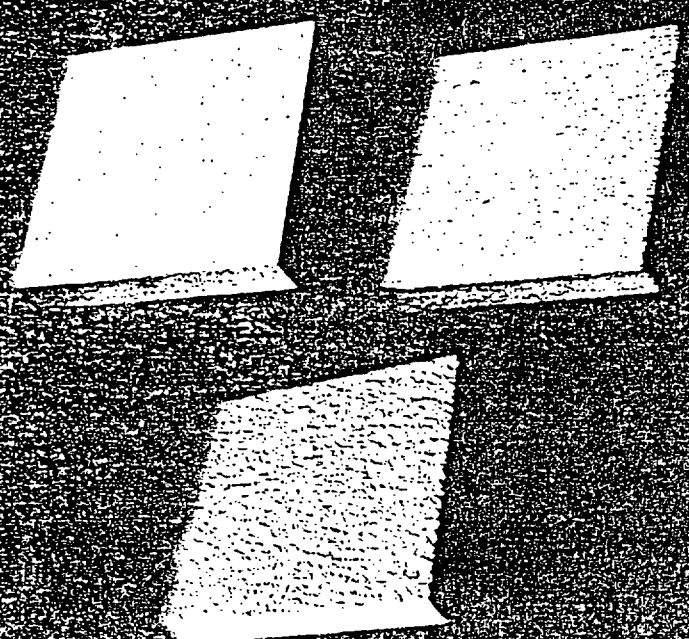
PLAINTIFF'S EXHIBIT
USG-696

Sound Control

beautifully done



BB030 0959

MOUNTING	PATTERN	FREQUENCY (cycles per second) 125	250	500	1000	2000	4000	NRC
16" Patch	Glacier	.25	.74	1.71	1.92	1.79	1.59	1.54
	Striated	.33	.99	1.66	1.79	1.73	1.58	1.54
	Finesse	.36	1.06	1.71	1.79	1.64	1.38	1.55
24" Patch	Glacier	.24	.74	1.76	2.13	2.01	1.71	1.66
	Striated	.35	1.01	1.79	1.97	1.94	1.69	1.68
	Finesse	.37	1.08	1.80	1.96	1.85	1.48	1.67
32" Patch	Glacier	.22	.81	1.88	2.28	2.16	1.83	1.78
	Striated	.31	.92	1.82	2.09	2.06	1.85	1.72
	Finesse	.32	.93	1.85	2.13	1.95	1.54	1.72
16" Strip	Glacier	.29	.87	1.66	1.89	1.77	1.56	1.55
	Striated	.41	1.02	1.67	1.77	1.73	1.60	1.55
	Finesse	.42	1.02	1.68	1.78	1.60	1.33	1.52

BB030 0960

Acoustone

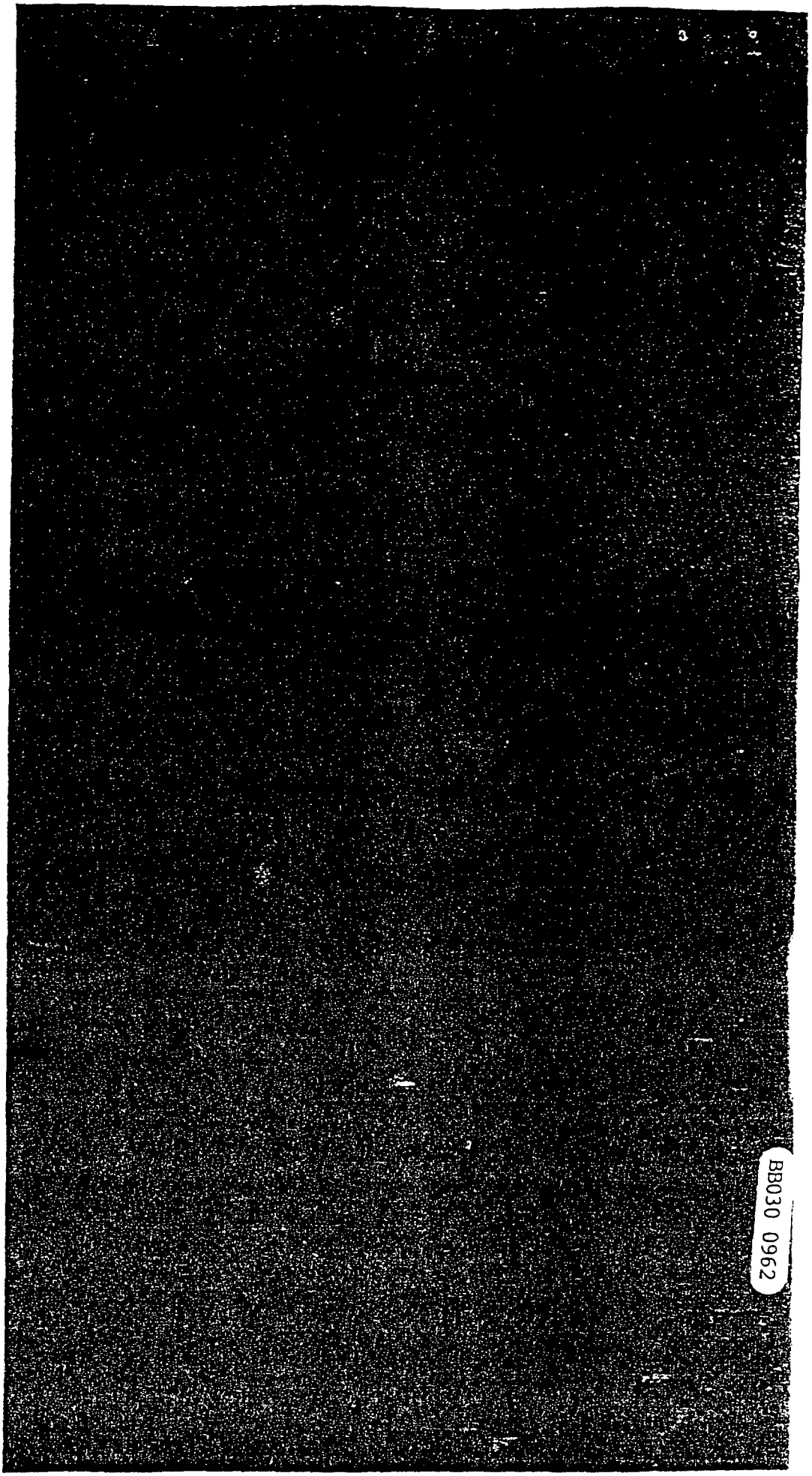
Mineral Acoustical Tile

BB030 0961

ACOUSTONE* Mineral Acoustical Tile embodies "classic design" in the broadest meaning of the phrase. Here is a product of natural, functional beauty. Offering a range of textures and patterns to match any architectural mood. Providing important fire protection. Assuring you of the most advanced approach to sound control for any room, any condition.

Through constant research and development in the field of sound control, utilizing the industry's most up-to-date facilities, United States Gypsum has kept ACOUSTONE Mineral Acoustical Tile at the forefront among fine acoustical ceiling products and maintained a corporate identity as the greatest single source for sound control products and information.

* Reg. U.S. Pat. Off.



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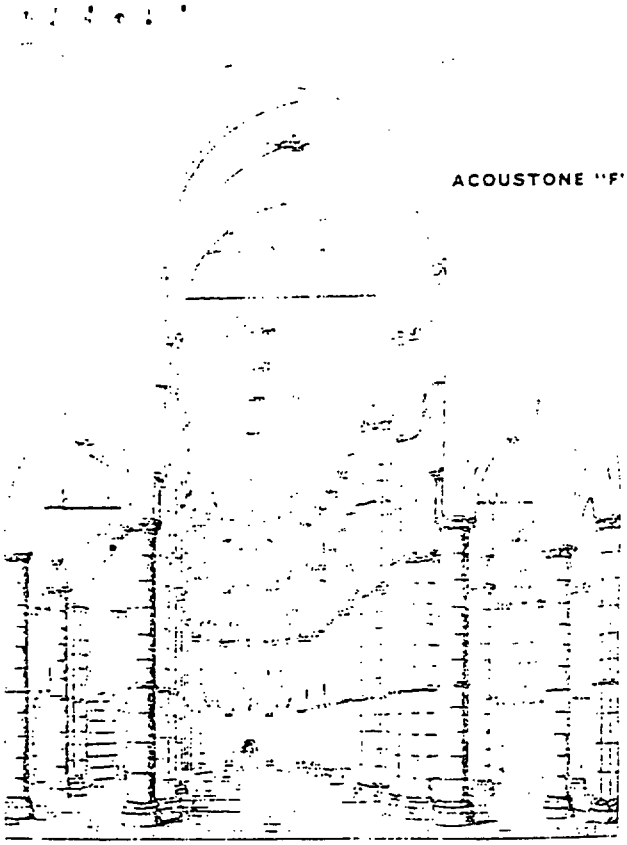
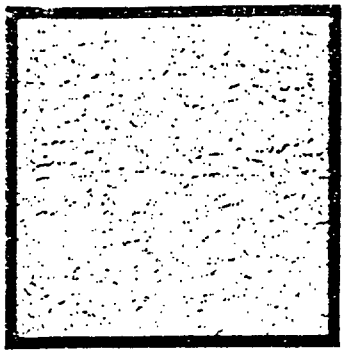


ACOUSTONE "F"



Acoustone "F"

This product features a natural fissure, the basic texture of ACOUSTONE Mineral Acoustical Tile. No two tile textures are exactly alike. Manufacturing tolerances, however, produce every tile to closely controlled dimensions. ACOUSTONE "F" (¾" thick) is available in sizes 12" x 12", 12" x 24", 24" x 24", 12" x 36", and 12" x 48". Edges are either square or beveled on most sizes.

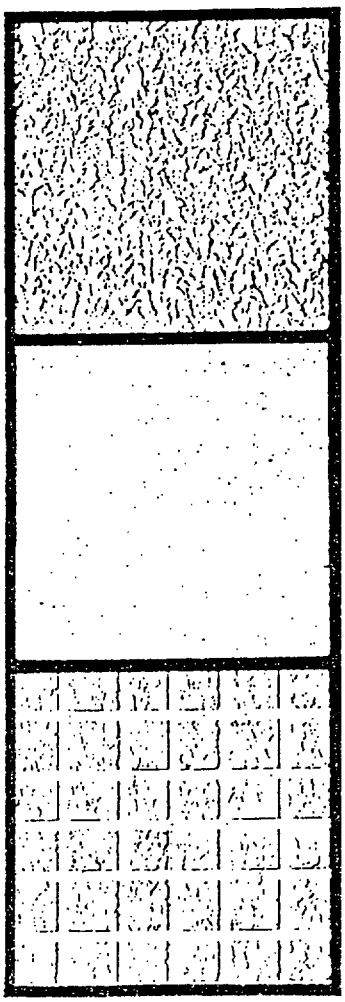
Major characteristics include a fire resistance rating of Class A in accordance with Fed. Spec. SS-A-118b, a flame spread rating of 15 in accordance with ASTM E84-61T, and sound transmission figures developed in accordance with AMA I-II test procedures.

ACOUSTONE "F" may be cleaned with a damp sponge, and can be spray- or brush-painted without appreciable loss of sound absorption qualities.

GLACIER

FINESSE

DOMINO



Finesse, Glacier, Domino

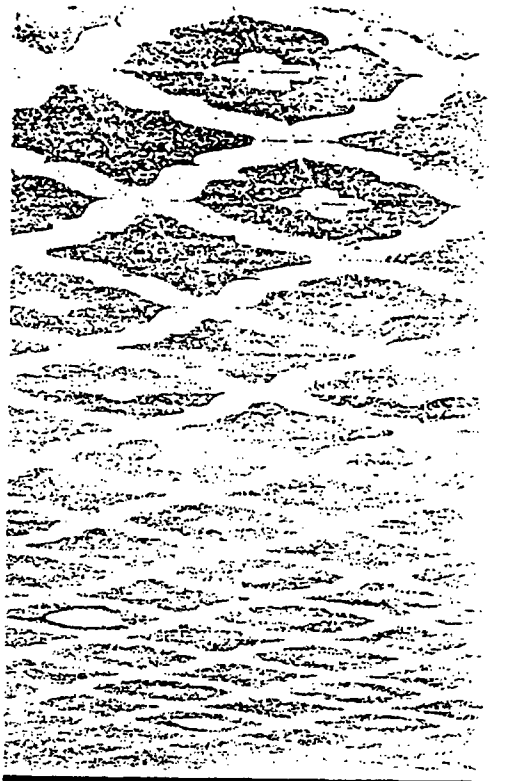
Three patterns add variation to ACOUSTONE "F". Glacier pattern is a deeper, heavier fissure, with a rough, natural surface that gives it a more rugged appearance. Finesse pattern is a lighter, more subtle fissure. Domino pattern is a routed version of ACOUSTONE "F" tile.

Physical characteristics, sizes, and suspension systems of all three are basically the same as those of ACOUSTONE "F" tile.

MOTIF'D ACOUSTONE Mineral Acoustical Tile is produced by altering the surface of ACOUSTONE "F" by a process, exclusive with U.S.G., that permanently etches a bas relief pattern into the surface of each tile. Light plays an important role in the appearance of MOTIF'D ACOUSTONE. Each of the four patterns shown here takes on a fresh, new appearance as the direction of the dominant light source changes and as shadows vary.

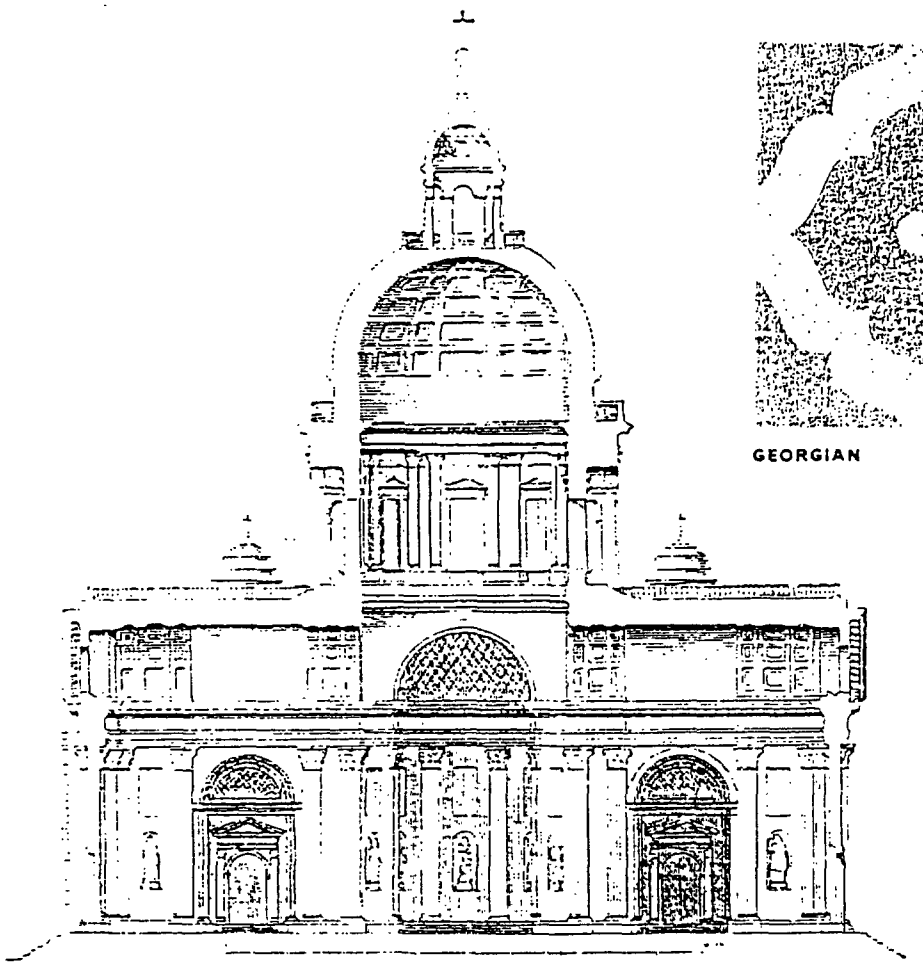
In addition to the four patterns shown, custom patterns can be produced to meet individual requirements. Physical characteristics of MOTIF'D ACOUSTONE are basically the same as those of ACOUSTONE "F".

* Reg. U.S. Pat. Off.





GEORGIAN





BB030 0964

STRIATED

GALAXY

FANTASIA

BB030 0965

Custom Motif'd

Esthetic expression is unrestricted with Custom MOTIF'D ACOUSTONE tile. Handsome custom patterns supplied by the customer can be permanently etched into the richly textured surface of Custom Motif'd, to make the ceiling contribute to any design theme chosen for the room. Some companies have used their trademark as a single Motif'd medallion or an an overall repeat ceiling pattern.

Notice below how the Early American drum pattern of Custom MOTIF'D underscores the 1776 theme and name of this room, the Fife and Drum Restaurant.

To achieve a Custom MOTIF'D ACOUSTONE ceiling merely submit a full scale drawing of the desired pattern or design to your U.S.G. Acoustical Contractor who will determine feasibility and obtain a quotation and delivery schedule for you. Patterns may be scaled to a single tile, or may be much larger, requiring proper installation of many of the Custom MOTIF'D one foot square tile to complete the single design.



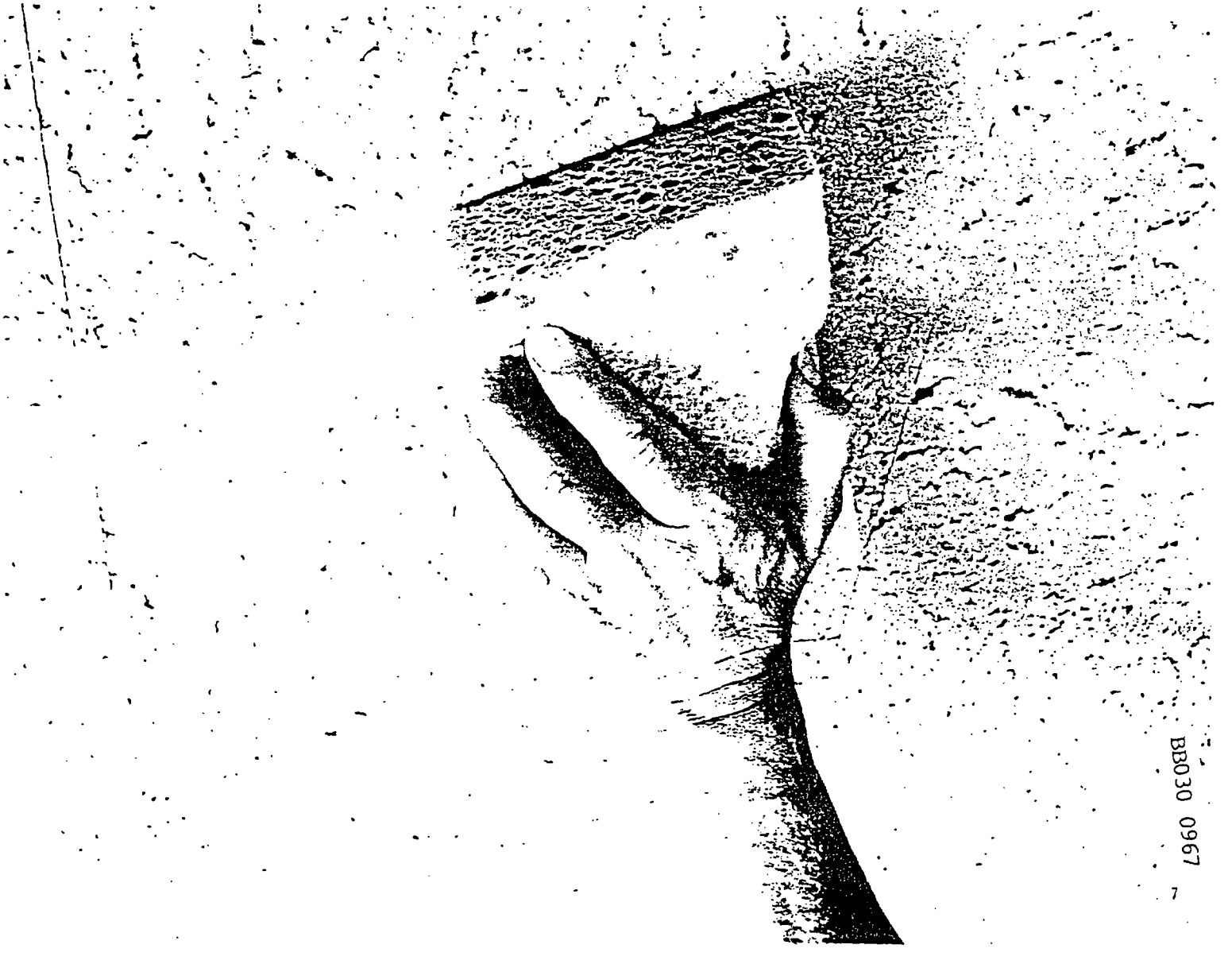
BB030 0966

Acoustone PC

This beautiful new mineral tile features the unique ability to stay fresh and clean even after long use. A durable plastic coating shrugs off the accumulation of air-borne dirt but does not reduce acoustical efficiency of the tile. ACOUSTONE PC acoustical tile, by actual test, outperformed standard acoustical finishes in resistance to soiling.

The plastic coated surface is also easily washable and quickly restored to its original good looks. Additionally, the stay-clean surface of ACOUSTONE PC maintains high light reflective efficiency. All these factors make ACOUSTONE PC tile ideal for heavy traffic areas, such as public buildings, restaurants and lobbies. Plastic coating is offered throughout the range of ACOUSTONE products. Available in the new 2-ft. x 2-ft. panels (see page 9), as well as in standard 1-ft. x 1-ft. size.

Major features include washability 20 times greater than standard finish acoustical tiles. Fire rating: Class 25 under ASTM test E84-61. Light reflection: Class A (85%) with ASTM test C523-63. Standard acoustical tests show that attenuation and absorptive properties are not materially affected by the plastic coating.



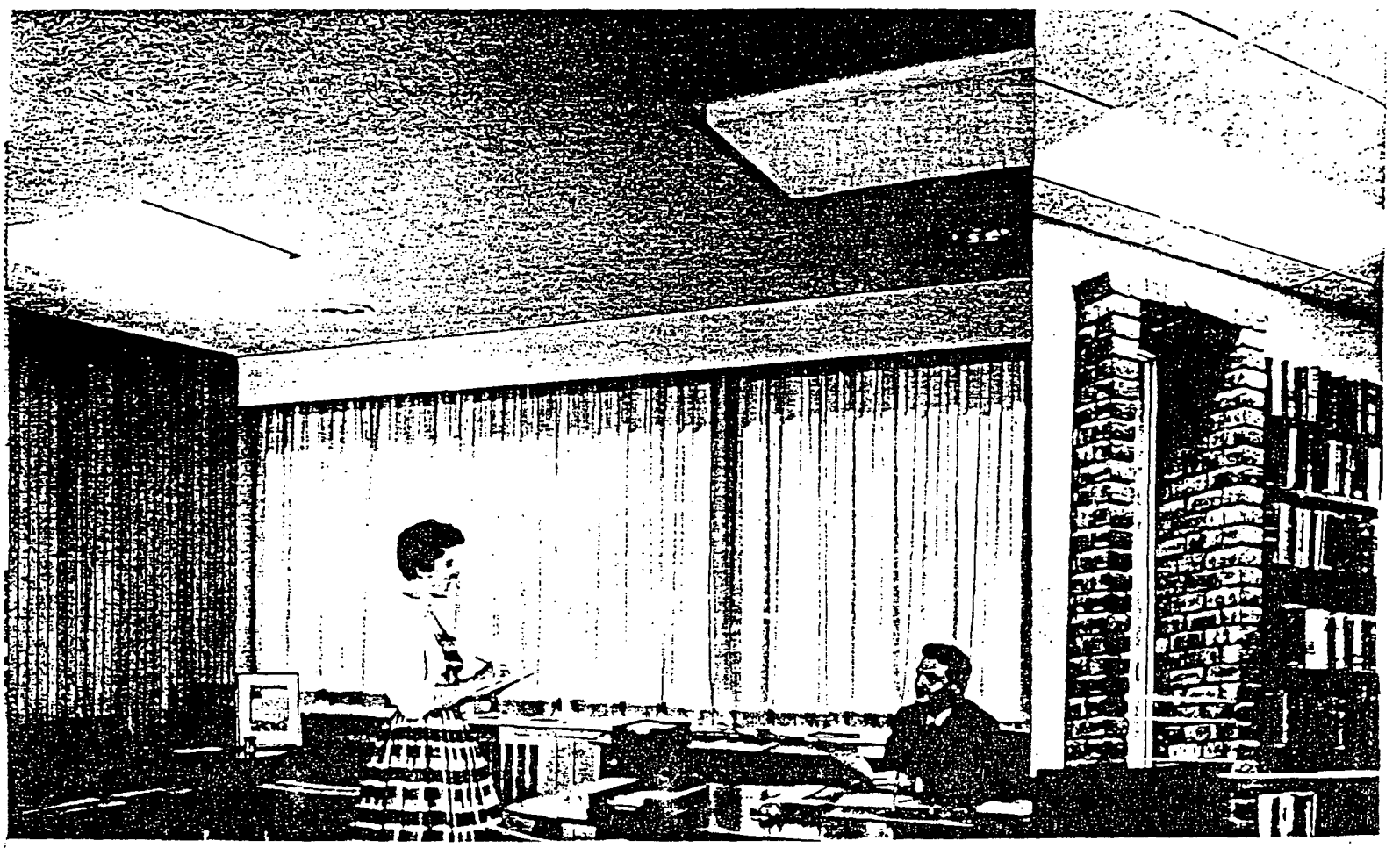
BB030 0967

Acoustone db

ACOUSTONE db Mineral Acoustical Tile not only absorbs noise, but, because it has a foil backing, efficiently retards sound travel through the ceiling and over partitions as well. Thus, ACOUSTONE db, with its high sound absorption *and* sound attenuation ratings, eliminates the need for extra backing. The built-in reflective foil backing of ACOUSTONE db also provides added resistance against winter heat loss and summer heat gain—an advantage that can quickly be translated into dollars saved in heating and cooling costs.

Since ACOUSTONE db is actually ACOUSTONE "F" with foil backing added, the physical characteristics are basically the same.

ACOUSTONE db is available in 1-ft. x 1-ft. tile, as well as in the new 2-ft. x 2-ft. tile (page 9)



Resistance (R) to heat flow †

	ACOUSTONE "db"	Regular ¾" Mineral Tile (without foil)
Winter (upward)	4.70	3.59
Summer (downward)	11.99	4.28

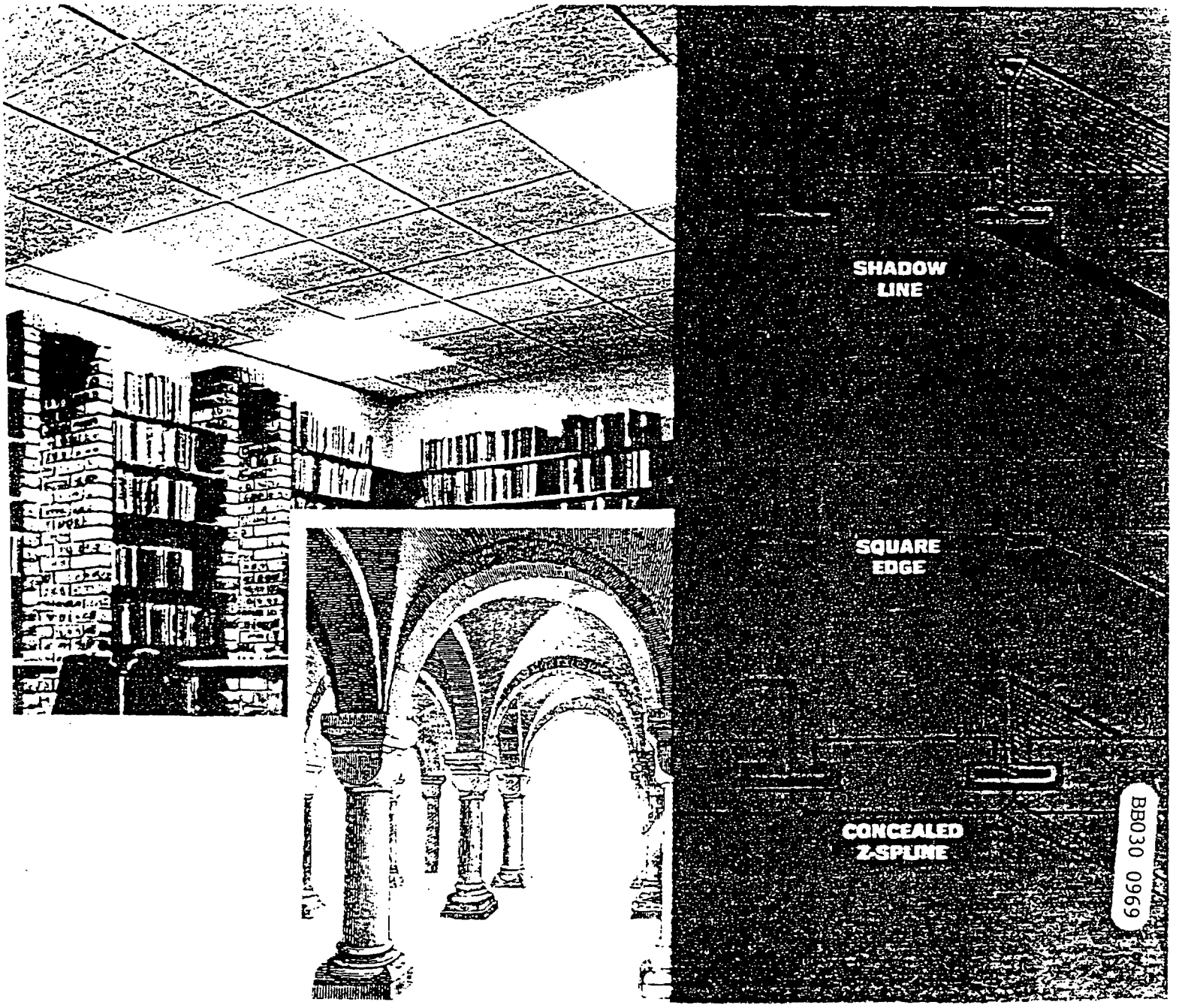
† 1960 ASHRAE Guide (includes tile and plenum air space)

BB030 0968

Acoustone 2x2

This new, 2-ft. ceiling panel for ceiling grid installation offers naturally fissured surface beauty plus the flexibility and variety of three different edge treatments. Shadow Line ACOUSTONE panels are specially back-cut to recess the supporting grid. A modification of this supplies a flush mounted appearance; and panels with a square-cut edge offer a conventional modular effect. Used with the concealed Z-spline System or the Concealed Accessible System, ACOUSTONE 2 x 2 may be selected as a more appropriate tile size for a large room, or to match 2 x 2 light fixtures. ACOUSTONE 2 x 2 panels have 85% light reflectance, plus a high noise reduction coefficient in the .70 to .80 range.

Full 3/4-in. thick, this panel-size tile is easily adaptable to suspended concealed grid modules. ACOUSTONE 2 x 2 also is available as (a) ACOUSTONE db (page 8) with foil backing to provide sound absorption and sound attenuation qualities; and as (b) ACOUSTONE PC plastic coated panels (page 5) with stay-clean qualities.



Acoustone 90, 120 & 180

1-, 1½-, 2-, and 3-hour U/L fire ratings

ACOUSTONE 90 suspended on the USG® Concealed Z-Spline System provides a 1-hour (Design No. 15) rating for wood joist and floor construction, and a 1½-hour (Design No. 6) rating for bar joist and concrete floor (or roof) construction.

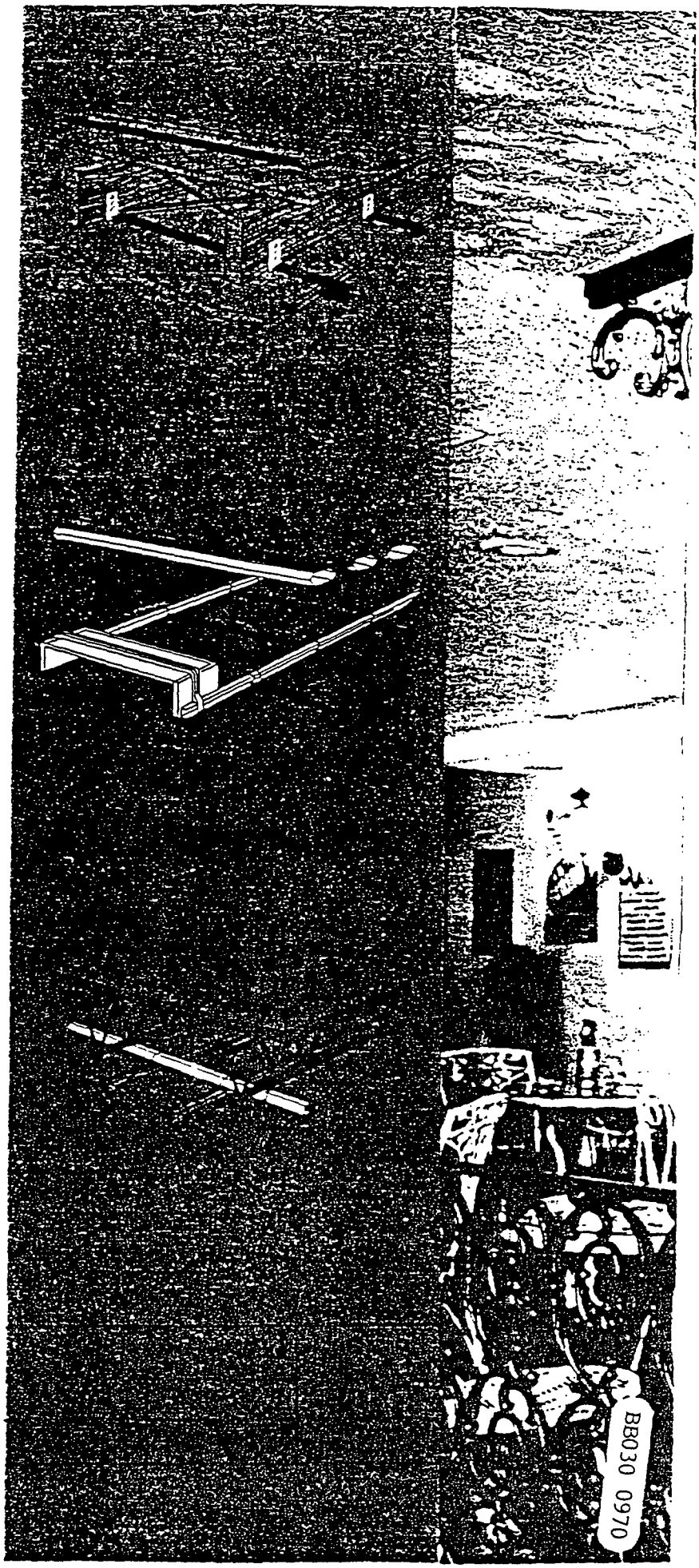
Foil-backed ACOUSTONE 120 suspended on the USG Concealed Z-Spline System provides a 2-hour (Design No. 41) rating beneath bar joist and a 2-hour (Design No. 55) rating beneath beam with concrete floor (or roof) construction.

Foil-backed ACOUSTONE 180 suspended on the USG Concealed Z-Spline System is formulated to provide a 3-hour (Design No. 96) rating for bar joist and concrete floor (or roof) construction.

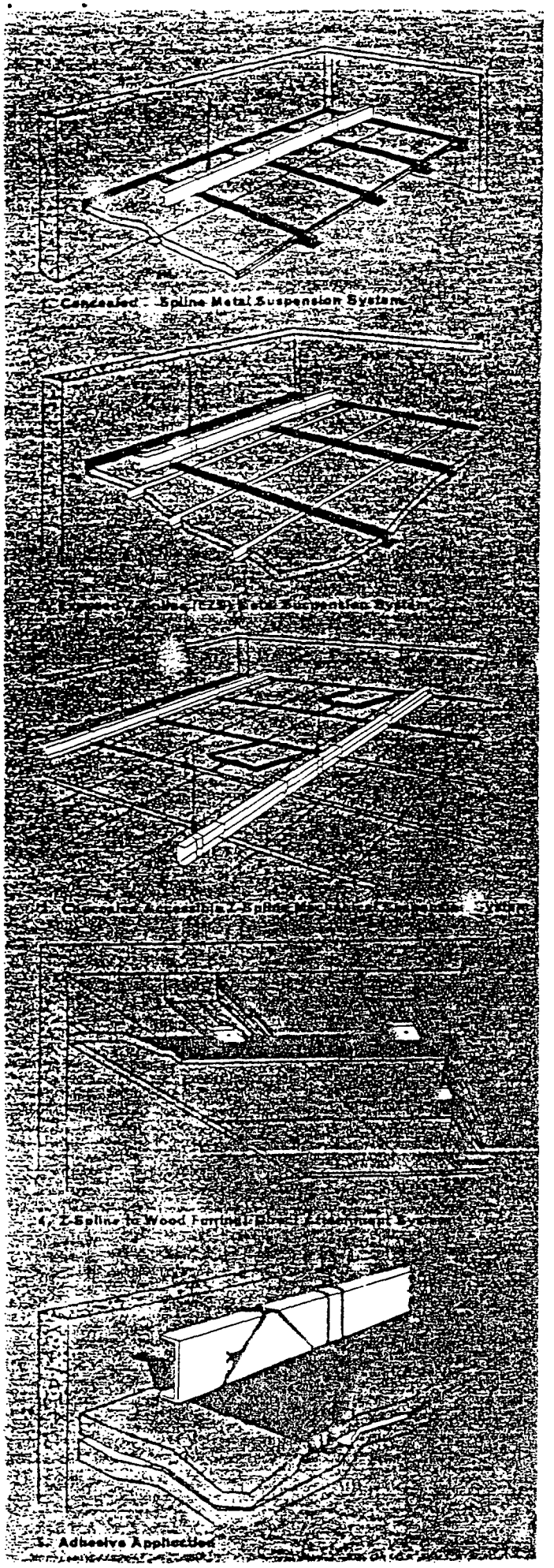
These fire ratings are based on the standards for Fire Tests of Building Construction and Materials Fire Endurance Test ASTM E-119, conducted by Underwriters' Laboratories, Inc.

Available in ¾" x 12" x 12" tiles, ACOUSTONE 90, ACOUSTONE 120 and ACOUSTONE 180 are factory-painted, 82% light-reflective white—have long-lasting beauty that can be easily maintained. Square edges and precise kerfing insure an appearance of uninterrupted beauty. Design 85 incorporates AIRSON* ACOUSTONE 120, Glacier ACOUSTONE 120, and MOTIF'D ACOUSTONE 120 in addition to the standard ACOUSTONE 120.

*Reg. U.S. Pat. Off.



LES MERVEILLES DE FRANCE
PALAIS des SPORTS
BALLET MOISSEIEV
JOHNNY HALLYDAY

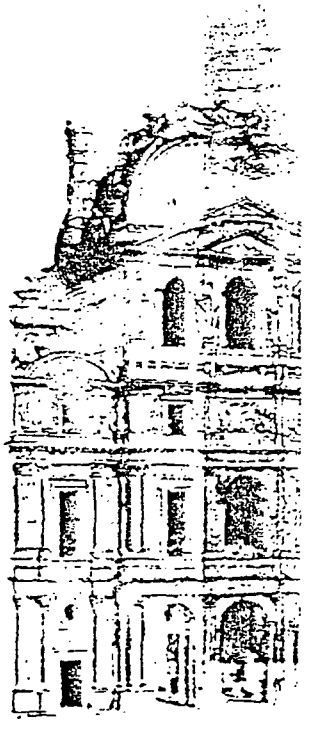


Construction Details

1. USG Concealed Z-spline System:
   - ACOUSTONE in 12" x 12" or 12" x 24" sizes—square or beveled edge. ACOUSTONE 24" x 24" beveled edge.
   - ¾" USG Z-spline, 12" on center, ¾" or 1½" USG Z-spline 24" on center, clipped to 1½" carrying channel.
   - USG Flat Spline for 12" span, T-spline for 24" span.
   - Spring steel spacer.
   - USG Finish Channel and Cover Plate.
   - USG clips—#62-A to attach Z-spline to 1½" channel. #65 or #67 to attach Z-spline direct to bar-joist.
2. USG Exposed Z-spline System:
   - ACOUSTONE in 12" x 24", 36" or 48" sizes—square or beveled edge.
   - 1½" USG Z-spline (painted white), spaced according to tile selection, clipped to 1½" carrying channel like Concealed System above.
   - USG Tee or Angle Spline to fit tile module.
   - Spring steel spacer.
   - USG Finish Channel and Cover Plate.
   - USG Clips as required.
3. USG Concealed Accessible Z-spline System:
   - ACOUSTONE in 12" x 24" or 24" x 24" beveled edge.
   - ¾" or 1½" USG Z-spline, 24" on center, clipped to 1½" carrying channel like Concealed System above.
   - USG Tee or Angle Spline.
   - USG Finish Channel and Cover Plate.
   - USG Clips as required.
4. USG Concealed Z-spline System attached direct to Wood Furring:
   - ACOUSTONE in 12" x 12" or 24" sizes, to square or beveled edge.
   - USG #90 clip to attach Z-spline direct to Wood Furring.
5. Adhesive Application:
   - ACOUSTONE is 12"-x 12" size, square or beveled edge.
   - USG Drywall Furring Channel wire-tied to 1½" carrying channel.
   - Acoustical adhesive manufactured expressly for this purpose.
   - Flat fiber splines for alignment.
   - Gypsum board base screwed to Furring Channel.







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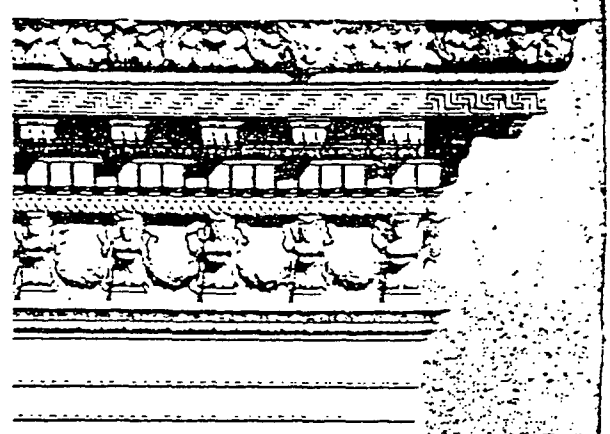
Sound Control Data



Sound Absorption Coefficients

ACOUSTONE PRODUCT	MOUNTING	WEIGHT PSF	NRC SPEC. RANGE	SOUND ABSORPTION COEFFICIENTS AT cps					
				125	250	500	1000	2000	4000
ACOUSTONE "F"	1	1.3	.70-.80	.03	.27	.83	.99	.92	.71
	7	1.4	.70-.80	.68	.67	.65	.84	.87	.74
ACOUSTONE GLACIER	1		.70-.80	.04	.20	.73	.99	.98	.89
	7	1.4	.80-.90	.60	.73	.73	.93	.88	.90
ACOUSTONE FINESSE	7	1.3	.60-.70	.78	.57	.59	.73	.70	.60
ACOUSTONE DOMINO will produce substantially the same technical results as ACOUSTONE "F".									
MOTIF'D* ACOUSTONE	1	1.3	.55-.75	.03	.26	.77	.93	.83	.78
Striated Design	7	1.3	.75-.85	.80	.69	.66	.86	.90	.87
ACOUSTONE db	7	1.3	.70-.80	.58	.48	.67	.99	.92	.85
MOTIF'D ACOUSTONE db Galaxy Design	7	1.3	.65-.75	.58	.46	.69	.91	.80	.76
ACOUSTONE 90	7	1.3	.75-.85	.83	.73	.68	.87	.93	.78
ACOUSTONE 120	7	1.3	.70-.80	.45	.46	.72	.97	.87	.90
ACOUSTONE 180	7	1.3	.70-.80	.45	.48	.62	.97	.96	.96
ACOUSTONE GLACIER db	7	1.6	.75-.85	.30	.46	.77	.99	.99	.90
ACOUSTONE PC	1	1.3	.65-.75	.22	.21	.78	.99	.78	.59
	7	1.3	.70-.80	.70	.63	.67	.82	.86	.62

Mounting No. 1 Cemented to gypsum board
Mounting No. 7 Metal suspension system

Sound Attenuation Data

ACOUSTONE PRODUCT	SUSPENSION SYSTEM	SIZE TESTED	SOUND TRANS. CLASS (1)	ELEVEN FREQUENCY AVERAGE	ATTENUATION (Decibels) AT cps										
					125	175	250	350	500	700	1000	1400	2000	2800	4000
ACOUSTONE "F"	Adhesive (2)	12" x 12"	47	48.1 db	30	36	38	41	46	48	52	59	58	62	59
	Concealed Z-Spline	12" x 24"	29	30.8 db	23	27	25	23	26	26	28	32	36	43	50
	Exposed Z-Spline	12" x 24"	26	29.5 db	24	30	23	21	24	25	25	30	34	42	47
ACOUSTONE FINESSE	Concealed Z-Spline	12" x 12"	34	37.5 db	26	29	29	27	31	33	35	41	47	57	58
ACOUSTONE db	Concealed Z-Spline	12" x 12"	40	42.7 db	28	33	33	34	38	41	43	49	54	61	56
	Concealed Z-Spline	12" x 24"	40	44.8 db	32	36	33	34	41	43	48	53	55	62	56
	Exposed Grid	24" x 24" (nom.)	40	41.3 db	28	35	28	34	37	40	43	47	51	55	56
	Exposed Z-Spline	12" x 24"	39	42.1 db	28	37	32	32	37	39	41	49	52	60	56
MOTIF'D ACOUSTONE db Galaxy Design	Concealed Z-Spline	12" x 12"	39	42.6 db	27	35	32	33	38	41	44	49	53	60	57
ACOUSTONE 120	Concealed Z-Spline	12" x 12"	39	42.2 db	28	31	33	33	38	41	43	49	53	59	56
ACOUSTONE GLACIER db	Concealed Z-Spline	12" x 12"	43	43.6 db	32	37	30	37	40	42	44	46	54	60	58

(1) Rated in accordance with ASTM E90-61T
SOURCE: Official AMA acoustical testing laboratory

*Reg. U.S. Pat. Off.

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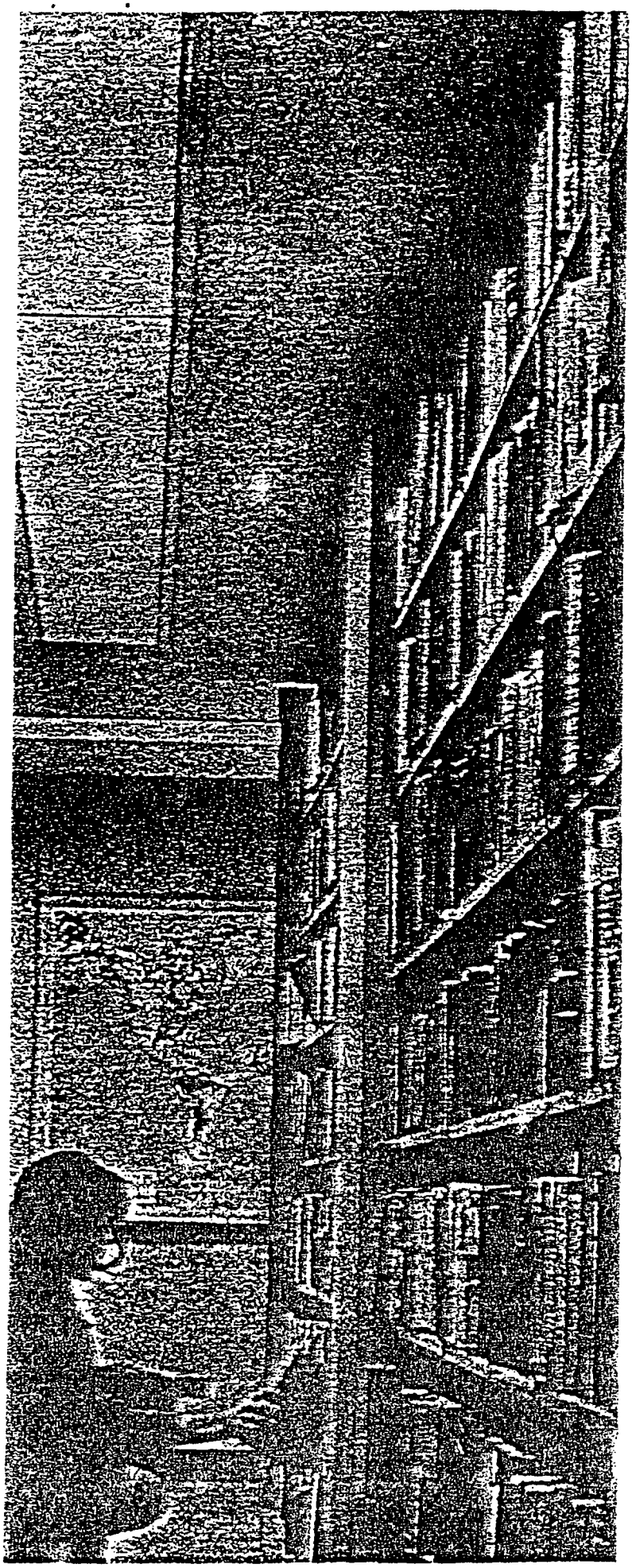

Architectural Specifications

notes to architect

1. United States Gypsum recommended contractors are highly trained specialists in the installation and design of U.S.G. sound control systems. They are well-equipped to survey your job, make recommendations and estimates, and help solve functional and esthetic problems that may be encountered. Should the problem be beyond the scope of a U.S.G. contractor, he will recommend a competent acoustical consultant who may advise you.
2. U.S.G. sound control contractors will usually arrange for their own layouts and estimating for jobs. Architects may, however, prefer to furnish their own layouts.

non-combustible tile and panels

I. scope—List all areas to receive acoustical treatment.

II. general provisions—Recommendations for construction conditions found in the latest Acoustical Materials Association Bulletin shall apply.

III. materials—Acoustical products by the United States Gypsum shall be: *(specify types, sizes, edges, patterns, installation from page 3; sound absorption, (NRC) from page 16; sound attenuation, (STC) from page 17).*

a. ACOUSTONE Mineral Acoustical Tile

—ACOUSTONE "F", ¾" thick, (width x length), non-combustible, class 25 mineral fiber units manufactured by molding to produce a natural fissured surface. Units shall have density: 18 pcf minimum; NRC: ( ), STC: ( ).

—Glacier ACOUSTONE, nominal ¾" thick, (width x length), non-combustible, class 25 mineral fiber units manufactured by molding to produce a natural, unplaned, heavy fissured surface. Units shall have NRC: ( ), STC: ( ).

—MOTIF'D ACOUSTONE, ¾" thick, 12"x12", non-combustible, class 25 mineral fiber units manufactured by molding and surface etching to produce (Georgian) (Striated) (Galaxy) (Fantasia) design. Units shall have NRC: ( ), STC: ( ).

—Finesse ACOUSTONE, ¾" thick, (width x length), non-combustible class 25 mineral fiber units manufactured by molding and planing to produce a finely textured natural fissured surface. Units shall have NRC: ( ), STC: ( ).

—Domino ACOUSTONE, ¾" thick, 12"x12", non-combustible, class 25 mineral fiber units manufactured by molding and routing to produce a three-dimensional natural fissured surface.

—Shadow-Line ACOUSTONE, ¾" thick, (width x length), non-combustible, class 25 mineral fiber units manufactured by molding and routing to produce face-rabbeted edges and ¾" reveal below plane of support. Units shall have NRC: ( ), STC: ( ).

Optional inclusions applicable to all above specifications.

—AB (foil backed)—Units shall have non-breathing factory-applied aluminum foil backing.

—PC (plastic coated)—Units shall have factory-applied acrylic plastic surface coating that is able to withstand 300 brush and water cycles without breaking in the Gardner Washability Test.

Concealed Spline—24" Tile—The suspension system shall be Concealed Z-Spline attached to 1½" channel grillage with 1¼" Z-Spline spaced 24" o.c. Metal tees shall engage adjacent tile.

Concealed Accessible Spline *(for bevel edge tile only)*—The suspension system shall be Concealed Accessible Z-Spline attached to 1½" channel grillage with 1¼" Z-Spline spaced 24" o.c. Sufficient back-to-back angle splines shall engage adjacent tile to provide *(specify %)* accessibility to plenum. Remaining adjacent tile shall be supported by 24" tee splines.

Exposed Spline—The suspension system shall be the E-Z-S system attached to 1½" channel grillage with 1¼" painted Z-Spline spaced *(specify dimension to 36")* o.c. Sufficient back-to-back angle spline shall engage adjacent tile to provide *(specify %)* accessibility to plenum. Remaining adjacent tile shall be supported by 24" tee splines.

Exposed Grid—The suspension system shall be an inverted tee direct hung system meeting "intermediate" (or better) structural standards shown in "Specifications for Acoustical Tile and Lay-in Panel Ceiling Suspension Systems" of the Acoustical Materials Association.

Adhesive—Acoustical material shall be adhesively applied using an adhesive manufactured specifically for applying acoustical tile. Fiber splines shall be inserted in the kerf at corners of square edge units.

WB030 0975

Acoustone: Mineral Acoustical Ceiling Tile

BB030 0976