

the
roofing spec

SEPTEMBER 1978

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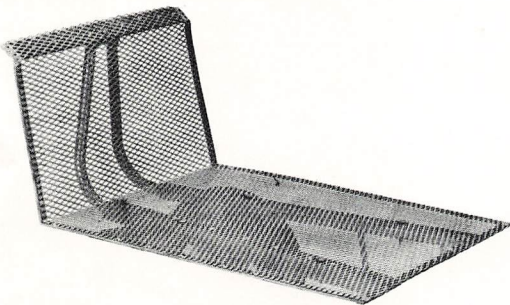
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- **TANKER SAFETY**
- **MID-YEAR REPORT**
- **ANALYSIS OF MINORITY & WOMAN
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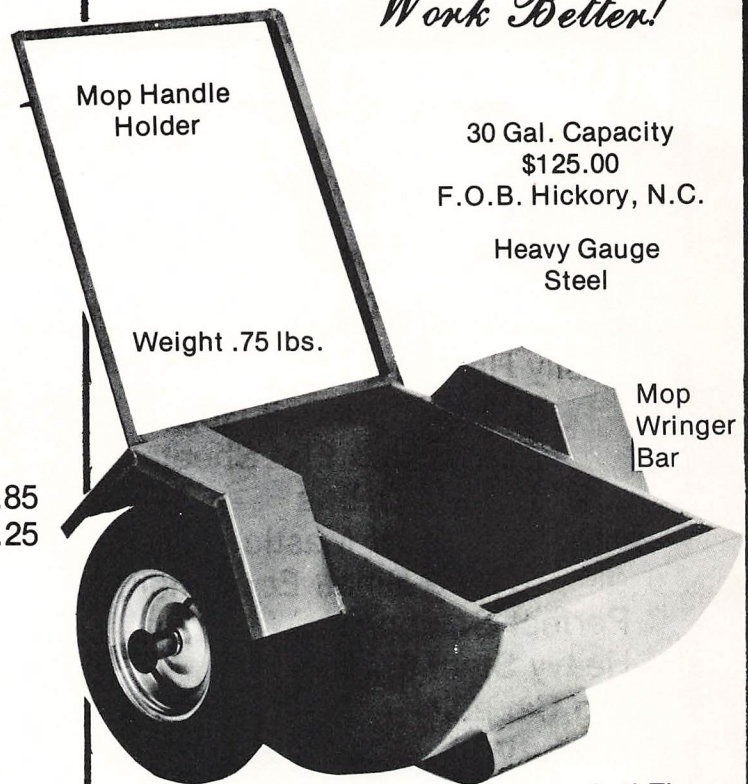
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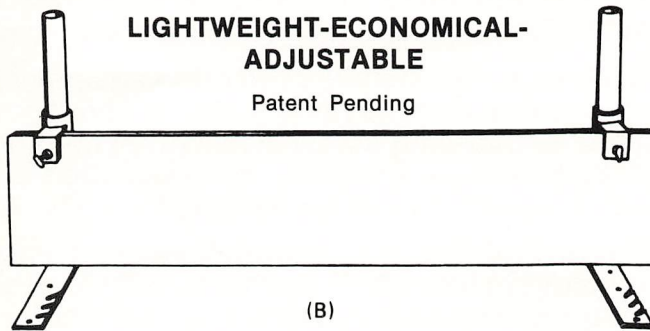
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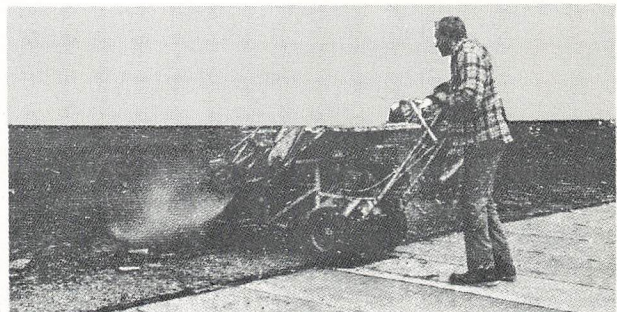


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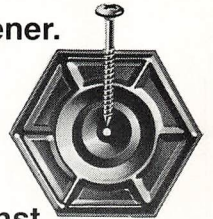
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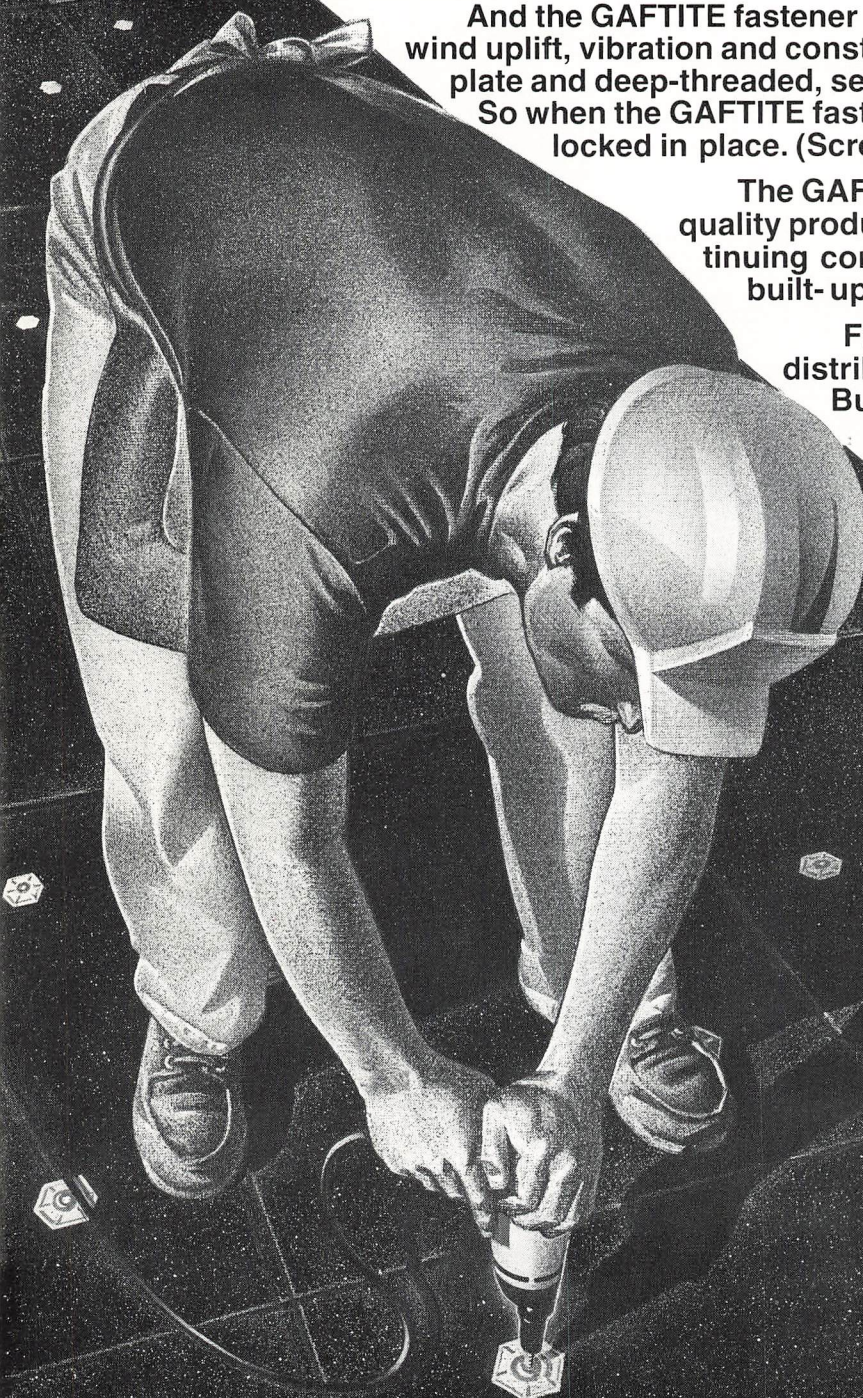
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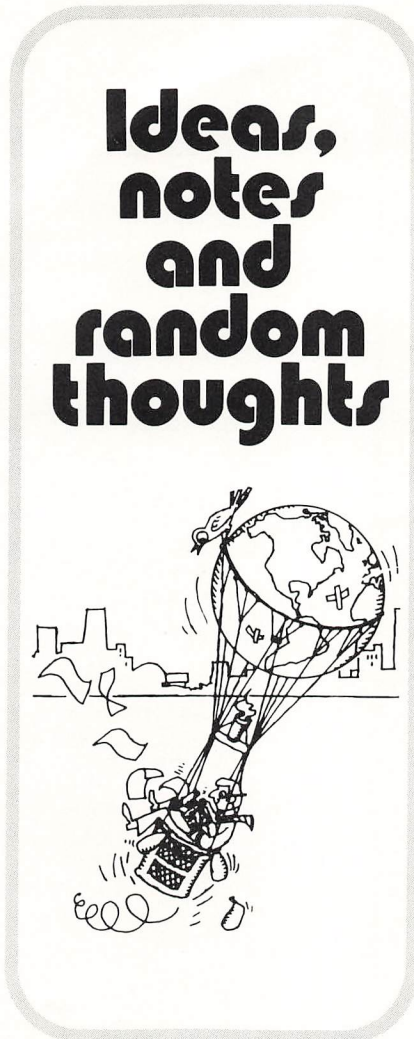
Coming Soon: Convention registration and room reservation forms for Houston, February 27 — March 2. Some exciting programs are being planned—Keynote speaker is John Connally—and you won't want to miss it. Be sure to check your mail and register early.

The duck, it seems, has been chosen to symbolize the nation's overworked, harassed but persevering small business people by the Council of Small Business of the Chamber of Commerce of the United States. "The duck," says Council chairman Frank Morsani, "finds himself a frequent target, not unlike small business. The duck does what many small business owners would like to do—go South for the winter. The duck finds safety in a flock. Small business people tend to be loners. We need to join the flock for safety."

Sounds like No Class: "Robert Strauss is President Carter's choice to fight inflation in this country. When asked by a reporter how he was going to get to Houston, Mr. Strauss replied, 'I'm going to fly first-class, unless they have a better class.' It seems Federal officials are ready for the rest of the country to make sacrifices to fight inflation as long as the officials don't have to."—Editorial by Station WSOC-TV, Charlotte, N.C.

President Carter gave two talks in Spanish in Panama recently. Asked how the President was doing, a White House aide replied: "He's doing as well as he usually does in English. Sounds like about third-grade level."

"In 1977, Congress enacted 223 new laws while the federal bureaucracy wrote 7,568 new regulations. That was a ratio of almost 34 regulations by unelected



bureaucrats for each law passed by elected officials."—U.S. Rep. John Myers.

"In short, the First Amendment does not 'belong' to any definable category of persons or entities: it belongs to all who exercise its freedoms."—Chief Justice Warren Burger of the U.S. Supreme

Court, upholding the right of corporations to speak out on ballot propositions.

Recent NRCA Mailings include:

- Action Information, August issue
- On Target Bulletin
- Tool Box Talk
- Membership Contest announcement
- Litigation Center survey
- Technical Developments Bulletin #4
- NRCA Membership Directory
- Congressional Review—September issue

Additional copies of most are available from the NRCA office.

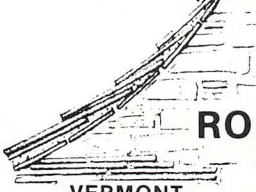
Your Tax Dollars at Work: The Consumer Product Safety Commission, the folks who have investigated, among other things, lawn mowers and matchbooks, are going to conduct an "intensive search" for an estimated 350,000 refuse bins in 40 states. Inspectors will search alleys, parking lots, apartments and schools to find bins that are prone to easy tip-over. Oh yes. There have been a total of 47 injuries and deaths attributable to unsafe refuse bins since 1971.

Superintendents' Conferences this year are scheduled for New Orleans on November 30 and December 1, and San Francisco on December 7 and 8. Using the theme, "Plan Ahead," the conferences will cover job set-up, equipment maintenance, safety, and effective communications, allowing a good deal of time for informal discussion sessions. Details will be coming soon.

And Finally: A new Department of Defense magazine for enlisted men tells of a retiring Army paratrooper so dedicated to his work he named his children Ripcord and Canopy. Honest.

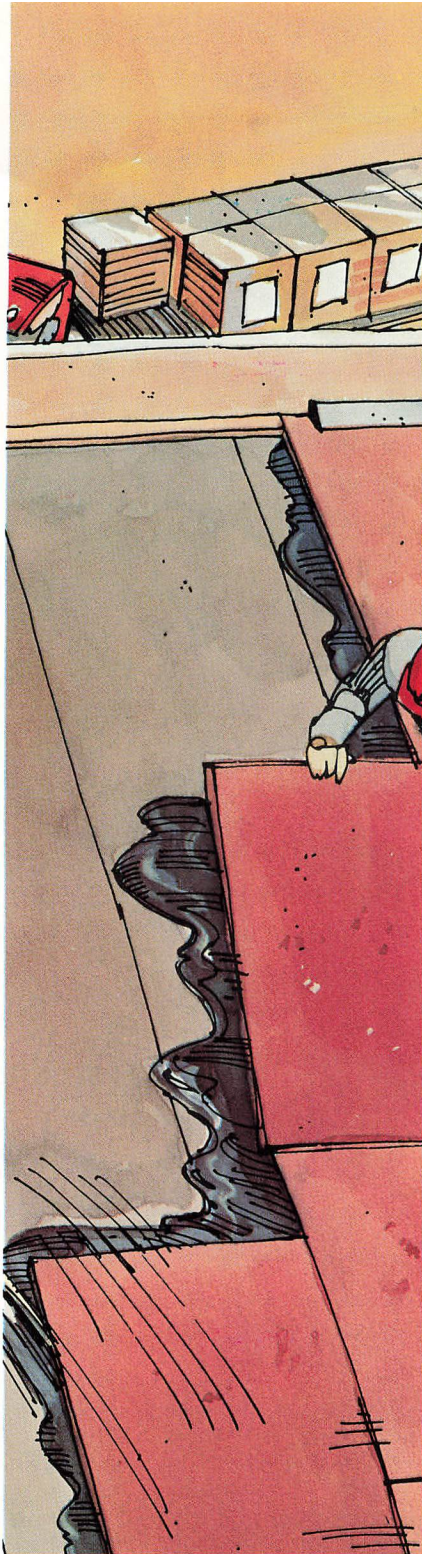


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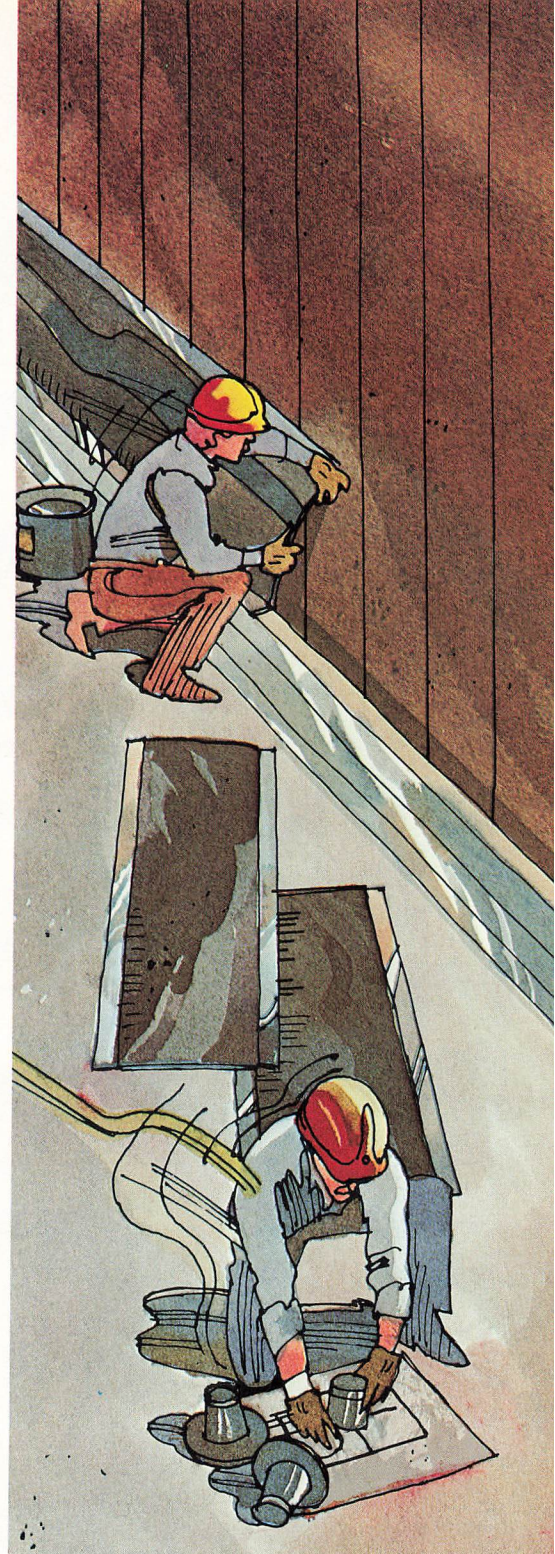


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MID-YEAR REPORT

Over 100 Officers, Directors, Past Presidents and Committeemen attended the NRCA Mid-Year Board of Directors meeting in Chicago in mid-July. Committee meetings began as early as Wednesday the 12th for some, and concluded with the Executive Committee meeting on Sunday the 16th. Nearly all of the NRCA committees met during that time, and the Board of Directors had two half-day sessions, covering committee and staff reports, as well as other association business. In addition, the Affiliate Executives group met for better than a day, discussing items of mutual concern, and making certain recommendations for NRCA policy. The following is a brief summary of the committee activities planned and in progress for the balance of the 1978-79 year.

MANUAL DEVELOPMENT

Eight different committees, each with its own section, are charged with updating and/or adding to the NRCA Roofing Manual. New sections will include Steep Roofing, Special Systems, Cold Systems, and Waterproofing. The Waterproofing section has been in the works for three years, and is near final completion. The Deck section has been completely reworked and professionally edited, and is also near completion. All other sections are on a timetable designed for final publication of a new Manual by next spring.

SAFETY & HEALTH

The Safety Committee has, for two years, been working with Parthenon Pictures in California to develop a series of safety films for roofers. Those films are now completed, endorsed by NRCA, and will be available very shortly. The films cover different job conditions, and will be available in 8mm., 16mm., or cartridges for hand-held viewers.

The Safety Committee has also completed work on guidelines for a Model Company Safety Program, which will be distributed to NRCA members this year. The Committee also has projects underway on hoisting safety, and promoting the NRCA Warning Line System—both by OSHA and by NRCA members.

The new Health & Environment Committee spent its initial meeting reviewing for comment a proposed publication of the National Institute for Occupational Safety and Health, "Health and Safety Guidelines for the Com-

mercial Roofing Industry." The committee will be concerned with examining bitumen emissions, and has begun to accumulate data and support resources.

TECHNICAL

A new Technical Data and Information committee has begun the process of devising an effective method of accumulating and indexing technical information for easy access by NRCA members. The committee is considering using a computer source for data retrieval. Also, technical bulletins will be

controlled by this committee, which has already cleared two new Technical Developments Bulletins.

The Specifications Review Committee has been charged with several important tasks: reviewing various industry documents, especially PSAE A-201, reviewing certain manufacturers' specifications manuals, developing a Code of Good Practices for contractors, and reviewing the NRCA Roofing Manual.

The Insulation/Energy Committee is continuing in its efforts to promote the theme, "Good Roofs Save Energy," on an industry-wide basis. In addition, it will coordinate efforts to determine proper



Many Board members worked for four or five days at the Mid-year meetings.



The Board listens to Ed Mertz's report.

continued

MID-YEAR REPORT

application methods for different insulation materials.

The Technical & Research Committee, comprised of the chairmen of the five technical committees and its own chairman, Ray Johnson, will coordinate the activities of the other committees and will establish the goals and objectives for long-range research programs. The T & R Committee will draw from the resources of NRCA Affiliate Organizations in developing specific research programs, and three such programs are underway to date: a materials testing program in conjunction with the Chicago Roofing Contractors Association, a test roof in conjunction with the Midwest Roofing Contractors Association, and a study of blistering over urethane insulation in conjunction with the Insulation/Energy Committee and the Western States Roofing Contractors Association.

EDUCATION

Three committees are responsible for educational seminars and ongoing educational programs for different seg-

ments of the industry:

- The Built-Up Roofing Conference Task Force has scheduled conferences—designed for architects, engineers, etc.—in Boston and Phoenix next January.

- The Superintendent's Conference committee has arranged for conferences in New Orleans and San Francisco this December.

- The Management Education

Committee is planning a three-day program in Puerto Rico in early January.

Also, the Educational Institute committee, with unanimous endorsement of the Board of Directors, has begun exploring, with other industry representatives, the establishment of an on-going institute to educate all aspects of the industry in the area of built-up roofing.



Affiliate executives were well represented, and presented many sound recommendations.

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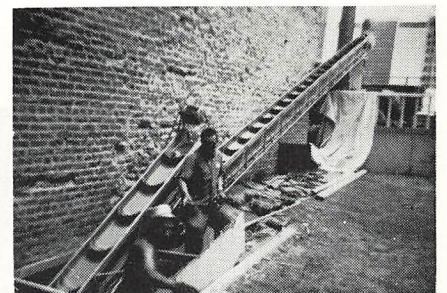
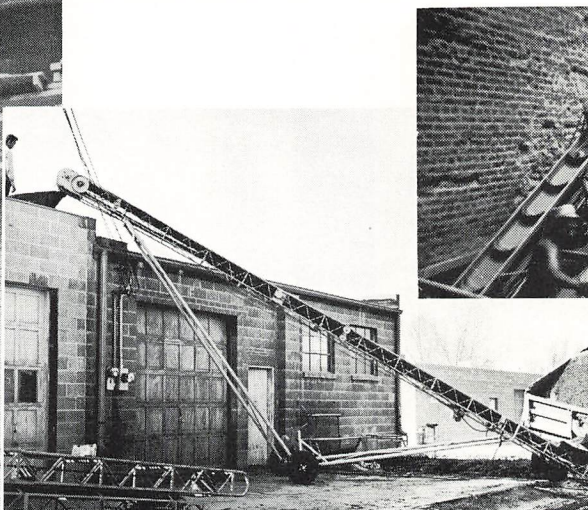
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President Kruger presides, while Senior VP Manson looks on.

OTHER

Two advisory groups—the Affiliate Advisory Task Force and the Associate Member Advisory Board—had productive meetings and made many suggestions for improving communications and relations in the industry.

The Membership Committee has established a membership promotion contest, and has put together a working list of 1000 good prospects.

The Litigation Center Committee is preparing to establish an information center, for contractors and their attorneys, who face the prospect of, or are involved in, litigation.

A new Industry Relations Advisory Council will serve as a resource for

NRCA public relations efforts.

The Apprenticeship Training & Recruiting Committee, working with the International Roofers Union, anticipates a Bureau of Apprenticeship and Training grant for roofing apprenticeship programs.

The new EDP Task Force will gather information from contractors who are using computers, to help out those who are contemplating it.

The Legislative & Government Affairs Committee, in addition to establishing NRCA policy on legislative matters and monitoring pending legislation, is conducting a study for the creation of a Political Action Committee.

The Insurance Committee continually evaluates NRCA group insurance programs, and provides assistance to contractors on the "Alert List," a unique warning system for those facing possible cancellation.

There are other committees as well, of course, and the brief descriptions above barely begin to cover the magnitude of NRCA involvement in the industry. In short...it was a busy few days for your elected leaders, with the promise of a productive year for the industry.



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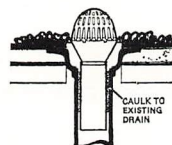
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NEW A-401

The American Institute of Architects has revised its Document A-401, Standard Form of Agreement Between Contractor and Subcontractor. In general, the changes clarify many of the previous provisions, and are seen as valuable to the subcontractor — especially in the areas of modifications and payment procedures. The American Subcontractors Association has prepared an excellent comparison of the old and new version, which NRCA will gladly make available to any member for the asking.

CONSTRUCTION ENTERING CRITICAL STAGE DUE TO INFLATION, HOUSING DECLINE

With the start of the second half of 1978, the cycle of U.S. construction activity has entered a critical stage. This is largely due to two factors—the resurgence of severe inflation throughout the economy in general and the construction industry in particular, and the impending decline in residential building.

McGraw-Hill Information Systems Company, in its second scheduled update of its *1978 Dodge/Sweet's Construction Outlook*, stated that while the value of construction contracts for the full year is not expected to reach \$147.7 billion—at current prices, a six per cent

for the year and total \$63.2 billion in contract value, Christie said that the total number of housing units started will be actually eight per cent below last year's level. "Contracting for nonresidential building which will be more sensitive than usual to the general economic climate in the second half of 1978," Christie observed, "is expected to total \$40.8 billion, a 16 per cent gain. For non-building construction, no change from the earlier February forecast of \$43.7 billion is anticipated."

DEMAND FOR TILE ROOFING INCREASES

As fire hazards have increased in certain sections of the United States so has the demand for tile roofing as a countermeasure. Moreover, improved production techniques, as well as production itself, are enabling manufacturers to cut delivery time to home builders.

Roger Thompson, secretary of the National Tile and Panel Roofing Manufacturers Institute, told members of the group attending its national convention in Las Vegas that architects and builders are specifying a greater use of concrete and clay tile for pitched roofs of both residential and commercial structures.

Thompson, who is also vice-president-marketing of Monier Company, the nation's largest producer of roofing tiles, in citing his own firm's product as an

true in Southern California where 25 per cent of the residential pitched roof market is going tile and 50 per cent of the commercial structures built during the past two years have tile roofs," Thompson stated.

He said incombustibility, longevity, availability and cost are the four principal factors, along with increased interest in energy savings, especially in the so-called Sun Belt states.

Fortunately, he asserted, improved production and production techniques of NTPRMI member companies have cut delivery time on roofing tile from nine months to 90 days.

Re-elected officers of the group were Jerome B. Greenebaum of Los Angeles, president; David A. Doyle of Oakland, vice president; Roger Thompson of Orange, Ca., secretary, and Warren Gibbs of Rialto, Ca., treasurer.

PROFITS OF BUILDING MATERIALS PRODUCERS INCREASED 25 PER CENT IN YEAR'S FIRST QUARTER

Makers of building products and materials posted a 25 per cent year-to-year earnings gain in the first quarter of this year, it was announced recently. Sales for the period advanced 13 per cent, fueled by a surge in residential starts in the last quarter of 1977 and growing strength in the non-residential sector, according to the latest report issued by

Industry developments

gain over 1977—a lower rate of contracting will be experienced in the second half of 1978. According to the firm, the decline on an annual basis may be as much as \$10 billion.

The report, prepared by George A. Christie, vice president and chief economist of the firm's F. W. Dodge Division, stresses that inflation will continue to push up the dollar value of construction contracts but that the physical volume of building has now reached a "bumpy plateau."

Explaining that although housing is expected to show a three per cent gain

example, said concrete tile's incombustibility has increased its use by home builders, particularly in such current fire hazard areas as Southern California, where last winter's heavy rains produced an extraordinary amount of grass and brush that have since dried and become extremely hazardous.

He pointed out that independent laboratory tests performed on typical tile roof assemblies have passed the Class A burning brand procedures under the Uniform Building Code Standard, and were classified as incombustible.

"The increased demand is especially

the F. W. Dodge Division of McGraw-Hill Information Systems Company.

An authority on the construction market, McGraw-Hill Information Systems is noted for its Dodge Reports on construction activity and Sweet's Catalog Files of building product information.

Based on a quarterly review of a group of 61 building products firms in 14 different product categories, the latest report revealed that profit gains of over 50 per cent were scored by makers of gypsum, cement, and heating-ventilating-air conditioning products.

continued



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The early start? KMM Membrane is packaged and palletized for easy transportation and handling. So there's only one step between getting to the job and getting started. And that's unloading. (In crowded downtown areas, the roofing membrane can be taken up to the roof in an elevator.)

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The painless cleanup? Extra KMM Membrane is simply rolled up and taken back to the shop. No waste of labor and no waste of material.

KMM Membrane comes in two grades—Standard and Aluminum. Both feature a tough plastic core sandwiched between two protective layers of bitumen.

Standard grade is easy to cut and shape around projections and requires an aggregate surface. Aluminum grade has a top layer of heavy embossed aluminum sheet and is recommended for sloped roofs and those too steep for aggregate surfacing.

Since Aluminum KMM Membrane also comes in cut widths specifically tailored for all

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INDUSTRY DEVELOPMENTS

According to George A. Christie, Dodge's vice president and chief economist, "Profits should continue to be strong throughout 1978, as residential construction peaks at an historically high level and commercial and industrial building gathers momentum."

First-quarter profits for firms in the 14 different groups reviewed by Dodge were:

Gypsum (2 companies)	..... up over 100%
Cement (6 companies)	..... up 77%
HVAC (3 companies)	..... up 72%
Multi-Products (6 companies)	..... up 33%
Tools & Hardware (5 companies)	..... up 31%
Glass (3 companies)	..... up 24%
Forest Products (5 companies)	..... up 14%
Heavy Equipment (5 companies)	..... up 13%
Aluminum (2 companies)	..... up 8%
Electrical Fixtures (5 companies)	..... up 8%
Controls (4 companies)	..... up 6%
Plumbing & Fixtures (4 companies)	..... down 1%
Coatings (4 companies)	..... percentage not meaningful, year-ago loss
Iron & Steel (4 companies)	..... percentage not meaningful, year-ago loss

GSA TO HOLD 5% RETAINAGE

Commencing June 29, 1978 the General Services Administration (GSA) will hold 5% retainage on progress payments for new contracts signed with the agency's Public Buildings Service.

"The move was taken without the benefit of hearings or advance notification to the construction industry," said Burton Fisher, President of the American Subcontractors Association, the organization largely responsible for convincing GSA it should eliminate retainage several years ago.

ASA has been assured the order was not instituted because of specific instances where the program of zero retention led to problems. Under heavy fire from the press and Congress over laxity in contract administration, GSA says it is taking the measure to show "greater control of job progress" and to "provide insurance against the contractor overestimating" something ASA maintains cannot occur as long as jobs are properly inspected before payments are authorized.

Another factor is that general contractors have been refusing to pass on to their subcontractors the benefits of zero retainage, defeating one of the purposes for which GSA decided to eliminate retainage in the first place.

In order to institute the new policy, the General Services Administration was granted permission to modify the Payments to Contractor clause of its General Conditions (Form 1139) and the Standard Form 23-A. The deviation is limited to GSA contracts; other federal agencies using the Standard Form 23-A will continue to hold back 10% with the authority to eliminate retainage "if the Contracting Officer finds that satisfactory progress was achieved during any period for which a progress payment is to be made."

"You will note that this deviation for the current Federal Procurement Regulations (FPR) clause is for a one-year period," said Robert F. McKinless, Chief of GSA's Construction Contracts Branch. The instructions issued by GSA to its Regional Administrators, however, are good for only six months, at which time they can be extended another six months if desired by the agency. "This

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Semi-Weathering Gray and Green		Mottled Green and Purple		Bangor Blue-Black		Unfading Green	
Royal Purple	Vermont Black	Mottled Gray	Rustic	Red	Flagstone Tile		

FULL ARCHITECTURAL SERVICE

Also —
Slate Cutters, Hammers, Rippers and Slate Hooks.

EVERGREEN SLATE CO. Inc.

"Since 1916"

Granville, New York, 12832

Quarries: Wells, Vt. • Shipping Station: Granville, N.Y.
Office: 34 North St. • Telephone: 518-642-2530

If you are a roofer, you shouldn't be without FLASHBAND.®

Flashband is a multi-purpose roofing material you can use for every roofing job.

- gutter lining and downspout repairs
- Around skylights

Flashband is a permanent roofing material. It's self-adhesive aluminum faced sealing tape, backed with a special asphalt to assure a water tight seal. The aluminum face protects the asphalt from weathering and cracking, thus assuring a permanent repair that does not dry out. In fact, it may outlast the other roofing materials it's being used with.

Flashband adheres to practically all building surfaces with a grip that gets stronger with time.

Installation is fast; no special tools are needed. Cut to size, peel off release paper, position and smooth down by hand. Flashband will mold easily to irregular surfaces. Masonry will require an asphalt specification primer.

Available in bright aluminum or grey finish, in 33 foot rolls. Widths ranging from 2" to 24".

For literature and pricing, contact your roofing distributor.
Or, call or write us direct.

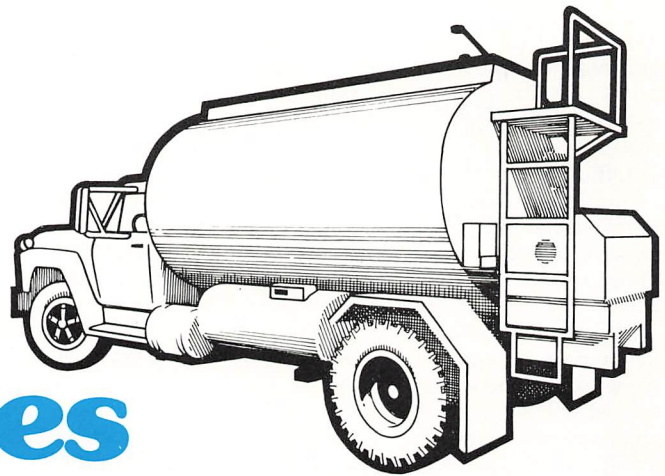
- deck joint stripping
- counter flashing
- coping joint sealing
- sealant for expansion joints
- roof patching
- gravel stop stripping
- through-the-wall flashing
- chimney and roof flashing



EVOLVE INC.

401 Kennedy Blvd.
Somerdale, NJ 08083
(609) 784-8200

Safe operating procedures for tankers



by Melvin D. Stevenson
President, Liquid Asphalt Systems, Inc.

CAUTIONS

Operating Procedures

Job Site Set-up:

NEVER FIRE BURNER unless a minimum of 6" of material covers flues. If Tank's contents are low, the Tank being uphill or downhill could expose the flues. Shut Burner down and check, if there is any question as to level.

If the Tank has set up cold (asphalt has cooled to where the Pump will not circulate material):
a. unlock and crack open fill manhole.
b. start Burner, following burner operating procedure.
c. close and lock fill manhole opening, ONLY after Pump can be started to circulate material.

During Operation:

DO NOT exceed the material manufacturer's suggested maximum temperature.
DO NOT open manhole for inspection of a Tank that is in process of being brought up to temperature.
DO NOT start Pump unless roof pipe is in position or discharge plumbing is plugged.

NEVER USE AN OPEN FLAME ON TOP OF TANK FOR ANY REASON!
If a freeze-up occurs, disassemble and remove all piping to the ground for thawing.

General operating Procedures:

Use caution when filling an already HEATED empty Tank. Do NOT stand over manhole.
DO NOT move Tank without securing all manholes. (All are close and/or locked.)

Raise suction foot after each working day. Relocate to proper operating height at the beginning of the next working day (6" above flue level).
Allow Tank's heating system to maintain material temperature at all times (provided material level is at least 6" above flues), either on the job site or in your yard, to eliminate:

- Tank's contents setting up cold.
- lag time at the beginning of each working day.

Allow time for flues to cool to material temperature, after firing Burner, before attempting to move tank.

The refilling of Tank, if necessary, should be done at the end of the day. This will allow the Tank to automatically recover to the desired material temperature overnight.
Clean Tank at the recommended intervals to insure proper and safe operation. (Consult Service Manual for "Tank Cleaning Procedures.")

Check and maintain Emission System as recommended. (Consult Service Manual or Emission System placard for "Maintenance Procedures.")

In case of a fire, NEVER USE WATER!

- use Dry Power Extinguisher type B.C.
- keep manholes closed, to help suffocate fire.

OPERATING INSTRUCTIONS

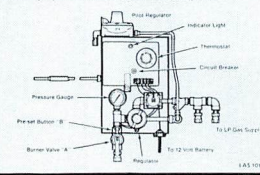
Semi-Automatic Burner Controls

- Attach hose assembly to liquid withdrawal propane tank.
- Turn on main supply valve at propane tank.
- Set thermostat to the desired temperature.
- Make sure main burner valve ("A") is in the "OFF" position (down).
- Push pre-set button ("B") until gauge shows gas pressure. Normal burner operating pressure is 20 PSI.

Caution: NEVER EXCEED 20 PSI.

If the Tank has set up cold (asphalt has cooled to where the Pump will not circulate material):
a. unlock and crack open fill manhole;
b. REDUCE burner regulator pressure to 7 PSI;
c. heat tank (at 7 PSI) until Pump can be started, to recirculate material;
d. after Pump has started recirculating, return burner regulator pressure to 20 PSI;
e. close and lock fill manhole opening.

- Continue to hold in button and light burner pilot. Release button ("B") after "Indicator Light" goes off.
- Open hand valve on auxiliary burner if desired.
- Open main burner valve ("A") slowly until fully open. Both burners will light.
- When the desired temperature is reached, the burners will automatically shut down. In order to re-light, repeat steps #4 through #6.
- Turn off propane tank at end of the working day.



But this danger can be virtually eliminated if the proper operating procedures are followed.

Explosions, of course, are just one potential danger. There are always hazards when working with and transporting large quantities of a flammable material. Still, by following the procedures below, any potential risks will be minimized, and the contractor will be able to get the most effective use of an important investment and valuable piece of equipment.

AUTHORIZED OPERATORS

All operators should be made aware that the equipment can be dangerous if it is not properly used and serviced. It should be operated and maintained only by persons who know how to use it. Operating and safety manuals should be kept on the equipment, and should be read and understood by anyone using it. If such manuals cannot be found on the equipment, they should be obtained from the person in charge before the equipment is used.

FILLING

Filling Empty Tanks (top fill):

1. Never fire the burners of a tank that is being filled. An overflow is possible that would spill into the burners, causing a serious fire.

2. Make absolutely sure that there is no water in the tank before you start to fill. Water can cause foaming, and if enough water is present, it can turn to steam, causing the material to spew out of the manhole.

3. Always allow enough room in the tank for the expansion of the material as it is heated.

Safe operating signs, such as these made for Taurus Tankers, are provided by tank manufacturers and should be kept clean and visible.

Hundreds of tanks are filled and fired every day by mechanics or other operators who have not been thoroughly trained in the many phases of tanker operation or the hazards that could endanger the operator from improper operation. There is potential for danger at each step of operation—unless the operator is made aware of the correct procedures to follow.

With tankers, the most severe accident is an explosion. In the recommended operating procedures that follow, I have given the greatest attention to preventing explosions, not only because of their potential severity, but because they can be prevented with the necessary precautions.

For an explosion (referred to as automatic ignition) to occur, the bituminous material must reach temperatures which range from about 625° to 925°. Once the material has been

heated to these automatic ignition temperatures, and oxygen is added, you have the potential for an explosion, provided the ratio of the ingredients is correct.

Now where do these high temperatures come from? First, the majority of all tankers (and kettles as well) manufactured today have immersion-type tube heating systems. These systems are capable of having surface temperatures far exceeding the automatic ignition temperature of the bituminous material. The heat of the tubes contacting the material produces super-heated vapors that are highly flammable when coupled with oxygen (which can be present in any kettle or tanker). The exact ratio of oxygen, fuel (the super-heated vapors), and required temperatures will result in an explosion.

SAFE TANKERS

4. When filling an already heated empty tank, allow enough time for the flues to cool down before filling again. If the flues are hot enough, it is possible that a flash fire could occur.

5. It is a good practice to stand away from the manhole when filling. Always open the manhole on a hot tank from behind the manhole. If a flash occurs, the lid will deflect the flame away from your body.

6. Use extreme caution when filling tank with material that exceeds the manufacturer's suggested maximum. A flash fire or explosion could occur.

MANHOLES

Make sure all manhole covers are closed and secured before moving the tank.

DRIVING A TRUCK OR TRAILER MOUNTED TANK

Use caution when driving a truck or trailer mounted tank full of hot material. Remember that you are hauling a live load that is continuously moving.

1. All truck and trailer mounted tanks should have full surge baffles and the lowest possible center of gravity.

2. Obey all state and federal laws regarding hauling of a flammable

material.

3. When using the brakes, avoid any abrupt stops that would cause the load to surge forward, making it difficult to stop because of the additional load shift. Allow plenty of braking time.

4. Use caution when driving on rough job site terrain.

5. Making turns while driving can be hazardous because of the side movement of the material. Use extreme caution and slow down when making turns.

FIRING

Cautions to observe while heating or operating an already heated tank:

1. Never fire burners unless there is at least 6" of material covering the flues. Firing burners with flues exposed will let the flue surface temperature exceed the automatic ignition temperature of the product. This will produce super-heated vapors from the material, and with the proper amount of oxygen, there is the possibility of an explosion.

2. Manually operated burners require an operator present at all times.

3. It is a good rule of thumb not to increase the burner regulator pressure to exceed 20 PSI.

Generally speaking, a burner operating in excess of 20 PSI is using

more fuel than necessary and not improving the heating efficiency of the tank. Also, you could be super heating the asphalt, which could result in a fire or explosion.

4. Move 100# Cylinders from racks prior to firing the tanker at least 10' away.

5. Check all gas lines for leaks prior to start up.

DO NOT fire burners while in transit.

HEATING

Use extreme caution in heating the tank when cold material is present.

1. A cold mass of material being brought up in temperature too fast can produce super-heated vapors that collect under the Melt due to the lack of circulation of material in the flue area. When the vapors do penetrate through the top of the Melt, you have oxygen present above the melt and you have the possibility of an explosion.

2. A good policy to follow when heating a cold tank is as follows:

When cold material is present, reduce the burner regulator pressure to 7 PSI and bring the mass to liquid slowly, which will keep the flue temperature lower and allow the mass to heat more evenly, reducing the chance for super-heated vapors to be present.

continued

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this is the combination.

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MARCH 1978
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BAKERSFIELD, CA 93308

**CONSOLIDATED
FIBER GLASS
PRODUCTS CO., INC.**

SAFE TANKERS

MAXIMUM TEMPERATURE

DO NOT exceed the material manufacturer's recommended maximum temperature while heating.

DO NOT OPEN MANHOLE

DO NOT open the manhole of a tank that is being brought up in temperature. Keeping oxygen away from the melt reduces the chance of fire or explosion.

TURN OFF GAS

It is a good practice to turn the gas supply off at the end of the day when using manual and semi-automatic controlled burners.

Do not leave tanks burning or unattended that are equipped with manual or semi-automatic burners.

TURN OFF BURNERS

Turn off burners and pump engine before re-fueling the pump engine or changing propane tanks.

STARTING PUMP

Do not start pump unless roof pipe is in position or piping on top is plugged.

1. Generally, tankers are equipped with direct drives (engine to pump). Whenever you start the engine, the pump will immediately start pumping.

2. If the top plumbing is not plugged, or the roof pipe is not in position, you will get a certain amount of material out the pipe on top of the tank due to back-up from the plug type valve.

OPEN FLAME

Do not use an open flame on top of the tank at anytime.

1. There is the possibility that an open flame could ignite vapors that can or cannot be seen. These vapors can set off the vapor within the tank, causing an explosion.

2. If a freeze up occurs in the piping on top of the tank, the piping should be removed to the ground for thawing.

TRANSPORTING A NEARLY EMPTY TANK

1. When you must transport a tanker that has recently been fired and emptied, allow enough time for the flues to cool prior to moving the unit.

2. A hot flue surface could cause super-heated vapors and by having oxygen present in the tank while you are moving the tank an explosion could occur.

IN CASE OF A FIRE

In case of a fire in or about a tank:

1. Never use water. It can turn to steam, causing an explosion.

2. Use a dry power chemical only.

3. Cover any exposed opening to shut off the oxygen and the fire will go out.

CLEANING OF ANY TANK

DO NOT enter tank to clean, inspect or repair until:

1. All manholes have been either opened or removed to allow all fumes to escape. Mechanically ventilating the tank (exhaust fan or blower) is recommended;

2. The tank has completely cooled;

3. Personnel entering the tank are equipped with a breathing apparatus or the tank is being mechanically ventilated while personnel are inside.

NOTE: Mechanical ventilation of tank or use of a breathing apparatus is highly recommended. Dangers exist from:

a. prolonged exposure to asphalt fumes and dust.

b. Poor ventilation or an inadequate volume of oxygen in atmosphere of tank.

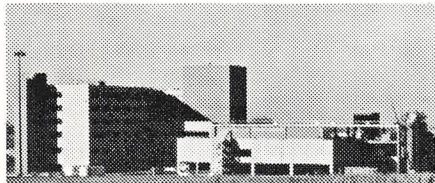
4. Standby personnel are available (properly equipped) to observe worker(s) in the tank, to assist in case of an accident or emergency.



THE LUCAS TAPERED SYSTEM

BROUGHT A NEW CONCEPT IN ROOF DRAINAGE TO

The DePaul
Community
Health Center
in St. Louis
County,
Missouri



WHEN YOUR JOB CALLS FOR A ROOF DECK WITH:

- positive drainage
- increased thermal values
- incombustibility

Use Lucas tapered panels produced from perlite board with 1/8", 1/4", or 1/2" incline, which may be combined with urethane board for maximum thermal efficiency. The LUCAS TAPERED SYSTEM eliminates most ponding conditions and contributes to a longer life expectancy of the roof.

Contact your local representative by calling
Sweet's BUYLINE® 800 Number

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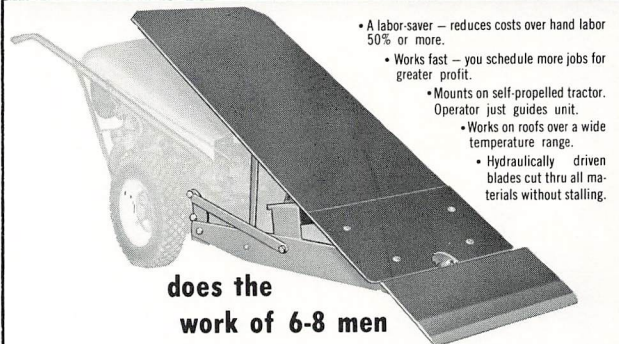
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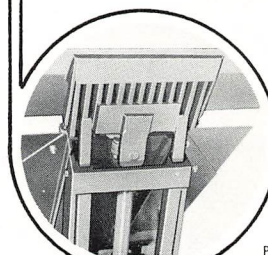
Nieman Power Roof Remover...*

*Patent No. 3,779,605



- A labor-saver — reduces costs over hand labor 50% or more.
- Works fast — you schedule more jobs for greater profit.
- Mounts on self-propelled tractor. Operator just guides unit.
- Works on roofs over a wide temperature range.
- Hydraulically driven blades cut thru all materials without stalling.

does the
work of 6-8 men



POWER ROOF REMOVER is equipped with two cutting tools to remove roofing down to the insulation or down to the decking, even if the insulation is solid matted. A toothed blade (left) is used on most roof removing jobs when job conditions require its bull-dozer action. The wide cutting blade (above) is used mostly when removing fiberglass insulation and when removing roofing down to the insulation.

Nieman
MANUFACTURING COMPANY, INC.

P. O. Box 64, New Prague, MN 56071 Telephone: (612) 758-4791



62' CONVEYOR

by

GARLOCK

FEATURING

- Garlock quality
- Electric brakes
- 25 H.P. Onan engine which runs at constant rpm's for maximum efficiency and long life
- Adjustable belt speed (from very slow to very fast)
- Outriggers for stability in wind
- Push button belt controls at top and bottom

SPECIFICATIONS

Discharge height .....	.40'
Belt speed .....	.400 fpm
Tires .....	.9 X 14.5 - 12 ply
Overall width .....	.7 ft., 8 in.
Overall length .....	.63 ft., 6 in.
Hydraulic oil	Automatic transmission fluid
Wt. ....	.6,000 pounds
Engine .....	.25 H.P. Onan



Handles rolls or insulation to high discharge height.



ALSO INCLUDED

- Battery (standard car battery)
- Gravel hopper (secures to conveyor)
- Telescoping boom support leg

OPTIONS

- Towing tower for pickup truck
- Tail lights and license bracket
- #78 Gravel Hopper w/legs

GARLOCK

GARLOCK EQUIPMENT CO.
 3250 GORHAM AVE. S. MINNEAPOLIS, MN 55426
 PHONE: (612) 929-0496

New Members

The following have been approved for membership in NRCA
between June 12 and August 14, 1978.

Alpine Roofing Inc.
St. Clair, Michigan

Axtec Roofing Co.
Ventura, CA

Blue Shield Industrial
Redding, CA

Brannon Brothers Roofing Co., Inc.
Rome, GA

R. L. Carney Co.
Nacogdoches, TX

C & M Roofing Co., Inc.
Pinehurst, MA

Carlson & Reynolds Inc.
Hillsboro, OR

Chippewa Roofing
Chippewa Lake, OH

Cumberland Valley Roofers Inc.
Carlisle, PA

Consolidated Materials &
Equipment Ltd., Inc.
Memphis, TN

Bruce Dally Roofing Inc.
Naples, FL

Duffy's Inc.
Port Arthur, TX

Dunlap Roofing & Flooring Co., Inc.
Macon, GA

Eastern Roofing Corporation
West Hartford, CT

Eastern Roofing Corporation
Norfolk, VA

Faust Roofing Inc.
Miami, FL

Graham Roofing & S/M Co.
Spencer, NC

Haukom Roofing Co.
San Gabriel, CA

C. R. Huffer Roofing Inc.
Columbus, OH

Inter-Mountain Roofing Inc.
Phoenix, AZ

Jones Roofing Co., Inc.
Alexandria, VA

Intin Sheet Metal Co., Inc.
Houston, TX

Johnson & Mathews
Roofing & S/M Co., Inc.
Athens, GA

Lehsar Roofing
Everett, WA

Mid-State Roofing & S/M
Oklahoma City, OK

Marland Roofing & Siding Co., Inc.
Glen Mills, PA

Matthews Roofing
El Dorado, KS

Robert D. Monahan Associates Inc.
Hudson Falls, NY

Navasota Roofing & S/M Co., Inc.
Navasota, TX

Palmer's Roof-Rite Co., Inc.
Miami, FL

Quality Roofing Co., Inc.
Santee, CA

Quality Roofing
Tahoe City, CA

Radonich Insulation & Roofing
Los Gatos, CA

Schuyler Construction Co., Inc.
Greenwich, NY

Sirner's Sheet Metal Shop
Chicago, IL

R. A. Startt Co.
Mahopac, NY

Suburban Roofing Co.
West Orange, NJ

Weathergard Inc.
Monroe, NC

Yakima Valley Roofing Co., Inc.
Union Gap, WA

F. M. York, Co.
Brooklyn, NY

INDUSTRIAL/INSTITUTIONAL

Howard County Public School System
Columbia, MD

University of Wisconsin System
Madison, WI

INTERNATIONAL

Briggs Amasco Ltd.
Surrey, England

Roofing & Coating Industries n.v.
Antwerpen, Belgium



WALL-BOND
TEXTURED
Stainless Steel
**THRU-WALL FLASHING
& WATERPROOFING**
FOR ALL FLASHING APPLICATIONS
Manufactured By
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One Broadway, Cambridge, Mass. 02142 Tel. (617) 491-3150

*The Pink Stuff
is available!
We've doubled
production.*

THE PINK STUFF

The two important things to know about roof insulation today.

THE GREEN STUFF

The **Pink Stuff** is Thermax[®] Roof Insulation. From Celotex. It's the most efficient on the market with a **Factory Mutual Class 1** fire rating.

We don't have to tell you the critical importance of insulating efficiency today and in years to come. The government is making it quite clear.

So start now with a simple fact ... the most efficient roofing insulation is foam, and one of the most efficient, stable, practical foamed insulation boards comes from Celotex.

Over new or existing roofs, Celotex will help you get the maximum insulation value at costs equal to or below the less efficient insulating systems you may use now.

High R factors.

One look at the chart comparing insulating value per thickness of Thermax, Tempchek, fibrous glass, composite (foam plus perlite), and fiberboard roof insulations shows how The Pink Stuff and The Green Stuff provide up to 2.5 times as much insulation value per inch.

Strong. Stable. Lightweight.

Both Thermax and Tempchek Roof Insulations are reinforced with glass fibers for extra dimensional stability. And both are 3 to 6 times lighter than less efficient insulation.

Thermax Roof Insulation...the only FM-rated foam insulation (non-composite) for Class 1 over steel.

Thermax Roof Insulation is the first non-composite foam insulation in

the U.S. to qualify for Factory Mutual Class 1 fire rating installed directly over unsprinklered steel decks.

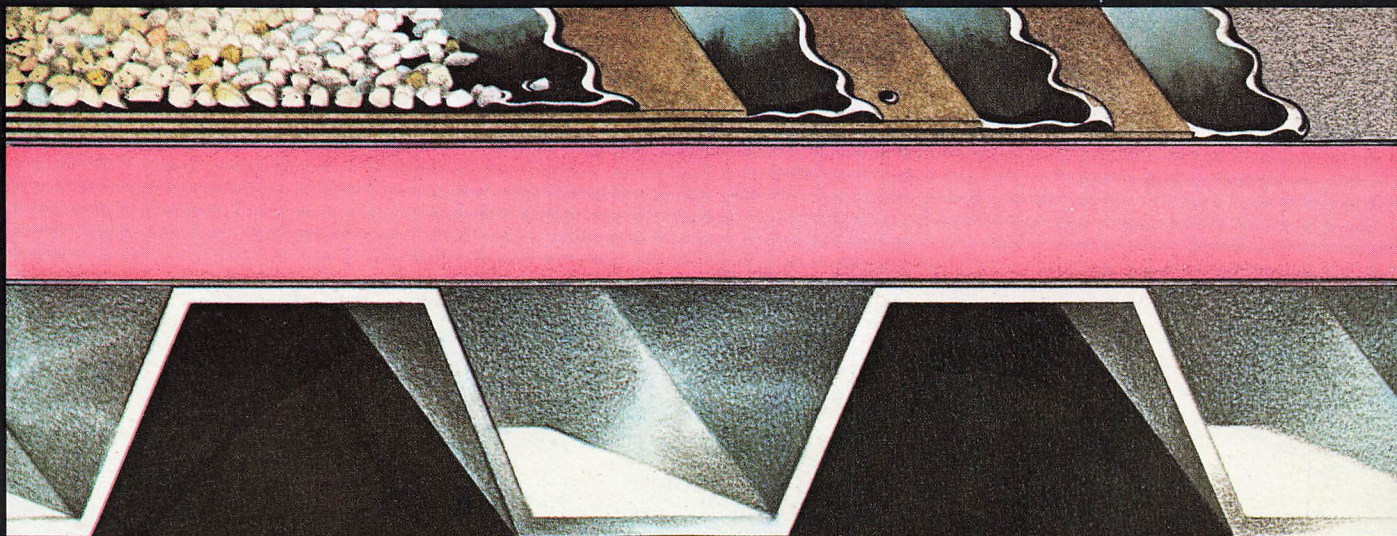
Why pink? To dramatize the exclusive isocyanurate foam core, sandwiched between two asphalt-saturated inorganic facers. It gives you the high insulation value of urethane, plus fire rating, without the need for a second material like perlite between it and the steel deck.

The best way to fasten Thermax to the deck is with Insulfast* nails, providing maximum protection against wind uplift and lateral movement. Mechanical attachment with Insulfast nails is FM approved.

With less deadload factor, you not only have easier installation, you can reduce the size and gauge of roof supports, have greater flexibility in choosing heating and air-conditioning equipment, and can reduce the size of metal or wood fascia around roof perimeters.

Thermax Roof Insulation costs no more for comparable insulation values than other fire-rated materials, is easy to cut and handle, gives more footage per truckload, and uses less warehouse space. All of which means a better application per dollar for everyone.

*Product of Berryfast, Inc.



The **Green Stuff** is Tempchek[®] Roof Insulation. From Celotex. It's the most efficient on the market for every other application.

When you don't need fire-rated insulation, you still need Celotex for high R factor. In Tempchek Roof Insulation.

Same high R factor. With some differences.

Tempchek is a lightweight urethane foam, reinforced with glass fibers to make it just as strong and dimensionally stable as Thermax. Check the chart again and you'll see that it has the same top-rated insulating efficiency per thickness as Thermax.

With the same lightweight, easy cutting, easy handling, easy application characteristics as Thermax Roof Insulation. And the same compatibility with hot asphalt.

The differences? Tempchek has organic instead of inorganic facers, a different chemical composition, and a different color, all simply because it doesn't have to be fire-rated like Thermax.

And one more thing.

Lower costs.

It costs less per application than conventional, lower-efficiency materials. And not just because of the lighter weight. Tempchek boards measure 3' x 4', so more roof area can be covered in less time than with normal 2' x 4' cuts.

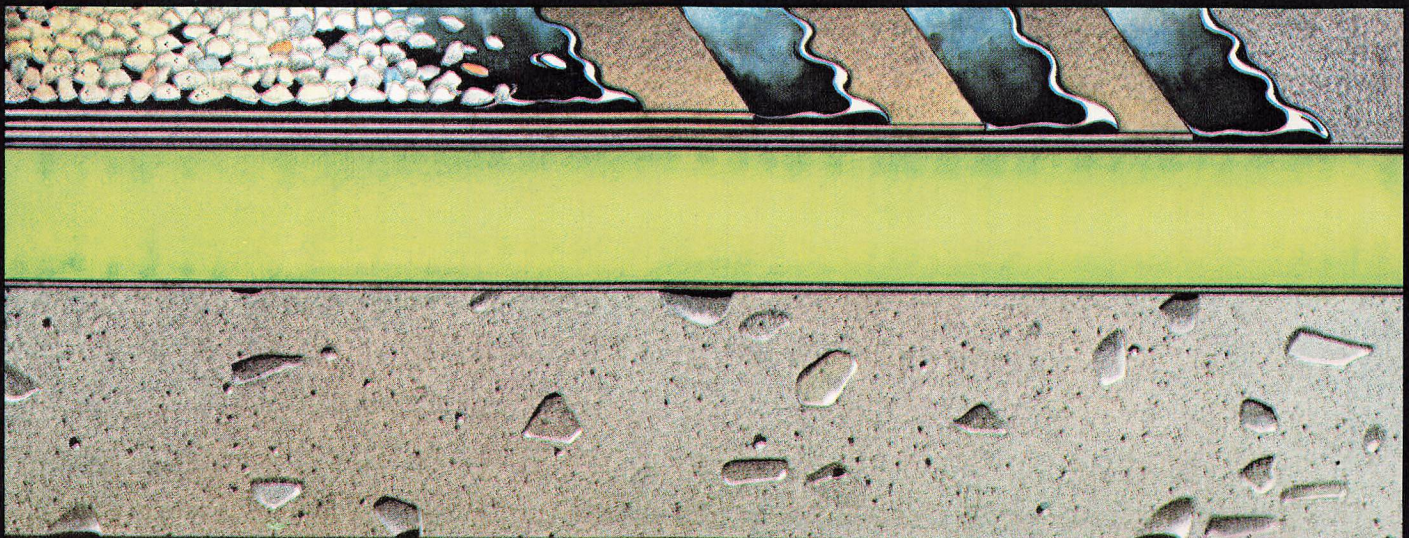
R FACTOR COMPARISON (Typical Thicknesses)

"R"	Thermax Roof Insulation [†]	Tempchek Roof Insulation [†]	Perlite & Urethane Composite Board	Fibrous Glass	Perlite & Fiberboard
8.3	1.2"	1.2"			3"*
10.0	1.4"	1.4"	1.9"	2-1/4"	4"*
11.1	1.6"	1.6"		2-7/16"	
12.5	1.8"		2.2"		
14.3	2.0"	2.0"	2.5"		
16.7	2.3"	2.3"	2.8"		
20.0		2.8"	3.2"		
25.0		3.0"			

*In two layers.

†NOTE: Under normal use, Thermax and Tempchek Roof Insulations will retain an average of 80% of their thermal resistance (R factor) values.

Another surprise on the next page. The most effective way to use the most efficient roofing insulation on the market. From Celotex.



This is the Upside-Down Roof. From Celotex. It's the most effective way to use the most efficient roofing insulation on the market.

The most effective place to put roofing insulation is on top of the roof assembly. It protects the membrane on new or existing roofs like no right-side-up roof ever could.

But it requires an insulation product that is able to withstand moisture, hot asphalt applications, the weight of conventional roofing equipment, and traffic. Tempchek Roof Insulation does all those things.

What makes the most protective roof practical?

1. A conventional application of 300 lbs. of slag or 400 lbs. of gravel per 100 sq. ft. protects roof installations from flaming brands, harmful rays of the sun, and impact damage caused by hail and roof traffic. Approved by U.L. as Class A Roof Covering.
2. Top pouring of hot asphalt keeps gravel in place and provides first line of protection against moisture.
3. New Tempchek Roof Insulation is what makes the Celotex Inverted Roof Assembly work so well. It provides thermal protection, dimensional stability and resistance to moisture.
4. Flood coat of hot asphalt keeps Tempchek Roof Insulation in place and provides more protection against moisture. The asphalt is

beneath the insulation and will not alligator.

5. Built-up roofing membrane provides the third line of protection against moisture. Serves as a vapor barrier as well. Roof membrane is protected from thermal shock, punctures and blistering by the Tempchek insulation above.
6. The Celotex Inverted Roof Assembly systems are readily applied to most conventional nailable and non-nailable decks. Shown is a concrete deck, with asphalt primer.

Celotex provides a 10-year Inverted Roof Assembly guarantee. For a specimen, and complete details about Thermax and Tempchek Roof Insulations, and the Inverted Roof Assembly, contact your Celotex representative or write:

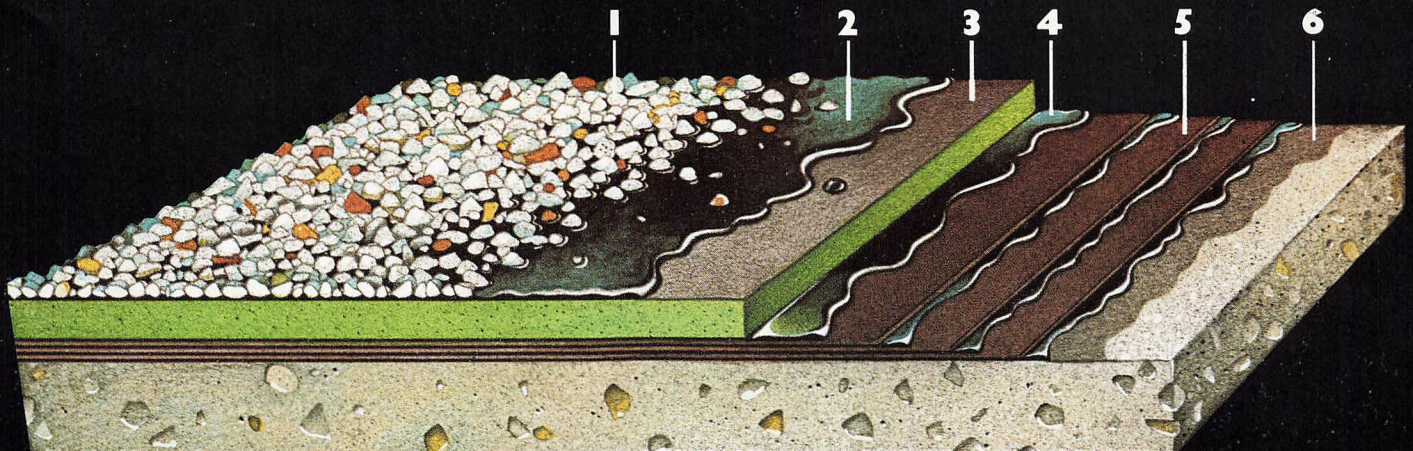
John Hasselbach
The Celotex Corporation
1500 N. Dale Mabry Highway
Tampa, Florida 33607.

Celotex[®]

BUILDING PRODUCTS

The Celotex Corporation, Tampa, Florida

a Jim Walter company



News from affiliates

Eastern Pennsylvania

The Roofing Contractors Association of Eastern Pennsylvania elected the following officers to serve for the year ending March 31, 1979:

President John F. Ostroski, Jr.
Mid-Valley Roofing & Supply Co.,
Scranton, Pa.
Vice President . . . John F. Gooding, Jr.
Gooding, Simpson & Mackes, Inc.,
Ephrata, Pa.
Secretary-Treasurer
Robert E. McNabb
Allentown Roofing & Sheet
Metal Co., Inc., Allentown, Pa.

The association reports it is also planning a series of regional meetings with architects and general contractors to discuss roofing design, specifications, and problems.

Florida

Three roofing contractors have been awarded the title of Certified Professional Roofing Contractor (CPRC) by the Florida Roofing, Sheet Metal and Air Conditioning Contractors Association (FRSA). The three are:

Gary R. Albritton, Vice President of Albritton Roofing Company, Inc., of St. Petersburg. Albritton, 29, a second generation CPRC who has 13 years of experience in the business, having performed part-time work for the company his father, W. L. Albritton, CPRC, founded in 1953.

David W. Merlin, an estimator with Roth Brothers of Florida, Inc., in Tampa. Merlin, 25, is a native of Tampa who has estimating experience with two other Florida roofing firms.

Roger W. Nolan, general manager of Tom Gustafson Industries, Inc., Boynton Beach. Nolan, a 1976 graduate of Virginia Commonwealth University in Richmond, has been with Gustafson for five years.

Georgia

The Roofing and Sheet Metal Contractors Association of Georgia held its 25th Annual Convention at the Savannah Inn & Country Club, Savannah, Georgia, June 15-17.

One of the highlights of the meeting was the presentation of the Boone Noblitt Award for outstanding service to Jerome Pierce, of R. C. Pierce Roofing Company, East Point, Georgia.

At the same meeting, the following officers were elected to serve during 1979:

President E. J. Lancaster
Metalcrafts, Inc., Savannah
1st Vice President . . . Ralph Newman
Southern Roofing & Insulation Co.,
Augusta

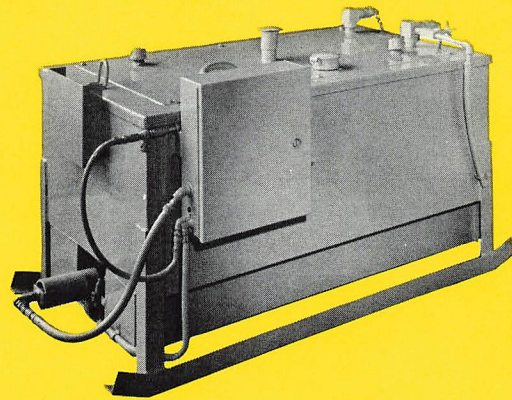
2nd Vice President
William F. Scupine
Tip Top Roofers, Inc., Atlanta
Secretary-Treasurer . . . I. Clark Mock, Jr.
Modern Roofing & Metal Works,
Augusta
The Georgia Association of Suppliers,
an affiliate group, elected the following

officers to serve during 1978-79:
President Jim Barber
Barber Machinery & Supply Co.,
Smyrna
Vice President Bill Lomel
Celotex Corporation, Atlanta
Secretary Jim Young
Young Refining Corporation, Douglasville



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*WARMS COLD PROCESS MATERIAL ELIMINATING SCORCHING
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- Speeds application and extends spraying season
- Used with High Pressure Hydraulic or Air Cold Process Material Pumps
- Trailer Mounting Available

SPECIFICATIONS:

HEIGHT: 29"

LENGTH: 60"

WIDTH: 32"

SHIPPING WEIGHT:
650 LBS.

NOTE: Heat transfer oil not furnished. 40 gallons required.



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Tele: (213) 261-5122

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New J-M Flex-I-Drain™

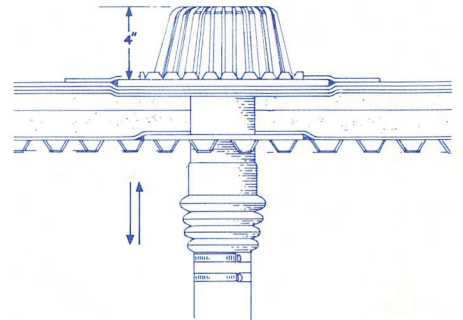
The only roof drainage system that adjusts in all directions to deck and pipe movement.



Deflection caused by loadings on roof decks often leave roof drains used with traditional rigid drain stacks high and dry.

Unique Flex-I-Drain, the new, patented, flexible drain system from Johns-Manville, solves this problem.

Flex-I-Drain has a bellows-type neoprene body that flexes to automatically compensate for most deck and pipe motion — both laterally and vertically. So the proper slope to the drain is maintained. And the drain and the roofing system remain functional under those conditions.



Flex-I-Drain offers installation versatility, too. Consisting of two parts, installation of the first part with its no-hub sleeve connection, in conjunction with vapor seal or fire barrier membrane, results in a waterproof installation. With installation of the second part, the Flex-I-Drain sleeve adapts to any thickness of insulation up to 3-1/4", plus normal roofing membrane, and firmly locks the roof membrane flashing against the roof membrane.

Flex-I-Drain is available in several sizes to fit 3", 4", 5" and 6" stacks.

Flex-I-Drain is also priced competitively with traditional systems. And with Flex-I-Drain, you're covered under the Johns-Manville Guaranteed Roof Program.

For more information about this unique new roof drainage system, consult Sweet's, write for brochure BU-319A.

Johns-Manville, Ken-Caryl Ranch, Denver, Colorado 80217, or call Dave Lucy, 303/979-1000. RS-9A

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Johns-Manville

News from associate members

Eliminator, Inc., Denver-based manufacturer of roofing vac systems and pneumatic conveyers, has announced the addition of the Mark VIII, "The Versatile Vac," an adjustable 3-way dump vacuum, to its product line. The new flow-through canister has a continuous 3-way dump hydraulically adjustable for one man operation, a 3-way semi-automatic filtration system, and is priced below hopper-type vacs made by other manufacturers.

"The new Mark VIII features a completely hydraulically operated flow-through canister for all the versatility of a

hopper-type vac with none of the hassle," says Bob Dolby, president of Eliminator, Inc. "The Mark VIII is completely hydraulically powered so one man can set up, vacuum and take down without effort. This new system eliminates the need for extra equipment and hand hoisting and positioning of the vac. This unit dumps from ground level up to 8'6" clearance enabling it to empty into dump truck, open container or on the ground.

"And," continues Dolby, "it's simple to operate; one man can clean up to 120 squares a day."

The Gibson-Homans Company, founded in 1913, is celebrating its 65th anniversary this year. The company, whose corporate offices still occupy the original site, has grown to a national network of 11 full service manufacturing plants in the United States plus two locations in Canada.

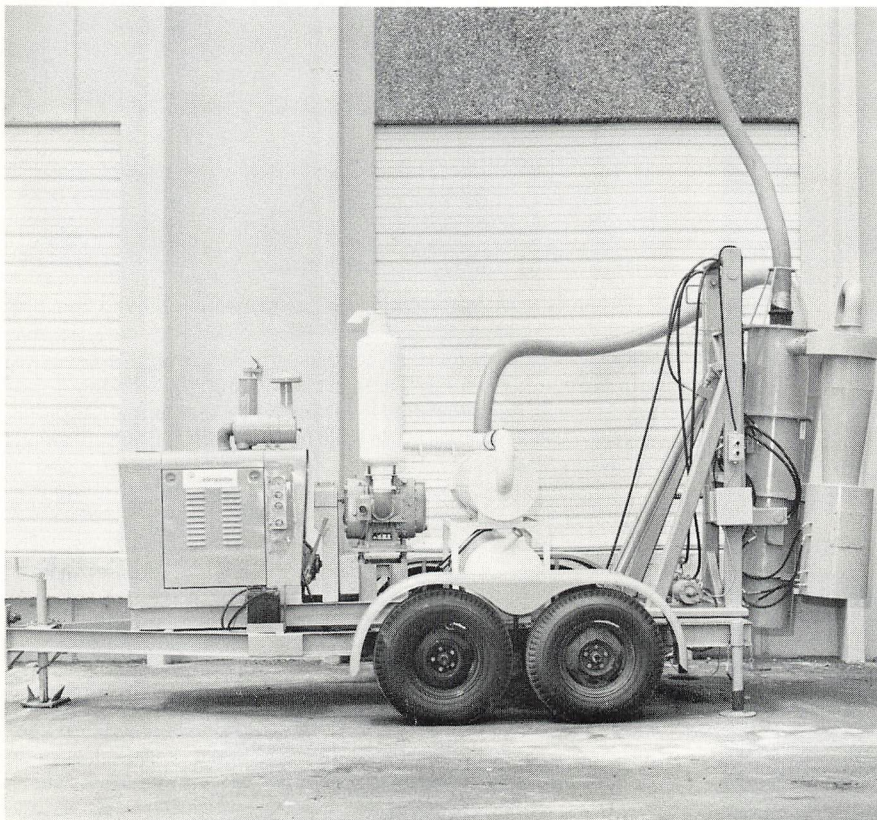
Originally formed to produce roof coatings for private label customers, Gibson-Homans now offers one of the largest lines of professional and Do-It-Yourself products available. The company currently manufactures over 200 different products including roof coatings, calks, sealants, protective coatings, glazes, wallcovering adhesives, cleaners and sealers.

According to Gibson-Homans President, William E. Painter, "The best supplier is one who is competitive in the market place in terms of quality service and price. A company that has a history of steady growth has demonstrated its responsiveness to the needs of the markets it serves. For 65 years, Gibson-Homans has used that yardstick to measure our growth and our commitment to the customers we serve."

The company's gross sales for 1978 are anticipated to exceed the 40 million dollar mark, an increase of greater than 400% during the past eight years.

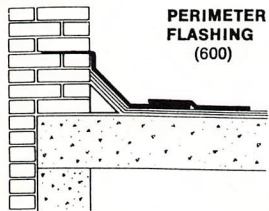
E. L. Hilts & Co., P.O. Box 1789, Hickory, NC 28601 has announced the release of their all new BIG DADDY mop cart. This new style mop cart was designed with pneumatic 4.80/4.00-8 EZ-Rolling wheels on a heavy-duty 1" reinforced axle. The tires are not only easy to clean, but these large tires help prevent damage to the membrane. The larger tires especially make moving the mop cart around the roof easier and safer. Additional information is available by contacting Hilts.

continued

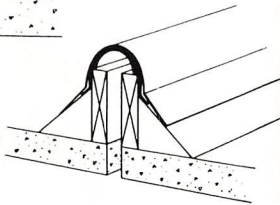


UPSTAIRS—DOWNSTAIRS ALL AROUND THE HOUSE NERVASTRAL WATERPROOFS IT!

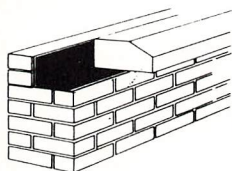
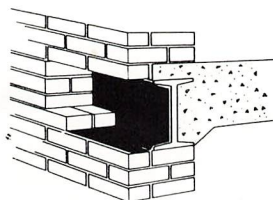
PERIMETER FLASHING (600)



NERVA-FLEX EXPANSION JOINT

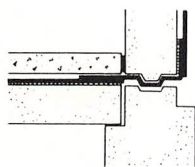
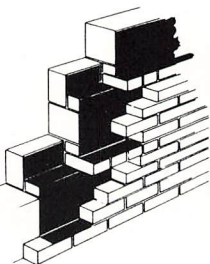


SPANDREL FLASHING (H-D, 300)

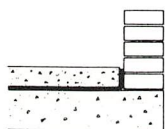


SILL FLASHING (H-D, 300)

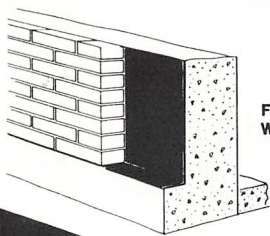
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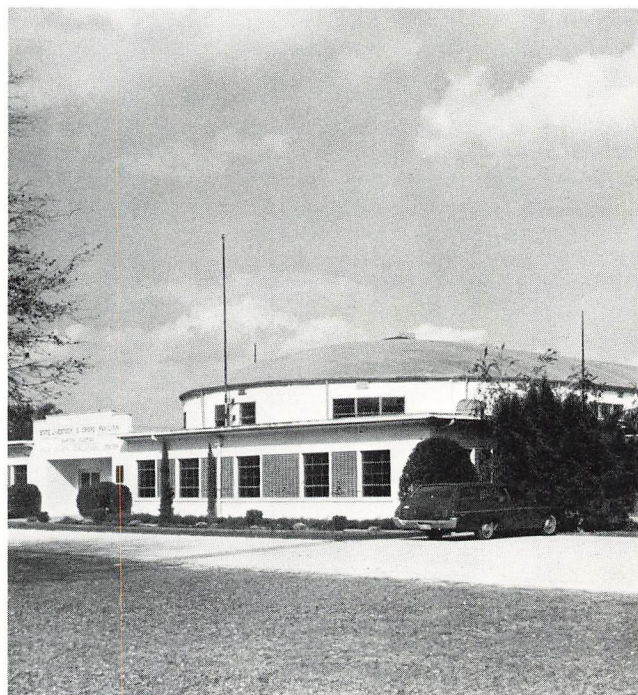
A one-ply membrane roofing system was used to re-roof an unusual turtle-shaped pavilion used for livestock shows and 4-H activities at the Polk County Agricultural Center at Bartow, Florida.

The oval roof on the two-story livestock and crops pavilion measures 90 x 120 feet with a rise of 12 feet from eaves to center. The original asphalt coated felt roofing system was installed over a poured gypsum deck at the time of initial construction.

Despite the roof's excellent drainage, years of exposure to the Florida sun, rain and winds caused severe deterioration. An inspection by Giffen Roofing Company, of Tampa, revealed splits, alligating, and extensive leakage.

To remedy the condition, the architects, Smith Architectural Group, of Lakeland, FL, recommended removal of the deteriorated roof and re-roofing with KMM Membrane from Koppers Company, Inc., Pittsburgh, PA.

"We chose Aluminum KMM membrane because of its reflective surface, low weight factor and good adherence to the substrate," architect Edward Lunz explained. "We had specified it once before with good results, and we are continuing to specify it where roof conditions warrant."



Using a three man crew, Giffen Roofing removed the old roofing, applied a 43 lb. coated base sheet, and installed the Koppers KMM membrane, working upward from the eaves to overlap the high point. The project required 10 working days.

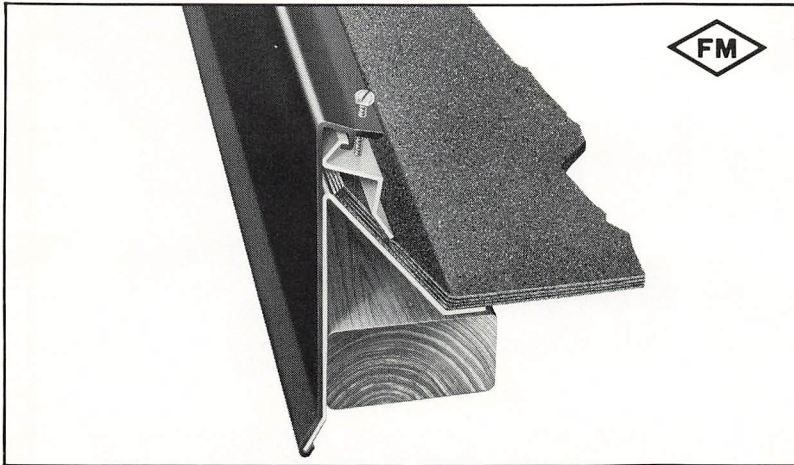
"This was our first experience with KMM membrane, and our people liked it because it's so easy to work with," Giffen Roofing estimator Phil Carr said.

Supplied in 43-in. x 33-ft. rolls, Aluminum KMM roofing is a five-layer laminate composed of a thick, flexible plastic core protected on each surface by a layer of modified bitumen, with a bottom layer of polyethylene film and a top layer of embossed aluminum sheet. It is available in a standard KMM grade for low-sloped roofs over most types of insulation and decking. The aluminum grade was suitable for the steep sloped roof on the Polk County Building.

Rolls are installed with 4-in. end and side laps, and joints are interply sealed by heat fusion with a propane torch. When installed in accordance with specifications by a licensed Koppers roofing contractor, a five-year renewable guarantee is available.



Light & Lively.



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a FREE brochure or refer to SWEET'S 7.3/MM

MM Fascia Systems

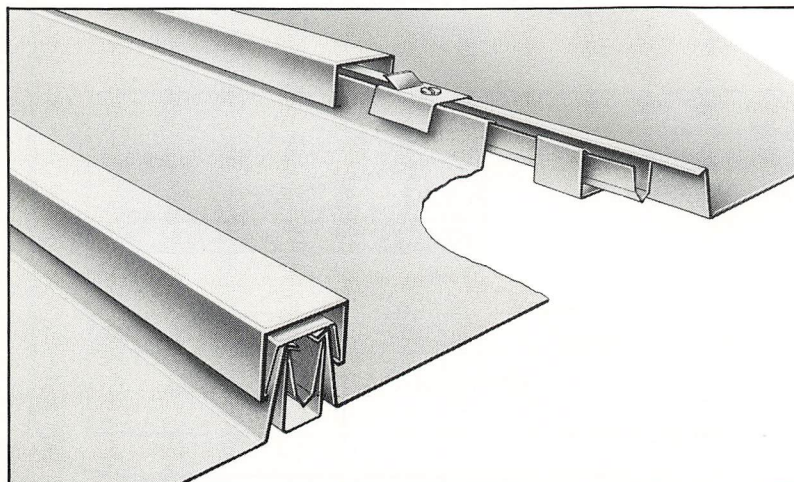
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Drip-proof MM Fascia Systems are light yet super strong. Made of extruded aluminum, they are factory-fabricated for accuracy and uniformity. Factory Mutual approval assures that wind-load requirements are met. The Lok-Tite design eliminates any penetration of the roof and makes installation easy.

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You can make them as lively as you want. A wide range of architectural finishes and coatings is available. Sharp and straight or curvilinear lines are much easier to achieve because splice plates and fasteners are concealed. So your design is the criterion we meet precisely.

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"The materials make it; the system shows it."

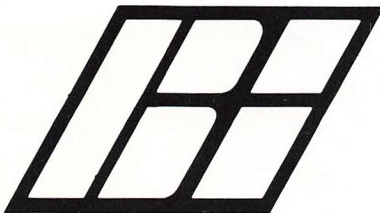
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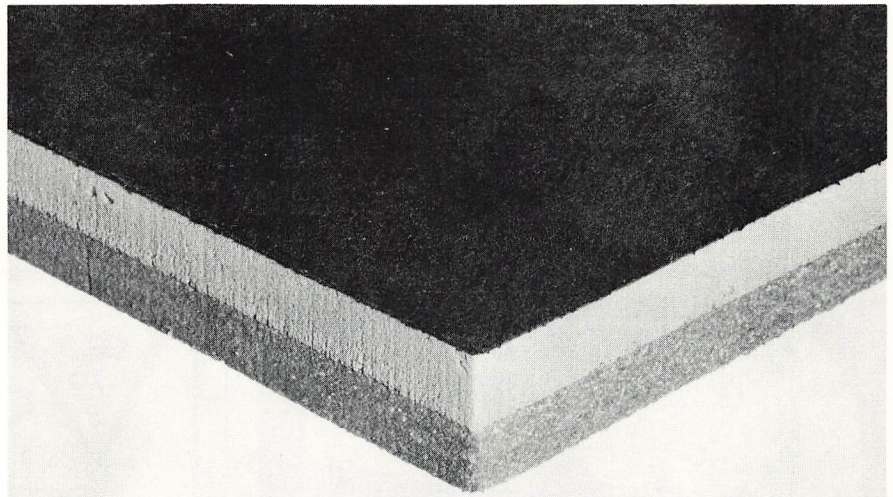
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COMPANY ADDRESS _____

CITY _____ STATE _____ ZIP _____

Composite board roof insulation

by Paul E. Burgess, Jr.
Senior Research Chemist
Jim Walter Research Corp.

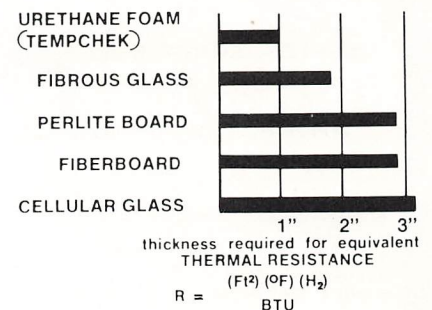


In these critical times of world-wide energy shortages, dwindling and increasingly high cost energy sources, and increased urgency upon the conservation of energy, no segment of the construction industry offers more immediate relief from this urgent sociological problem than the Thermal Insulation Industry.

Thermal Insulations are materials which offer resistance to or retard the flow of heat. An efficient thermal insulation material provides numerous obstructions to the flow of heat. Generally, these obstructions consist of voids in intermeshing fibers, expanded or popped non-conductive spheroids, or individual gas-containing cells in plastic or glass foams. These obstructing voids or cells are sufficiently small that little or no convective heat transfer occurs and, therefore, insulating efficiency is high. Roof insulation is a type of thermal insulation designed for installation on the

uppermost surface of a structural unit as a means of conserving energy by keeping the heat in during cold weather and out during hot weather. Since the roof area

COMPARATIVE THERMAL EFFICIENCY



of single story buildings can represent 85% of the total exposed area, a thermally efficient roof assembly can provide

ROOF INSULATION

perpetual savings through reduced costs for fuel energy necessary to provide environmental control for the structure.

There are seven major types of non-structural roof insulation materials currently used. These commonly used roof insulations are rigid polyurethane foamboard, perlite board, fiberboard, glass fiberboard, foamglass, styrofoam, and composite boards. Comparative thermal efficiencies of the basic types of insulation materials are shown in Fig. 1.

Over the past few decades, structural steel decks have become an increasingly important factor in the roof construction industry. Steel decks are unsuitable for the direct application of BUR and, therefore, require a surfacing substrate which generally consists of rigid insulation board. However, steel roof deck constructions provide a unique condition wherein high temperature developed within the structure, possibly as a result of isolated local fire conditions, could cause gases to be liberated from combustibles in the roof construction components and could contribute to the spread of fire on the underside of the deck. In order to qualify as Class I roof deck assemblies,

the heat release rates of the roof assembly must be within acceptable limits developed by FM to insure that the components within the assembly will not contribute directly to the initial spread of fire under the steel deck. Specific minimum thicknesses of perlite, fiberboard, glass fiberboard, and cellular glass were initially found to provide the thermal barrier qualities necessary to provide this protection. However, the need for greater insulation efficiency without the added cost of multilayer construction and the design need for lower deadweight load factors gave birth to products known as composite.


The composites combine the excellent thermal efficiency of polyurethane foam (Figure 1) and the thermal barrier qualities of certain inorganic substrates. Typically, the composite roof insulation board consists of a specific bottom substrate thickness of perlite, mineral fiber, or glass fiberboard integrally laminated to a core of polyurethane foam and a uniform top surface faced with an asphalt saturated roofing felt or fibrous glass mat for maximum strength and adhesion to the roofing membrane.

Composite roof insulation is generally produced in 3' x 4' or 4' x 4' panel sizes manufactured on a continuous lamination boardstock facility. Product thickness range from 1-1/4 to 5-9/16". The published thermal conductance values (C-value) and corresponding thicknesses of several competitive composite roof insulation products are given in Table I. The product manufacturers' literature should be consulted for more specific thermal data.

Composite roof insulation is not limited to steel-deck assemblies, but rather enjoys widespread use over noncombustible structural decks such as concrete, gypsum, asbestos-cement and other Class I structural decks such as impregnated wood or cement fiber. Structural component composite insulation panels are also available and at least one manufacturer offers a composite of perlite-urethane-perlite.

The current manufacturers' literature should be consulted for definition of specific construction assemblies, and several approved construction design assemblies are described by Factory Mutual System and Underwriters Laboratories, Inc., Guides and Bulletins.

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- WELDED AIRCRAFT TYPE TUBE CONSTRUCTION
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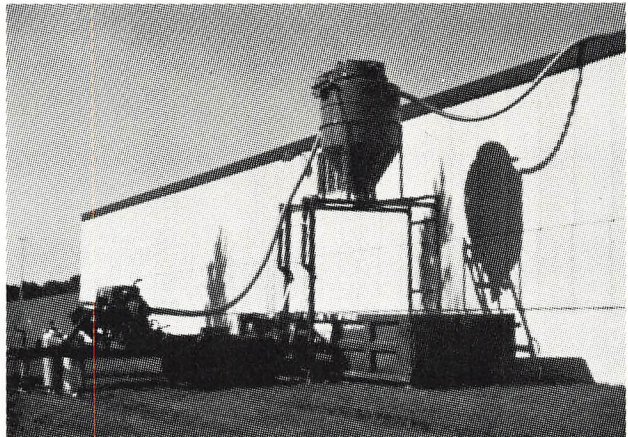
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ROOF INSULATION

TABLE I

**C-VALUE COMPARISON CHART OF
COMPETITIVE COMPOSITE ROOF INSULATION PRODUCTS (1)**

Thermal Conductance, C-Factor	Celotex Tempchek Plus *	Apache Millox	Grefco Permalite PK **	USM Suprathane Class I	NRG Composite	JM Fesco Foam	Panel Era Insul Roof I	FURI
.17					1.25"			
.15		1.5"	1.4"				1.2"	
.13	1.6"	1.6"	1.5"		1.50"	1-1/2"		
.12			1.6"	1-9/16"		1-5/8"	1.4"	
.11				1-5/8"				
.109							1.6"	
.10	1.9"	1.75"	1.75	1-3/4"	1.75"	2"		1-9/16"
.093							1.8"	
.09		2.0"	2.0"	2"	2.00"	2-1/4"	2.0"	1-11/16"
.08								1-13/16"
.07	2.5"	2.5"	2.5"	2-1/2"	2.50"	2-1/2"		2"
.069							2.25"	
.061							2.5"	
.06	2.8"	2.75"	2.75"	2-3/4"	2.75"	2-3/4"		2-1/4"
.05	3.2"	3.0"	3.0"	3"	3.00"	3-1/4"		2-1/2"
.049							3.0"	
.041							3.5"	
.04								2-7/8"
.035							4.0"	3-7/16"
.031							4.5"	
.02								5-9/16"

(1) Values taken from published product literature

* Nominal thickness includes facers

** Facer not included in nominal thickness

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The Office of Federal Contract Compliance Programs has promulgated new regulations (41 C.F.R. Part 60-4) which completely restructure pre-existing affirmative action requirements for contractors holding Federal construction contracts, and which include for the first time affirmative action requirements and goals for employment of women by construction contractors. These regulations abolish the present system of using Imposed Plans for certain geographical areas, such as Philadelphia, Atlanta, and Washington, special bid conditions for substantial projects in areas not covered by Imposed Plans or Hometown Plans, and substitute a uniform system of solicitation notices and specifications which govern affirmative action requirements in every locality that is not covered by an approved Hometown Plan.

In addition, these regulations apply to the entire work force of all contractors or subcontractors who hold a Federal or Federally-assisted construction contract in excess of \$10,000, rather than simply to projects on which the total exceeds \$500,000, as was the case with the prior regulations. The regulations set goals for employment of females as well as racial minorities, and provide that efforts must be made to meet the goals for each particular group, e.g., females and all minorities. The regulations provide for debarment of contractors who are found in violation, and provide that no contractor covered by the regulations may enter into any contract with a debarred contractor.

These regulations took effect on May 8, 1978, and set a goal of 3.1% employment of women in construction after one year, 5% after two years, and 6.9% after the third year. For the time being, the regulations continue in effect the existing goal percentages for minorities as specified in Imposed and Hometown Plans, but provide that the government will propose new minority goal percentages in the near future and require Hometown Plans to submit female affirmative action goals within 45 days. If these new Hometown Plans are not submitted on a timely basis, or are not approved, the plan will terminate.

Other than the inclusion of female affirmative action requirements, the most sweeping change in the new regulations is that these regulations apply to every contractor or subcontractor holding a contract or subcontract for Federal work or Federally-assisted work, which contract is in excess of \$10,000, including construction contracts entered into between a construction contractor and a federal non-construction contractor where the construction work is necessary in whole or in part to the performance of that non-construction contractor. Once a

Analysis of federal affirmative action requirements for women and minorities in construction

by McNeill Stokes and Ira J. Smotherman, Jr.
Stokes & Shapiro

contractor is covered by the regulations, they apply to all of its employees actually engaged in onsite construction, and part of the affirmative action requirements are that the minority and female employees of the contractor must be spread out over all the projects on which the contractor is engaged, both Federal and non-Federal.

A notice setting forth the requirements of regulations, and specific Standard Federal Equal Employment Opportunity Construction Contract Specifications, are required to be included in any solicitation for bids put out by Federal contracting officers, applicants for Federal funds, and Federal non-construction contractors soliciting bids. The Office of Federal Contract Compliance Programs must be notified within ten days of the specifics of any contract awarded subject to these regulations. In addition, the notice provides that all contractors holding a contract subject to the regulations must notify the OFCCP within ten working days of the award of any subcontract in excess of \$10,000 resulting from the same solicitation. To enforce the regulations, there is provision for an administrative show cause procedure to call the accused contractor before the OFCCP. In the alternative, the Department of Justice may proceed against the contractor under the enforcement provisions of §209(a)(2) of the Executive Order 11246, upon which the regulations are based.

The regulations specifically provide that the provisions of a collective bargaining agreement or failure by a union to refer either minorities or women is no defense to the contractor in an enforcement action, and add that the contractor has the affirmative duty to provide immediate written notification to

the OFCCP when the union has not referred to the contractor a minority person or woman sent by the contractor, or when the contractor "has other information that the union referral process has impeded the contractor's efforts to meet its obligations" under the regulations. This introduces an area of great danger to the contractor, both in determining whether to "report" the union to the OFCCP, and in calculating how hard the contractor should push with the union itself to provide women and minorities. The employer is thrust right in the middle between the union and the OFCCP and required to make very difficult practical decisions.

The regulations also provide that the contractor must "insure and maintain a working environment free of harassment, intimidation and coercion at all sites," including assigning two or more women to each project. This requirement sets no standard of conduct which can be measured in the field, only good faith. Another tremendous burden created by these new regulations is in record keeping, although the preamble to the regulations professes that no specific record keeping formats are established. Nevertheless, the contractor must: (1) establish and maintain a list of minority and female recruitment sources; (2) provide written notification to the sources when any employment opportunities are available; (3) maintain a record of the responses from such organizations to such notices; (4) maintain a file of each minority and female off-the-street applicant; (5) maintain a written record of each minority or female referral from a union or recruitment source, and of what action was taken with respect to each such individual; (6) as stated previously,

provide written notification to the OFCCP when it believes the union is failing to refer minorities or females or is otherwise impeding the contractor's obligations in that regard; (7) document its development or participation in on-the-job or other training programs which expressly include minorities and women; (8) include its EEO policy in notices to unions and recruitment sources, its policy manual and collective bargaining agreement, its company newspaper, annual report, and on its bulletin boards; (9) document meetings where its EEO policies are reviewed at least annually with each of its employees who have any responsibilities concerning employment; (10) it must document its dissemination of its EEO policy externally in the news media; (11) document its notice, no later than 30 days before the beginning of any training program, to female and community organizations and schools and other minority and female recruitment organizations; (12) document an annual examination of all minority and female personnel for promotion; (13) document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers; and (14) document an annual review of all supervisors' adherence to the requirements of its EEO policy and these regulations.

The requirement to maintain a record of all solicitation of offers of female and minority subcontractors and suppliers has been criticized as unnecessary, but the regulation writers state that since these businesses may be assumed to employ substantial numbers of female and minority individuals, they should be considered a part of the contractors' affirmative action requirements to contact all possible sources of female and minority employment.

The regulations specifically provide that contract or trade associations may substitute their efforts for those of individual contractors in meeting the affirmative action requirements, but that each contractor in such associations is still individually responsible for its affirmative action requirements, should the association's efforts fail to fully comply.

The regulations are very specific in providing that a contractor must take affirmative action for each specific minority group, both female and male, and for women, both minority and non-minority. Consequently, the contractor may have achieved its goals or otherwise acted in good faith regarding women and a particular minority group, but may still be in violation of the regulations for having not achieved the requirements of the regulations concerning another minority group which is employed in a substantially disparate manner.



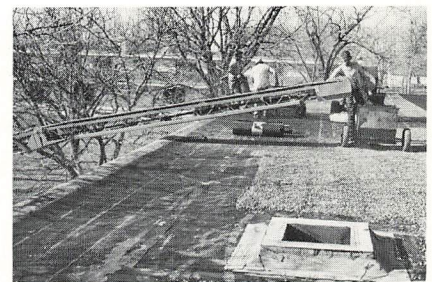
“We’ve had a **MORGEN** Roofers Conveyor for two months. Just try to get it away from us!”

Nieman Roofing Co., New Prague, MN has owned a 68-foot Morgen Roofers Conveyor for only two months. And already John Nieman says, “You couldn’t get it away from us!”

It has at least doubled their gravel production compared to a hoist, and they have used it for elevating felt, insulation and shingles as well.

An 18-foot section of the boom hydraulically folds under to shorten the conveyor for towing. Time to set up is a matter of minutes after arrival. Nieman Roofing has towed it to six locations so far and “haven’t had a stick of trouble with it.”

John Nieman likes the way the boom can be lowered to the ground for a low charging height, and the way



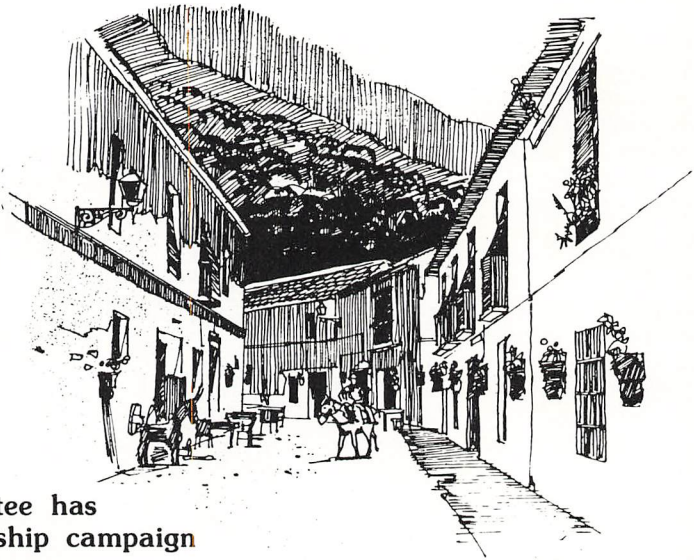
the conveyor is controlled by the buggy operators, who can start and stop the belt to get a full load without spilling.

“When a piece of equipment can save labor like this does, it can only make us money,” Nieman says. That’s why he says he’ll soon be in the market for a second Morgen.

Write for literature and prices—

MORGEN MANUFACTURING CO. Box 160 Yankton, SD 57078

It's contest time again!



Your NRCA Membership Committee has announced an aggressive membership campaign for the next six months, and to encourage every member to participate, some special prizes are being offered.

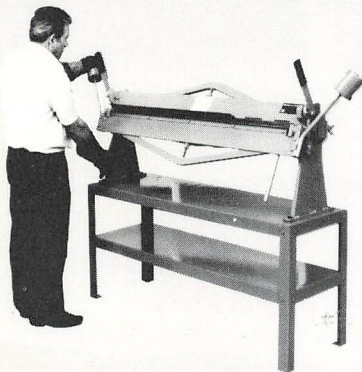
- Anyone who signs up 5 members will receive a \$100 Gift Certificate; 10 members is worth a \$300 Gift Certificate.
- Sign up 13 members and you can go to Costa Del Sol as part of the Reconvened Convention—or take a \$500 Gift Certificate.
- And if you sign up only 16 members, you and a friend or spouse will be our guests at the Reconvened meeting—or take a \$1000 Gift Certificate.

THE RULES:

1. Anyone is eligible to compete.
2. Applications received prior to February 1, 1979 will be credited towards the contest.
3. The sponsor's name must appear on the application to ensure credit.

IMPORTANT: Lists of prospective NRCA members—those who have expressed an interest over the last six months—are available from the Membership Committee or from the NRCA office. We also have application forms and descriptive brochures—yours for the asking.

NRCA just passed a big milestone with its 1500th member, and we'd like to make it 2000 by next year. Please help—and win a nice prize while you're at it!



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Marathon Heavy Duty Bench Brakes

- Lightweight ... Portable ... 4' & 5' Models
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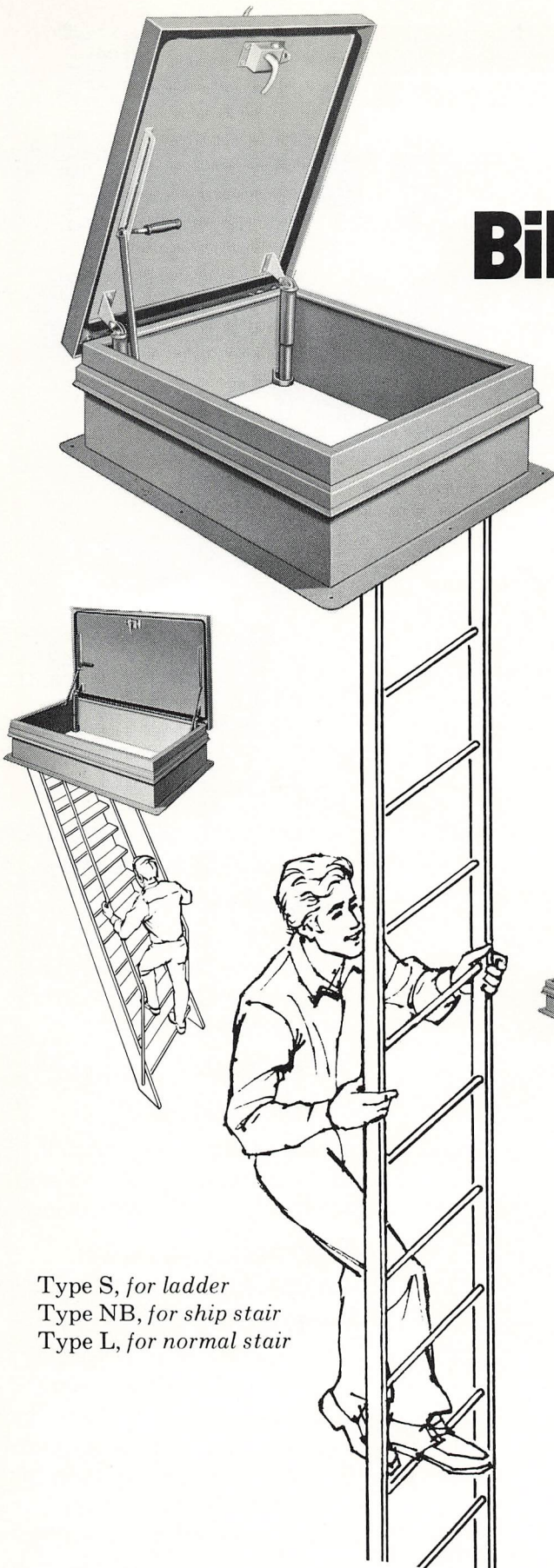
When your specifications call for performance proven Bilco roof scuttles you are specifying the brand that assures lasting satisfaction for your client. Good design, rugged construction, and smooth, easy operation are the qualities that have firmly established Bilco roof scuttles as the standard of the industry.

The Type S Scuttle, for ladder access, is an example of our concern for building quality and value into every Bilco product. Constructed of heavy gauge material, it is insulated and gasketed for complete

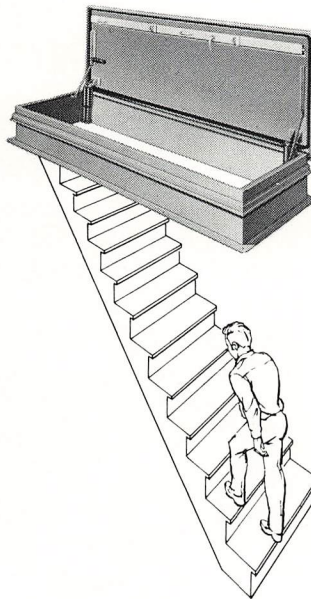
weathertightness. In operation, compression spring operators float the cover upward and it locks automatically in the open position. The convenient operating handle affords effortless one-hand control in closing and latching the cover while the other hand remains securely on the ladder.

Standard sizes in steel or aluminum for ladder access, ship stairs or normal stairs are always in stock for prompt shipment. Special sizes are also available in single leaf or double leaf design.

See our catalog in Sweet's General Building, Industrial Construction and Engineering Files for complete information, or write for a copy.



Type S, for ladder
Type NB, for ship stair
Type L, for normal stair



Their value is measured by the satisfaction they give.

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SELL A BETTER ROOF. MAKE A BIGGER PROFIT. MAKE YOUR MOVE TO GLASSGUARD.

A Glassguard® roof is a better roof. And that gives you a big selling advantage.

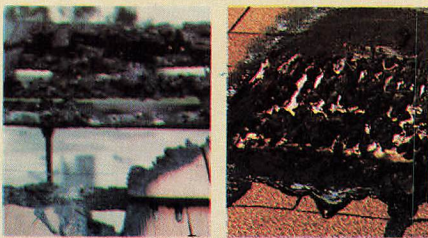
Because you'll be able to offer the security-conscious home owner extra protection against fire, wind and weather. Inexpensively. With a roof made from CertainTeed fiber glass based asphalt shingles.

And you'll be making a smart move up—to a bigger profit.

A U.L. Class "A" fire rating has got to help you sell.

In a test where burning brands were placed directly on the shingle surface, Glassguard earned the highest fire rating possible—a U.L. Class "A" rating.

And that kind of security is a big issue with today's homeowner.



*(Left) Wood shakes and deck completely burned through. Time: (before extinguished) 15 minutes.
(Right) Glassguard only scorched. Time: (before burning itself out) 25 minutes.*

They're into smoke detectors, fire extinguishers, escape ladders, burglar alarm systems—you name it. Which means your prospective buyer is probably going to be impressed with protection he can see—a Class "A" Glassguard roof.

In fact, impressed enough to buy.

We made Glassguard to last longer and perform better.

You can install Glassguard without worrying about callbacks.

For example, Glassguard comes with a super-fast sealing strip—assuring quality, weather-tight protection.

Not only is it going to last longer than conventional asphalt shingles, but it won't blister, curl, split, warp, expand, shrink or absorb moisture. And it's U.L. rated for wind resistance.

Plus, every Glassguard roof is backed by a 20-year limited warranty.



We engineered Glassguard to save you man-hours. Materials. And effort.

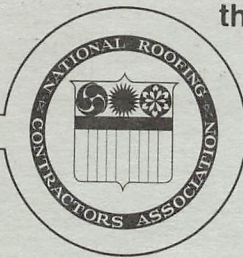
We make it in a 12¼" shingle, instead of the usual 12" width. You'll find those extra quarter-inches can add up to substantial savings in time and materials.

And since Glassguard shingles are lighter, they'll make those trips up the ladder and on the roof a lot easier.

With our capacity to produce, you won't be kept waiting. Or wanting.

For example, we are one of the few roofing manufacturers who make our own fiber glass mat. And we make fiber glass based asphalt shingles in more plants than anyone else.

Which means commitments we make to our customers are based on our production capacity. Not someone else's. You can depend on us.



the roofing spec

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