WRG001733



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GRACE
ZONOLITE
CONSTRUCTION PRODUCTS DIVISION

Sprayed Fireproofing

File
Tom Egan

TO:
C. R. Lowe/Zono-Atlanta
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R. E. Dunham/Zono-Minneapolis Office
W. G. Gray/Zono-Dearborn
W. K. Rogers/
C. H. Wendel/Zono-Los Angeles Office
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V. G. Monroe/Zono-Wilders
T. E. Dietrick/Zono-Atlanta
L. P. Hollis/Zono-High Point
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N. T. Burns/Zono-Beltsville
J. R. McLeod/Zono-Minneapolis Office
J. N. McDougall/Zono-Omaha
W. J. Sinacore/Zono-Chicago Plant
A. W. Dambros/Zono-Los Angeles Office
T. W. Pickthall/Zono-Newark
W. V. Culver/Zono-Auburn
J. V. McKague
W. F. Hunter/F. Hyde (Ontario) Ltd.
S. K. Vallieres/F. Hyde and Co., Ltd.
R. B. Moran/Texas Vermiculite Co.
J. H. Greer/Vermiculite Products Co.
J. Lyall/Southwest Vermiculite Co.
L. K. Irvine/Vermiculite-Intermountain, Inc.
F. E. Gebert/Robinson Insulation Co.
N. F. Bushell/Grant Industries
A. D. Webster/F. Hyde and Co., Ltd.
R. W. Sterrett
T. P. Feit
R. M. Vining
K. Harrison
B. R. Williams
J. N. Beveridge
J. C. Ottinger
R. O. deBastian/Zono-St. Louis
W. J. Bourke/Zono-Chicago Plant

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ST. LOUIS, MO. 631

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ZONOLITE

CONSTRUCTION PRODUCTS DIVISION

7094371

TO: See Distribution List DATE: March 24, 1971

FROM: T. F. Egan

Gentlemen:

Most of you are aware by now that we are being included in the term "Spray Fireproofing" which is getting a bad name from recent fires in high-rise office buildings. An article in Engineering News Record, March 11, 1971, noted comments by W. R. Powers of New York Fire Underwriters and recent opinions of the New York Fire Rating Organization (See Attached).

I and others are attempting to refute these charges which include Mono-Kote in the indictment against sprayed fibers. A previous article in Engineering News Record, November 26, 1970, from which we made data sheets (see attached) noted what Powers stated in his official report.

It's important that you make clear to everyone that the fires in New York and the charges against failure of spray material is SPRAYED FIBERS. Further, I urge that you contact the local rating bureaus noted on the attached list and state your case for Mono-Kote. It would be wise to talk in terms of types, e.g., Cementitious (plaster) vs sprayed fibers and not use brand names. Petition that the rating officials make judgments on known facts which are that the sloppy application procedures permitted in New York along with the poor physical properties of sprayed fibers combined to make the situation in New York criminal. I'm attaching copies of some letters to insurance officials that may be of help in stating our case.

I am writing a similar letter to each of these bureaus and will send a copy to you. Would you please help by making contact and reporting the results. Also, if you have contacts in insurance circles, let them know the facts and advise if and how I can help.

To achieve success, the job must be done by everyone at all levels and at the same time. Don't delay and don't be afraid of talking straight to the facts.

Thanks and I'll be waiting to hear from you.

Yours truly,

Thomas F. Egan

TFE/jac

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ZONOLITE

CONSTRUCTION PRODUCTS DIVISION

7094372

W. R. GRACE & CO. 62 WHITEHEAD ROAD

March 23, 1971

Mr. Hobart E. Fountain
New York Fire Insurance
Rating Organization
130 William Street
New York, New York 10038

Dear Mr. Fountain:

I recently received a list of rating offices from Mr. Bechtolt of the Fire Insurance Research and Actuarial Association, and he asked what our company was doing about the sprayed fireproofing situation. My reply is attached. I'm sending it along to you, Mr. Fountain, because I'm disturbed at our cementitious material being indicted by the charges being leveled.

As I mentioned when I met with you, that what you are seeing when you look around New York is sprayed fibers on 90% of the work. Further, this material is being applied today as poorly as ever, in spite of our concern, because no one is doing enough to make sprayed fiber applications meet standards.

Recent articles, particularly the one in Engineering News Record of March 11 in which your organization is mentioned, include cementitious in the term spray-applied material. I would hope that some statement could be made to note a difference between cementitious and sprayed fiber. They are not alike; and if you're comparing, you might want to note that the recent fire in the Bank of America Building in San Francisco, protected with Mono-Kote, had none of the damage incurred in the two New York fires where sprayed fibers were used. I'm sure Mr. H. Spaeth of the Pacific Fire Rating Bureau could relate to these facts. It should not be unusual to note differences in <u>type</u> of protective materials, particularly when one is able to see the differences in properties, application and performance.

GRACE

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CONSTRUCTION PRODUCTS DIVISION

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As I noted earlier, I'm anxious to meet with you and others at any time to further clarify our position or be of service and assistance in this matter.

Yours truly,

Thomas F. Egan - Manager
Fireproofing Products

TFE/jac

Attachment

25053648

ZONOLITE

CONSTRUCTION PRODUCTS DIVISION

7094374

W. R. GRACE & CO. 62 WHITTEMORE AVENUE CAMBRIDGE, MASSACHUSETTS 02140 (617) 876-1400

March 23, 1971

Mr. P. R. Bechtolt
Fire Insurance Research
And Actuarial Association
160 Water Street
New York, New York 10038

Dear Mr. Bechtolt:

In your letter of February 8, you asked what Zonolite has done or is contemplating doing to insure that our product will be properly applied.

As a means of answering that, I will first explain that our product Mono-Kote is a Cementitious (Plaster) sprayed fireproofing. This is very much different from the sprayed mineral fiber types which have caused so much controversy not only in the area of improper application but in pollution.

Mono-Kote, being cementitious and having gypsum plaster as a binder, is wet mixed, pumped and sprayed. The binder takes a chemical set, locking all the ingredients in a hardened mass and always providing an in-place density in accordance with those shown in the particular fire test assembly.

This is not the same with sprayed fibers since they are mixed dry, blown to the nozzle and wetted as sprayed. The control of water and feed rate at the nozzle directly affects the in-place density. This has been of concern to us, of course, but for a long time others have made note of this condition but little heed has been taken. As an example, I quote from Document No. 3 of the Construction Specifications Institute titled "Specifying Sprayed Fireproofing", Installation Methods Section G, paragraph G1, "With fibrous materials accurate water measurement is highly important. A common way to cheat on the application is to reduce the water flow at the nozzle, thus decreasing density and increasing coverage per pound of fiber."

GRACE

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CONSTRUCTION PRODUCTS DIVISION

70-9375

For years, the almost total concern for getting lower in-place costs overcame any regard for proper application. There were and are few guidelines by legislation or code. Also, these few regulations were seldom, if ever, enforced. Therefore, the rules of conduct were how fast and how cheap. Like many things that go on long enough, they become accepted by those who never see how or what others in different areas are doing or are required to do.

The two basics of applications are: (1) Thickness and (2) Density. Since the density is assured with cementitious material, then relatively simple tests for thickness can be regularly performed by government, insurance, or owner/architect inspection. For sprayed fibers the additional requirement for density should be enforced.

As stated earlier, Zonolite, as part of Construction Products Division of W. R. Grace & Co., has been striving for years to enlist others in control measures on application of sprayed materials, particularly with fibers. Some areas, particularly the Pacific Coast area, have been following stricter regulations on approval and in-place inspection. It's interesting to note that the overwhelming majority work in these areas is cementitious. Noting further that the Uniform Building Code requires time-temperature on beams and cities like San Francisco require pre approval testing for damageability, make the criteria of performance strict.

It has been our feeling and we have urged that inspection of thickness and/or density be handled by an independent laboratory. Attached you will note our data sheet where in our specifications we make clear in red a recommendation for density tests. We are increasing our efforts to call attention to the need of proper fire-protection with all responsible segments. Now that the insurance people are looking directly at the application and damageability question, we are anxious to cooperate. Also attached is an "Inspection Guide" that we have prepared for code and other inspectors. It is hoped that these will be of assistance in bringing some clarity to a very confusing matter.

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CONSTRUCTION PRODUCTS DIVISION

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It would be easy to say "You got what we have told you you'd get by allowing sprayed fibers to be installed with no control." We will say it but offer our talent and effort in cooperation with you and others so together we can provide proper protection in accord with codes and insurance ratings. Also, that the unfair advantage gained by inferior fireproofing will be stopped.

In summation, I contend that "sprayed fireproofing" should not be taking the brunt of indictments, but that sprayed fiber application practices should be noted and distinction be made by the insurance rating agencies and officials whether spray protection is provided by (a) cementitious or (b) sprayed fiber types.

Realizing that some or most of this may be confusing, I am asking that you allow me to speak in person to you and any other interested parties at your convenience. If this is satisfactory, please advise, and I'm sure that with some open question and answer, all the facts can be examined.

Yours truly,

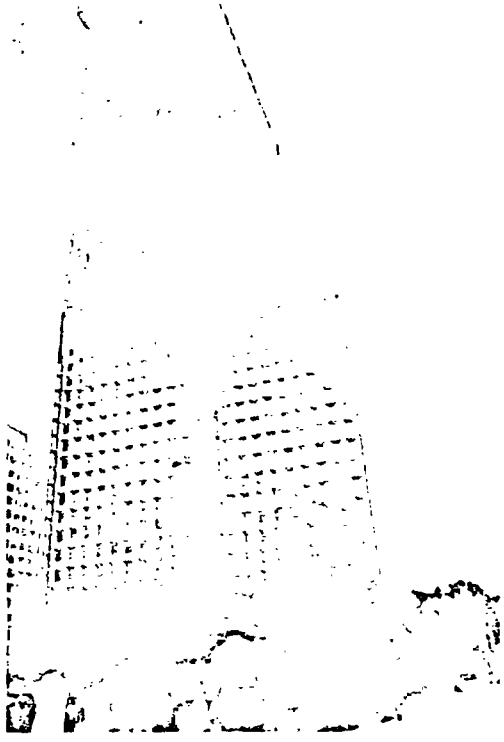
Thomas F. Egan

Thomas F. Egan - Manager
Fireproofing Products

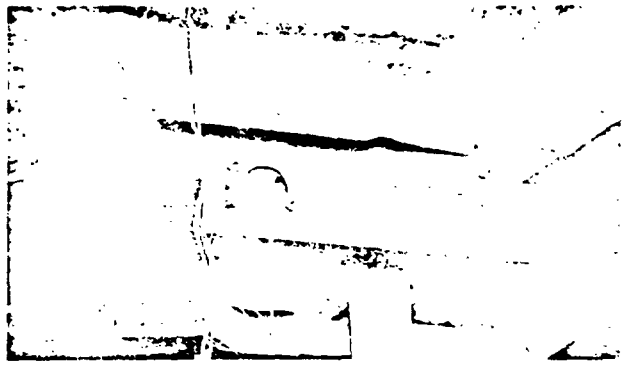
TFE/jac

Attachment

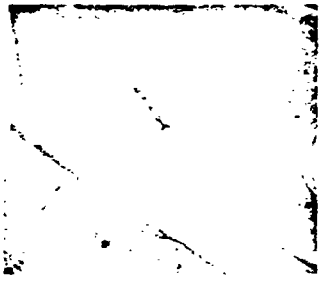
25053651



Fire hits three floors of 50-story building



Unprotected steel beam deflected and sheared connection bolts



Duct-pierced floor passed fire



Fire consumed flexible duct at mixing box

7693377

Construction industry seeks answers to problem of fire in tall buildings

The construction industry quite suddenly is wrestling a problem many considered almost nonexistent—fire in high-rise buildings. The problem existed, but it was hidden by the description, "fire-resistive building."

Owners, designers and builders equated building safety with life safety. To some extent the two do overlap, so the industry overlooked the significance of events.

Two events in the early 1960s were as dramatic as they were significant. On Thanksgiving eve in 1961, a fire raged in the third basement of the 24-story Times Tower in New York City's Times Square. The blaze was held to that basement, but two firemen died—on the 22nd floor. Smoke got them. Also killed was a building service employee. He was trapped in an elevator stuck between the first and second floors. Smoke got him.

Two years later, four days after Christmas fire struck the 14-story Hotel Roosevelt in Jacksonville, Fla. Firemen contained the blaze in the lobby where it started, but 22 persons died, all on floors six through 13. Smoke got them.

Both buildings of fire-resistive steel and concrete construction, were erected in the early 1900s so the fatalities perhaps were attributed to design features long since abandoned and to use of older combustible materials. The Times Tower, for example, had open stairways that distributed dense smoke throughout the building.

But last year fire hit three high-rise buildings. All are new, all use the most modern materials and all employ the latest design techniques.

One fire involved San Francisco's Bank of America Building, a 52-story office structure occupied early in 1969. The fire, of incendiary origin, was contained where it started, in a 35th floor lounge. Furniture and some interior finishes were destroyed in the fire area. There was some smoke damage on a few upper floors, but no structural damage.

The other two fires, in New York City, killed five persons. One, in midtown Manhattan, occurred in a 47-story structure known as the Carpet Center Building, and the other was in a 50-story building at One New York Plaza in lower Manhattan's financial district. Tenant finishing work was still under way on some floors in both buildings.

Three building workers died in the Carpet Center fire, two in the hall on the fifth floor, the fire floor, and one in an elevator stuck at the fire floor. The fire at One New York Plaza killed two building employees, both in an elevator stuck at the 33rd floor, lowest of the three fire floors.

Lowering the boom. The New York Board of Fire Underwriters and its superintendent, W. Robert Powers, a licensed professional engineer, soon after issued reports that jarred the construction industry, the steel industry, and the elevator industry.

Among other things, Powers urged installation of automatic fire sprinklers throughout high-rise office buildings, use of fireproofing material other than the spray-applied mixes on steel frames, and use of elevator call buttons of a type that would not call a car to a floor because of heat, smoke and flames.

The insurance industry responded rapidly. The New York Fire Insurance Rating Organization, a service organization in New York State for about 250 insurance companies, issued an advisory opinion effective Feb. 1, that steel frame structures be considered for insuring purposes as unprotected steel if spray-applied material is used for fireproofing. It is believed that the change

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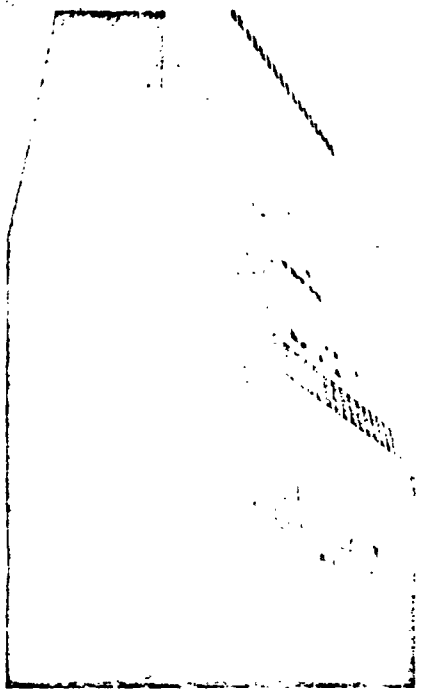
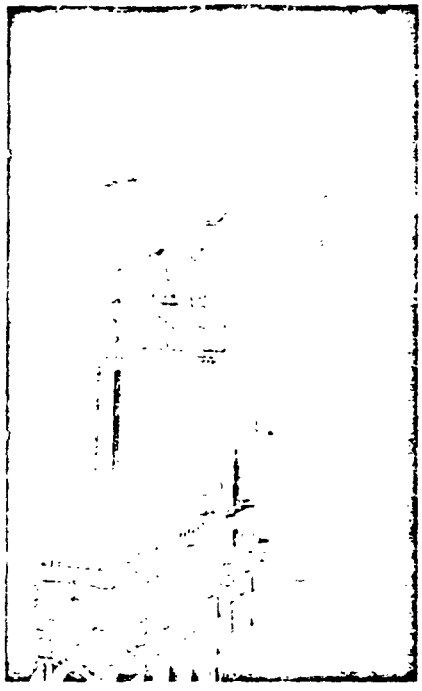


In another tower, smoke rose to top inside



Basement fire kills two on 22nd floor



Lobby fire kills 22 on hotel's high floors.

could double premium charges for fire insurance policies on buildings.

Expensive alternates. Alternates to spray-applied fireproofing are expensive. Concrete encasement costs over 10 times more than spray-applied fireproofing, according to Ira Hooper, of Seelye, Stevenson, Value & Knecht, New York City consulting engineers. As an example, Hooper says encasement of a W 16 × 36 beam would cost about $8 per lin ft as against 75 cents per lin ft for spray-applied fireproofing.

Troweled plaster on lath would cost seven times more than spraying, and intumescent mastic would cost eight times more.

The steel industry fears that if builders are forced to go to concrete-encased steel they might move all the way to reinforced concrete. Hooper has offered the steel producers a way out of the potential competitive problem. He suggests that the steel industry develop prefabricated fire-rated assemblies for enclosing steel members in buildings.

Steel companies might, however, find that the Fire Rating Organization is willing to compromise on the use of spray-applied fireproofing materials. Since it issued its advisory opinion, it has circulated proposals to the steel makers and builders that would make the spray job acceptable.

This could be accomplished provided a system of inspections and testing was established. One condition would require daily inspection of steel-spraying operations by a qualified engineer.

Sprinkler protection. The recommendation that automatic sprinklers be installed throughout high-rise office buildings is supported by fire departments and insurance companies. In addition to serving as a prime protector of life, sprinklers also rank as a top property-protection system.

Reaction of the builders appears mixed. Owners contend that the cost of sprinkler installation is high. Some also claim that activation of a system causes heavy water damages.

Sprinkler system designers, manufacturers and installers scoff at both claims. They say the sharply lower fire insurance premiums that usually prevail for fully sprinklered buildings can amortize the cost of a system in less than 10 years, usually five or less.

They say that water damage is slight compared to the damage done by a fire and fire-fighting requirements. They note that one sprinkler operating at 75 psi delivers about 50 gpm, while a 2½-in. hose operating at the same pressure delivers about 400 gpm.

Also the number of heads activated by an office fire probably will be small. Data gathered over the last 100 years of sprinkler history show that 37.4% of all fires that activate a sprinkler are controlled by one head, 73.4% are controlled by five or fewer sprinklers and 85% by 10 or fewer sprinklers.

Other cost offsets also may be available in direct construction outlays in some geographic areas under some circumstances. Last year the Southern Standard Building Code, a model code published by the Southern Building Code Congress (SBCC), and used in various communities of 22 southern and southeastern states was revised to reduce required fire ratings by one hour on commercial buildings if a sprinkler system is installed throughout a building. A four-hour rating would drop to three hours, a three-hour rating to two and a two-hour rating to one. No material rating would go below one hour. Sprinkler industry spokesmen say that such changes could reduce some building costs by up to 25%.

Those who argue against reliance on a sprinkler system say that a smoky fire frequently will not produce enough heat to activate sprinklers. They say that this means the most deadly product of a fire, smoke, will in some cases increase and spread uncontrolled.

(Continued on p. 22)



Office floor stripped by blaze

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LIST OF FIRE RATING ORGANIZATIONS

1971

INSURANCE SERVICES OFFICE
(formerly compiled by
FIRE INSURANCE RESEARCH
and
ACTUARIAL ASSOCIATION)
160 Water Street, New York, N. Y. 10038

January, 1971

25053654

Alabama Inspection & Rating Bureau
L. Vernon Cantey, Manager
Washington Building, 125 Washington Street
P. O. Box 80
Montgomery, Alabama 36101
Phone: (205) 264-7331

Alaska
Pacific Fire Rating Bureau
H. S. Morr, General Manager
465 California Street
San Francisco, California 94104
Phone: (415) SU 1-8828

Arizona Fire Rating Bureau
(Division of Pacific Fire Rating Bureau)
Arvie Korstad, Manager
3500 North Central Avenue
Phoenix, Arizona 85012
Phone: (602) 264-7021

Arkansas Inspection & Rating Bureau
W. M. Harman, Manager
600 Tower Building, P. O. Box 2661
Little Rock, Arkansas 72203
Phone: (501) FR 6-1381

California
Pacific Fire Rating Bureau
H. S. Morr, General Manager
465 California Street
San Francisco, California 94104
Phone: (415) SU 1-8828

Colorado
Mountain States Inspection Bureau
R. H. Harmon, Manager
910 15th Street
P. O. Box 1740
Denver, Colorado 80201
Phone: (303) TA 5-6191

Connecticut
New England Insurance Rating Association
Robert H. Stocker, Jr., Executive Manager
Three Center Plaza
P. O. Box 2057
Boston, Massachusetts 02106
Phone: (617) 742-9560

Delaware
Middle Department Association of Fire Underwriters
Richard M. Kennedy, Executive Manager
Public Ledger Building
Philadelphia, Pennsylvania 19106
Phone: (215) MA 7-6800

District of Columbia
Insurance Rating Bureau of The District of Columbia
Kenneth R. Underwood, Manager
840 Woodward Building
Washington, District of Columbia 20005
Phone: (202) NA 8-1230

Florida Inspection & Rating Bureau
Arthur B. Jones, Manager
35 South Hogan Street
P. O. Box 539
Jacksonville, Florida 32201
Phone: (904) 356-4201

Georgia Inspection & Rating Bureau
Grayson H. Parker, Manager
1577 Northeast Freeway, N.E.
P. O. Box 29851
Atlanta, Georgia 30329
Phone: (404) 633-4171

Hawaii Insurance Rating Bureau
Frank H. Kuhn, Secretary Fire
700 Bishop Street
5th Floor, P. O. Box 4500
Honolulu, Hawaii 96813
Phone: 531-2771

Idaho Surveying & Rating Bureau, Inc.
W. S. Hayes, Manager
1007 West Jefferson Street
P. O. Box 1069
Boise, Idaho 83701
Phone: (208) 343-5483

Illinois Inspection and Rating Bureau
F. R. Marcon, Manager
175 West Jackson Boulevard
Chicago, Illinois 60604
Phone: (312) WA 2-4281

Indiana Rating Bureau
Ernest S. Pavy, Manager
320 North Meridian Street
Indianapolis, Indiana 46209
Phone: (317) ME 4-5305

Iowa Inspection Bureau
Glenn W. Bondesson, Manager
414 Insurance Exchange Building
Des Moines, Iowa 50308
Phone: (515) AT 8-0203

Kansas Inspection Bureau
M. E. Stubbs, Manager
625 Polk Street
Topeka, Kansas 66603
Phone: (913) CE 4-3405

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Kentucky Inspection Bureau
Joe D. Smith, Manager
940 Starks Building
Louisville, Kentucky 40202
Phone: (502) 587-1343

Louisiana Rating & Fire Prevention Bureau
Edwin T. Mitchell, Manager
P. O. Box 60730
1300 Pere Marquette Building
New Orleans, Louisiana 70160
Phone: (504) JA 5-2391

Maine
New England Insurance Rating Association
Robert H. Stocker, Jr., Executive Manager
Three Center Plaza
P. O. Box 2057
Boston, Massachusetts 02106
Phone: (617) 742-9560

Maryland Fire Underwriters Rating Bureau
Arthur C. Muhly, Executive Manager
First National Bank Building
Light & Redwood Streets
Baltimore, Maryland 21202
Phone: (301) LE 9-3554

Massachusetts
New England Insurance Rating Association
Robert H. Stocker, Jr., Executive Manager
Three Center Plaza
P. O. Box 2057
Boston, Massachusetts 02106
Phone: (617) 742-9560

Michigan Inspection Bureau
P. H. Kesselring, Manager
4000 Cadillac Tower (Zone 26)
Box 2719
Detroit, Michigan 48231
Phone: (313) WO 5-1300

Minnesota
Fire Underwriters Inspection Bureau
W. C. Freitag, Manager
12 South Sixth Street
Minneapolis, Minnesota 55402
Phone: (612) FE 2-7401

Mississippi State Rating Bureau
C. Burnell Egger, Manager
900 Bankers Trust Plaza Building
P. O. Box 1790
Jackson, Mississippi 39205
Phone: (601) 948-7030

Missouri Audit Bureau
W. M. Brown, Superintendent
1301 Pierce Building
St. Louis, Missouri 63102
Phone: (314) MA 1-3715

Missouri Inspection Bureau
T. E. Scott, Manager
1400 Pierce Building
St. Louis, Missouri 63102
Phone: (314) MA 1-0380

Montana Fire Rating Bureau
(Division of Pacific Fire Rating Bureau)
J. J. O'Leary, Manager
308 Strain Building
Great Falls, Montana 59401
Phone: (406) 453-2428

Nebraska Inspection Bureau
Emil C. Wagner, Manager
3016 Harney Street
Omaha, Nebraska 68131
Phone: (402) 346-8633

Nevada
Pacific Fire Rating Bureau
H. S. Morr, General Manager
465 California Street
San Francisco, California 94104
Phone: (415) SU 1-8828

New England Insurance Rating Association
Robert H. Stocker, Jr., Executive Manager
Three Center Plaza
P. O. Box 2057
Boston, Massachusetts 02106
Phone: (617) 742-9560

New Hampshire Board of Underwriters
Carl B. Smith, Jr., Secretary & Treasurer
105 Loudon Road
Concord, New Hampshire 03301
Phone: (603) CA 5-2703

New Jersey
Fire Insurance Rating Organization of New Jersey
T. M. Boyd, General Manager
744 Broad Street
Newark, New Jersey 07102
Phone: (201) MI 3-3600

New Mexico
Mountain States Inspection Bureau
R. H. Harmon, Manager
910 15th Street
P. O. Box 1740
Denver, Colorado 80201
Phone: (303) TA 5-6191

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New York Fire Insurance Rating Organization
K. O. Smith, General Manager-Secretary
110 William Street
New York, New York 10038
Phone: (212) WO 4-7060

North Carolina Fire Insurance Rating Bureau
C. E. Hibbard, Manager
226 South Dawson Street
P. O. Box 2021
Raleigh, North Carolina 27602
Phone: (919) TE 4-4313

North Dakota
Fire Underwriters Inspection Bureau
W. C. Freitag, Manager
12 South Sixth Street
Minneapolis, Minnesota 55402
Phone: (612) FE 2-7404

Ohio Inspection Bureau
P. E. Seidelmann, Manager
431 East Broad Street, P. O. Box 1290
Columbus, Ohio 43216
Phone: (614) CA 8-5441

Oklahoma Inspection Bureau
M. B. Rook, Manager
2000 Classen Bldg.
P. O. Box 559
Oklahoma City, Oklahoma 73101
Phone: (405) JA 8-3421

Oregon Insurance Rating Bureau
(Division of Pacific Fire Rating Bureau)
H. E. Marqueling, Manager
721 SW Oak Street
Portland, Oregon 97205
Phone: (503) CA 6-2651

Pennsylvania
Middle Department Association of Fire Underwriters
Richard M. Kennedy, Executive Manager
Public Ledger Building
Philadelphia, Pennsylvania 19106
Phone: (215) MA 7-6800

Puerto Rico Inspection & Rating Bureau
Fernando Garcia Sharp, Manager
P. O. Box 1333
San Juan, Puerto Rico 00902
Phone: 723-1830

Rhode Island
New England Insurance Rating Association
Robert H. Stocker, Jr., Executive Manager
Three Center Plaza
P. O. Box 2057
Boston, Massachusetts 02106
Phone: (617) 742-9560

South Carolina Inspection & Rating Bureau
Charles E. Koon, Manager
1332 Sumter Street
P. O. Box 202
Columbia, South Carolina 29202
Phone: (803) 252-8661

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South Dakota
Fire Underwriters Inspection Bureau
W. C. Freitag, Manager
12 South Sixth Street
Minneapolis, Minnesota 55402
Phone: (612) FE 2-7401

South-Eastern Underwriters Association
(Operates Bureaus in Ala., Fla., Ga. and S. C.)
Robert P. Harris, Manager
1577 Northeast Freeway, N.E.
P. O. Box 29972
Atlanta, Georgia 30329
Phone: (404) 633-4171

Tennessee Inspection Bureau
C. N. Mullican, Jr., Manager
4304 Harding Road, P. O. Box 127
Nashville, Tennessee 37202
Phone: (615) 298-3333

Texas
State Board of Insurance
Ned Price, Chairman
Durwood Manford
Charles D. Mathews
Phone: (512) GR 5-3949

Commissioner of Insurance
Clay Cotten
1110 San Jacinto
Austin, Texas 78701
Phone: (512) GR 5-2273

Utah Fire Rating Bureau
(Division of Pacific Fire Rating Bureau)
A. H. Bywater, Manager
1106 Boston Building
Salt Lake City, Utah 84111
Phone: (801) DA 2-5567

Vermont
New England Insurance Rating Association
Robert H. Stocker, Jr., Executive Manager
Three Center Plaza
P. O. Box 2057
Boston, Massachusetts 02106
Phone: (617) 742-9560

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Virginia Insurance Rating Bureau
E. D. Sommers, Manager
700 E. Main Building
P. O. Box 1198
Richmond, Virginia 23209
Phone: (703) MI 3-7471

Washington Insurance Examining Bureau, Inc.
William S. Cunningham, Jr., Manager
Alaska Building
P. O. Box 3967
Seattle, Washington 98124
Phone: (206) MU 2-5111

Washington Surveying & Rating Bureau
George W. Clarke, General Manager
1100 Alaska Building
P. O. Box 1168
Seattle, Washington 98111
Phone: (206) MA 2-8353

Washington, D. C.
(See District of Columbia)

West Virginia Rating Bureau
John K. Roberts, Manager
1120 Kanawha Boulevard East
P. O. Box 626
Charleston, West Virginia 25322
Phone: (304) DI 2-0116

Wisconsin
Fire Insurance Rating Bureau
Roger C. Krafft, Manager
615 E. Michigan Street
Milwaukee, Wisconsin 53202
Phone: (414) BR 6-3462

Wyoming
Mountain States Inspection Bureau
R. H. Harmon, Manager
910 15th Street
P. O. Box 1740
Denver, Colorado 80201
Phone: (303) TA 5-6191

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