

# The PAVE TECH EDGE

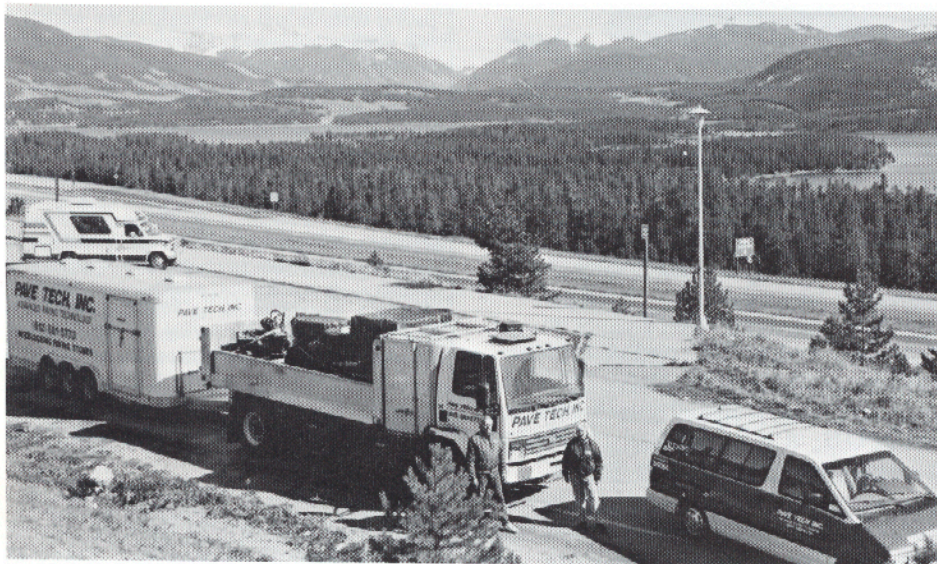
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## Have You Seen These Guys?

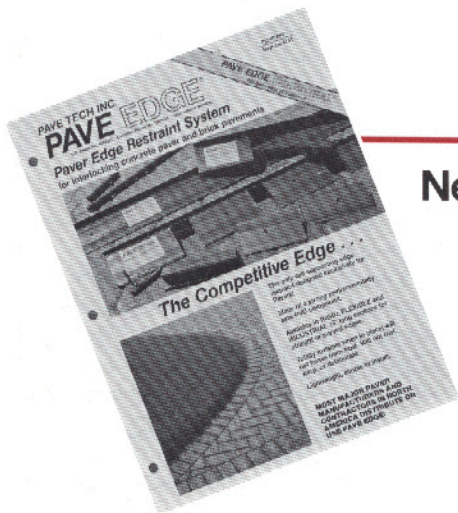


The vast beauty of our continent stops even PAVE TECH.

PAVE TECH'S roving team of installation gypsies may stop in to see you. PAVE TECH will be criss-crossing the continent in 1991 to get a better feel on how best to provide help and support for the paver industry. If you have a specific need for us to conduct a paver installation seminar or lecture presentations, please call Steve Jones or Dale Sopkowiak, US 800/728-3832 or CANADA 800/247-3433. 



No, we don't like mountains!



## New PAVE EDGE® Brochure


PAVE TECH has just introduced its new pavement edging brochure that now includes PAVE EDGE Flex, PAVE EDGE Rigid and the New PAVE EDGE INDUSTRIAL. Complete specifications for installation of PAVE EDGE is included in brochure. The new brochure is available by calling:

USA 800/728-3832

Canada 800/247-3343

## Canadian Patent & Copyright Infringement Actions

### RE: Decra-Loc/ D. Barnett

PAVE TECH Inc. has brought separate legal actions against Decra-Loc Canada Ltd. and D. Barnett & Co., Ltd. for copyright infringement and patent infringement on PAVE TECH's Canadian edging patent. The latest action concerns Decra-Loc's involvement with an American Company "Snap Edge" and Decra-Loc's distribution of the "Snap Edge" product in Canada. The "Snap Edge" Company was sued by PAVE TECH in the United States immediately following the public disclosure of their product almost a year ago. PAVE TECH is continuing to forge ahead with their legal proceedings against Snap Edge and its distributors for patent infringement. 

### What Else Is New? Look Inside!

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# Proper Roadbase Steer Clear of Soil Cement



by John Knapton

The most important material in any paver project is the one which the user should never see — the roadbase. This is the major structural component in the pavement and it must be designed and built with pavement trafficking and ground conditions in mind. It can be compared with the chassis of a truck or the human skeleton — get the roadbase wrong and the whole pavement will soon fall apart.


Design methods for selecting materials and thickness for roadbases have been developed in many countries. The first method was produced by the UK Cement and Concrete Association in 1975. That method was based upon laboratory tests which demonstrated that pavers bedded in sand behaved very much like asphalt concrete, except they spread traffic loads more effectively. This allowed existing UK asphalt concrete road design methods to be adapted to design concrete paver roads. Other design methods, very similar in principal to the UK one, were subsequently introduced throughout the world, including the U.S.A. in recent years.

We now reach the stage where anyone designing a paver project can find all the information he needs to make sure the project stands up to long-term use. In the main, this had resulted in successful paver projects, but there have been some failures worldwide. **John Knapton Consulting Engineers Limited** have investigated many of these failures and we can summarize the common reasons for failure in the table shown.

In Europe, the roadbase is usually crushed rock or for heavily trafficked pavements, lean concrete or asphalt concrete. Experience shows that it is



Courtesy of John Knapton

important to test the roadbase materials to ensure that they achieve required density and strength values. In the U.S., a third type of roadbase is sometimes constructed. 

John Knapton is Managing Director of John Knapton Consulting Engineers Limited and is a Chartered Engineer. He gained his First Class Honours B.Sc and Ph.D from the University of Newcastle upon Tyne in 1970. Prior to establishing his practice in 1979, he was



John Knapton

employed as a Section Engineer on the A1 Seaton Burn Diversion, as a Research Engineer at the Cement and Concrete Association and as a Lecturer in Structural Engineering at the University of Newcastle upon Tyne. His particular interest is paving systems and he developed the world's first pavement design procedures for Highway Pavements, Industrial Pavements, Port Pavements and Aircraft Pavements surfaced with pavers. He is Chairman of the International Council of Small Element Pavement Technologies and initiated the First International Conference on Concrete Block paving in 1980. He is author of the British Ports Federation Heavy Duty Pavement Design Manual and has worked with the U.S. Federal Aviation Administration in developing aircraft pavement design methods. He is consulted worldwide on paving and is a visiting fellow at Royal Melbourne Institute of Technology. He has published over 40 papers on all aspects of paving work and is currently writing the British Standard on concrete block and clay paver road design.

This is in-situ cement stabilization of existing ground. In Europe, in-situ stabilization is used only when a strict testing regime has been undertaken to ensure that the resulting roadbase is suitable. In-situ stabilization can be cost effective but is generally regarded as providing a relatively weak roadbase. In fact, in the UK it would never be used as a roadbase but might be used to improve the ground below a roadbase, **i.e. in-situ stabilization would not be used to form the important structural layer of a pavement — it is just not up to the task.**

It might sound obvious, but it is nonetheless worth stressing that no matter how much careful planning goes into a concrete paver project, if the roadbase is not strong enough, the result will be disappointing. It is recommended that in-situ stabilization should not be used as the roadbase but that properly engineered materials should always be specified.

## The PAVE TECH EDGE

A Publication of

**PAVE TECH, INC.**

P.O. Box 31126

Bloomington, MN 55431

Stephen Jones, President

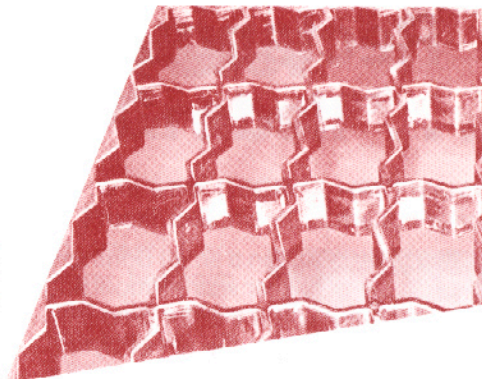
Louise DiPlacido Branham, Editor

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OBSERVED TYPE OF DISTRESS	REASON FOR FAILURE	NATURE OF ERROR CAUSING FAILURE
Chipping and spalling of paver	Road surface is springy, causing neighboring pavers to touch when trafficked	Roadbase is insufficient for loading and soil condition. Design error.
Rutting develops as soon as pavement is trafficked	Crushed rock-roadbase is easily displaced	Moisture susceptible ground has become waterlogged and cannot support roadbase. Drainage should have been provided.
Pavers remain loose in the surface and bedding sand pumps out	Sand becomes waterlogged and will not support pavers	Either water is trapped in the sand or the sand is incorrectly specified.
General undulation in paver surface after a few months use	Ground is overstressed	Insufficient attention paid to strength of ground hence roadbase is insufficient.
Blocks move sideways and joints open up	Edge restraint absent.	Failure to recognize the need to restrain horizontal forces in pavers.

# Ten Tips for Extended Mold Life and Better Product

Courtesy of Rampf Molds Industries, Inc.



## Longer mold life starts with:

1. Proper mold alignment in your machine, this entails:
  - a correct fitting of the mold between mold table and feed box table. Your feed drawer must run smoothly with a clearance of 1/8" to 1/16" between feed box and mold. It should not "sit" on the mold and must not have too much clearance, otherwise material will be lost.
  - adjusting the tamperhead in such a way that the shoes are properly centered in the cavities. This will prevent the shoes scraping against the walls (premature wear of your mold), as well as apparition of burrs on the edge of your pavers, causing a loss in their sharp outline and neat appearance.
2. Regular cleaning of the agitator grids to prevent uneven distribution of the aggregate in your feed box (filling problems!!).
3. Changing your brushes at regular intervals. (Keep them at the proper height to ensure a thorough cleaning of your shoes.)
4. Keeping the overhead mounting surfaces for both: machine and tamperhead clean to avoid setting your head at an angle — causing uneven compaction of your stones and an irregular appearance on their surface.
5. The mold insert *sitting flush* on the vibrating table/wear plate to avoid washouts developing in the cavities.
6. Ensuring that your mold bottom is fastened with equal pressure to all four corners of the vibrating table, and;
  - all of your rubbers being changed at the same time.
  - your vibrating table plate being changed with every mold if you own a Hess or Zenith machine. Use a surface ground, perfectly flat wear plate.
  - of grinding the surface of your vibrating table at regular intervals, if you own another multilayer.

- if you own a single layer, ensure that your production pallets are in good shape so that the mold bottom sits flush atop.
7. Keeping vibrator bearings in good shape and ensuring that all of your vibrators are functioning.
8. Changing your molds as little as possible in the machine. Every mold change takes approximately 1% off your mold life.
9. After every production run:
  - clean your mold and spray it with a protective oil
  - check on straightness of insert bottom
  - check for washouts in the cavities
  - check chamfer of your shoes (Are they intact? Do they show undue wear?)
  - check the clearance of shoes in the cavities; when the clearance exceeds 1/16" or when your pavers start showing burrs, con-

sider a change of shoes. This will also enhance your mold life.

10. If your mold is nearing the end of its useful life, consider buying a new bottom, insert, and shoes, to be fitted to your existing head. A partial change over can result in savings of \$1,000 or more compared with the purchase of an entire new mold.

For assistance, regardless of the make of your molds or for additional information you may require or if anything goes wrong which you cannot fix with the means available to you, call:

Rampf Molds Industries, Inc.  
at — 800/48-MOLDS



## Canadian Paver Producers Meet PAVE TECH



Entering Saskatchewan



Entering Manitoba

PAVE TECH hit the road with its traveling gypsy show to visit with its Canadian Distributors and potential distributors. Steve Jones, President of PAVE TECH was on the 5,000 mile trek through the Provinces of Canada. We wish to apologize to those paver producers we were unable to see. We had a limited time, and a great distance to travel. If you are a paving material producer, you should contact us at 800/247-3343 about becoming a PAVE TECH/PAVE EDGE distributor.

# Rectangular Confusion “No Dutch Treat”

By Lee Martin, **ZENITH** Equipment Company



Lee Martin

Many years ago in a small Southern church, the preacher was sermonizing on sin. He asked all the congregation who had committed the sin of “lying” to stand up and say “amen.” Quite a number stood up and shouted a resounding “amen.” The pastor then asked that those who had committed the sin of “stealing” to stand and say “amen” which again brought a large response. Then the person asked that all those who had committed the sin of “adultery” to stand and shout “amen.” There was no response for some quiet seconds, then a voice from the back of the church said “now you’ve quit preachin’ and gone to meddlin!”

Perhaps many folks will consider this “meddlin’,” but for many years there has been a puzzlement within the hierarchy of our industry regarding “Hollandstone.” What is “Hollandstone?” In North America we define “Hollandstone” as any rectangular paver whose length is one-half its width when set, in-situ. This definition certainly was not taken “verbatim” from the CPI dictionary but is rendered by the writer after observing the industry for a decade. “Hollandstone” is (arguably) collectively the largest selling paving stone in North America.



The definition is very loose when we hear some factory workers and installers address “Hollandstone” as “brick.” In fact in some parts of North America the term “brick” is now being applied to any concrete paver. As one who has fought long and hard for our products to be known as “pavers” rather than “blocks” the idea of our pavers now being called “bricks” is a tantamount to profanity. The clay brick industry is mounting a campaign to regain lost ground for their paving brick so we must do all we can to protect and promote our identity.

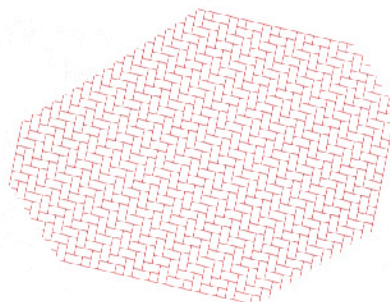
Pavers were introduced to North America by entrepreneurs who chose

to select their product line predicated on “gut” feelings for what would work. Our industry is based on the “interlocking” market and bolstered by Unistone, Uni-Dekor, Munich, Finetta, Z-Pavers, et al. Early on, Hollandstone was a necessary evil. Perhaps not enough attention was paid to so many different sizes coming on the market.



The “Hollandstone” confusion may have been enhanced by machinery manufacturers or mold builders who tried to influence a customer toward a particular length and width of “Hollandstone” due to size of the machinery manufacturers vibrating table, to maximize economy of production. On most paver machines, the very best economy of production can be achieved with the most widely used and accepted “Hollandstone” . . . Germany’s rectangular paver (100 x 200). From 48 to 54 pieces per cycle can be made on just about all German paver machines. At 4.65 stones per square foot (in 98 x 198 actual stone size), 54 pieces equals 11.61 square feet per cycle.

However, on some German machines the acceptance of 105 x 212 or 105 x 213 is common. On a typical layer or pallet, less than 10 square feet per cycle of this stone can be made. From a strict “money in the bank” aspect, why would one want to give away a minimum of a half of square foot when multiplied by the number of machine cycles per day?



Several U.S. producers now make Hollandstone with “imperial” dimensions . . . fitting into a 4” x 8” module. This is especially tantalizing to an architect who thinks he can design the exact number of pavers into the area the drawings indicate. We have documented two separate sizes of stone which customers have specified to attain the exact 4” x 8” joint centerline: 3 $\frac{3}{8}$ ” x 7 $\frac{7}{8}$ ” and 100 mm x 201.5. Theorizing, first, that the joint around the stone will have to be 1/8”, then logically the centerlines per each stone will be at 4” x 8”. The metric/imperial idea is also sound . . . because converting 101.5 x 203 mm (joint dimensions considered at 1.5 mm) equals 3.9961 x 7.9921 inches. This is as close as one can get in converting metric to inches in this module.

We think there may be as many as ten to eleven different sizes of Hollandstone sold in North America. We introduced four already in this article. We know that there are producers making:

105m x 212m  
98mm x 198mm  
104m x 210m  
105mm x 213mm  
103m x 208m  
100mm x 201.5mm  
112m x 225m  
101.5mm x 203mm  
4” x 8”  
3 $\frac{3}{8}$ ” x 7 $\frac{7}{8}$ ”

The importance of having a standardized “Hollandstone” is certainly not as significant as having a standard concrete masonry unit (7 $\frac{7}{8}$  x 7 $\frac{7}{8}$  x 15 $\frac{1}{2}$ ”). After all, block layers install

(continued on page 5)

## Rectangular Confusion

(continued from page 4)

concrete masonry units by virtue of absolute elevation and mortar joint. Pavers are a bit harder to "fit" into a module as it is extremely difficult to positively control the joints between pavers. Product is being set on a flexible base and slight variations in elevation can deflect from the consummate circumstances.

Installers have related to me the difficulty in trying to set pavers in stack bond into modular 12 foot squares bordered by concrete beams, when the designer does not want any cuts. Arithmetically trying to work this problem is easy but practicality proves laborious, with usually less than desirable results.



Joint spacing is perhaps the most unheralded item in the process. Trying to squeeze pavers into a concrete module for the sake of "art" and taking all the spacing away from the pavers is a great way to limit our industry's success. Jointing sand forms an integral phase of interlock. Without joints there is no lockup.

Without joints, stones rub and spall. Replacing broken stones is not a pleasant and rewarding pastime for our colleagues in the installation business.

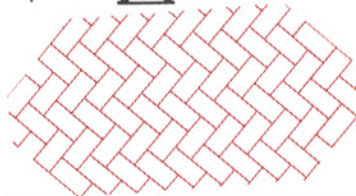
There are locations where three or more different sizes of "Hollandstone" are being sold within the same municipality. Credibility in a market like this must hurt the paver industry.

The North American paver market is unlike the European market in that producers here are pretty much independent in their market approach. There are no country-wide marketing companies who specialize in a general effort toward one particular shape or another. Even the UNI Group is formed by independent producers who market individually a series of similar products . . . some patented, some not . . . with basic literature and cooperative advertising as their common goal.

We hope that this article raises several questions. Number one must be "does the industry want standardization of shapes and sizes, especially "Hollandstone?" Perhaps number two will be "should we expect to go

"imperial" with rectangular pavers?" Canadian producers and installers are exporting their products and contracting efforts into the U.S.A., so how would acceptance of an imperial sized Hollandstone affect the Canadian market? Typically, interlocking shapes are very much universal. Mold builders make "Munich," "UNI-Stone," "UNI-Decor," or other interlocking shapes in the same size, except for some block machine production where pavers are reduced in size (remember mini-UNI-Stone) to maximize production on the block machine pallet. If there is going to be a paver designated as "Hollandstone," should it not be a standard size all over North America, as are interlocking shapes? If a producer wishes to make a rectangular stone of a different size than that of the standardized "Hollandstone" he would certainly be welcome to continue that practice without restriction.

Our industry is becoming more and more sophisticated. It would appear to be the most beneficial approach to development, that of standardizing one of the top selling shapes. If our industry is to continue its growth pattern the task of specifying our products should be made as simple and easy as possible. Size standards must become a part of our approach to marketing pavers of all shapes and descriptions. ▽



## "Probst Grabs!!" . . .

. . . is what GEORGE HARTMANN of Probst tells his customers. Probst of West Germany has long been the leading supplier of specialized paver handling equipment.



George Hartmann

PAVE TECH found out early on that Probst equipment, although not terribly inexpensive, was a must for proper and efficient paver laying. There are less expensive U.S. and Canadian imitations, but none we have tried works or lasts as well as Probst products. Their new specialized paver equipment brochure again shows their leadership and support to our industry. Demand the best, call Probst and talk to George Hartmann, 609/771-1236. ▽



PAVE TECH demonstrating small Probst Grab at training seminar.

# Mechanical Installation — And What It Means to the Paver Industry



OPTIMAS AMERICA INC.



Mike Mueller

By Mike Mueller, Optimas America, Inc.

## Preface

By Stephen Jones, President  
PAVE TECH, Inc.

As our paver industry expands and larger and larger jobs become available, the lure to invest in mechanical installation equipment is almost unbearable. While this method of installation has great advantages, it is also a market that is over crowded with excess capacity. Most companies with mechanical paver laying equipment find it very difficult to keep their machines and crews busy. Those that do, must travel from job to job on very low margins. It will probably be another couple of years before our existing capacity is more fully utilized.

If you have a need for mechanical equipment or installation expertise, please call either:

Michael Mueller  
Optimas America, Inc.  
416/873-0121

Bill Schneider  
LPS Pavements  
708/232-1770

or

For equipment only, please call:

George Hartmann  
Probst Equipment, Inc.  
609/771-1236

Kevin Ford  
Walker Equipment Limited  
416/294-8333

As we enter the 1990's, there are several encouraging developments, as far as the paving stone industry in North America is concerned. At last we have an organization, the Concrete Paver Institute (CPI), that is truly dedicated to the advancement of the paving stone concept. In a sense, the CPI is unifying efforts from various fronts, all promoting this industry.

The mechanical installation of paving stones is one such effort, having been introduced to North America about five years ago. Acceptance of this concept has advanced to a point where recently, some project owners have specified that their pavers be installed by machine.

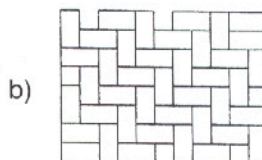
The growth of mechanical installation can be attributed to the fact that the three main hindrance factors are being addressed by the industry. We will explain them later.

Clearly, the intended customers of this machinery are paving stone contractors. However, in cases where any one contractor cannot yet afford his own machine, some paver manufacturers have "kick-started" the use of installation machines in their area, by purchasing a machine, and then renting it to their various customers. Most contractors are quick to understand the benefits of mechanical installation versus manual laying. So what were (and in some cases still are) the hold-ups?

1. The limited availability of pavers produced in a laying-ready pattern:
  - although some paver shapes are produced in patterns that already suit mechanical installation, the choices are simply too few.
  - probably the most often installed paver shape/pattern combination is the rectangular paver, laid in a herringbone pattern (see photo #1).



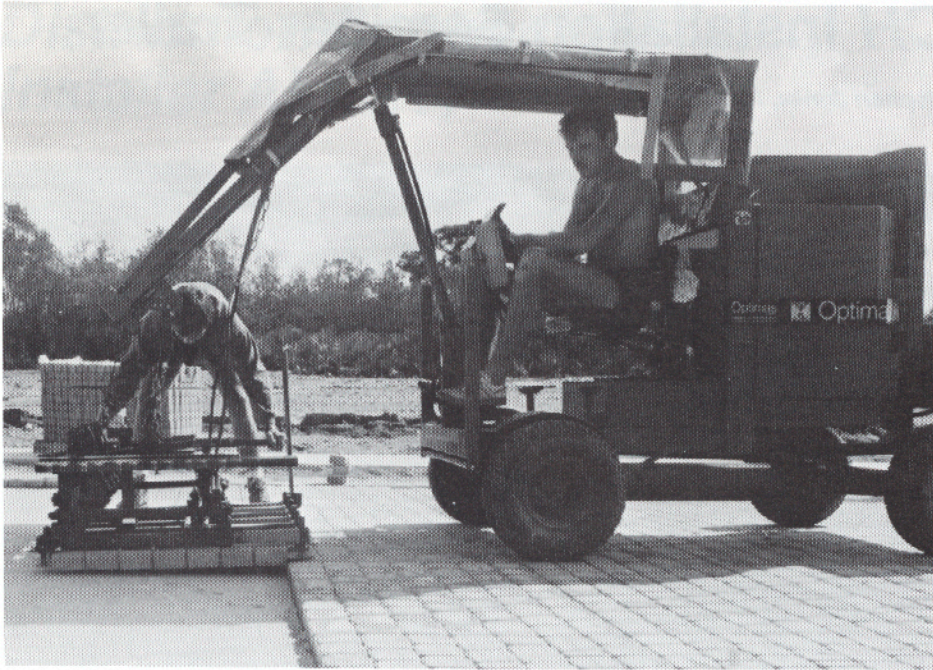
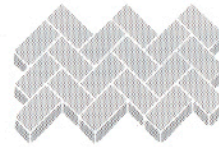
- almost every paver manufacturer in the U.S.A. and Canada produces the rectangular paver, but the vast majority utilize a mold layout similar to a), and not b).



- the same situation exists with other popular paver shapes.
2. The lack of projects that are deemed large enough in size, to warrant mechanical installation:
    - without a doubt, the larger a project is, the more justification exists to use a machine.



- however, companies that have properly informed themselves about mechanical installation, have realized that a machine can be very efficient on areas much smaller than they first thought (see photo #2).
  - as far as the much sought-after larger projects are concerned, a "chicken-or-the-egg" situation exists; do we wait for this market to materialize and then use mechanical installation, or do we use mechanical installation to expedite the process of developing that market.
3. The difficulty of mechanically installing paving stones in a "Color-mix:"
    - few paver manufacturers in North America presently produce a mechanically layable color-mix; basically because contractors wanting to use a machine, have not urged manufacturers enough to do so.
    - there are many paver plants that cannot produce a color-mix suitable for mechanical installa-



tion, without making some changes to their batching/mixing equipment and/or batching process.

- when attempting to mechanically install pavers that do not have good horizontal color-mix (within each layer), the result is a “checker-board” effect; this is clearly not an acceptable appearance to a finished pavement.
- although some major color-mix projects have been successfully installed by machine, the widespread use of machines will only happen on solid-color projects.
- fortunately, most commercial/industrial projects will use solid-color pavers, because aesthetic beauty will finally take a back-seat to the more important values of paving stones — pavement strength and durability!


Having said all that, there is little doubt that mechanical installation will make a major contribution to the accelerated growth of the paver industry in North America. To understand that fact, it will help to first understand how this equipment is used.

Experience has shown, that a crew of six workers optimizes the efficiencies of a machine. Typically, three workers are used to prepare and screed the area to be installed. (It is assumed here that all sub-base work has been completed.) Two more workers install the pavers, with one driving the machine and the other acting as “clamp-man” (see photo #3).

The latter is responsible for tapping each layer with a rubber mallet after the machine has released that layer. It is this tapping that ensures straight, consistent lines in the pavement. With the advent of spacer bars on paving stones, there can be no argument that the process of tapping the pavers is detrimental to the required minimum joint width. The sixth worker is responsible for a variety of duties, that include bringing and preparing bundles of pavers, so that the installation machine can continuously be in operation.


Since the threesome that screeds the area is ideally 1,000-2,000 square feet ahead of the machine, towards the end of the day, these workers are then used to cut, tamp, and sand the installed pavers. In essence then, an area of 5,000-6,000 square feet can be completely finished, depending on the amount of cutting.

Although daily outputs of 10,000 square feet have been realized, taking “real life” factors into consideration, it becomes realistic to expect a daily output of 5,000-6,000 square feet. When comparing that performance with the output of the same six-worker crew laying by hand, usually between 1,000-2,000 square feet, it becomes obvious that significant savings in time and cost are to be had.

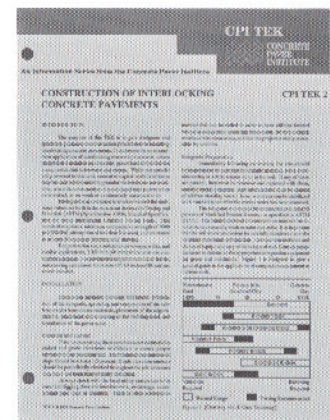
Simple economics indicates that the lower costs to the end user will result in more sales. That fact, in conjunction with other efforts by the CPI in the fields of marketing and technical support, should accelerate the growth of this industry. 

The new members from Canada and U.S. continue to increase. We wish to acknowledge the contractors especially for their involvement. We hope that those producers that have not yet joined will contact either Steve Jones at *PAVE TECH* or David Smith at the CPI headquarters. A lot is happening in our Association and we want to keep you informed. With your involvement and participation we will continue to grow. Please call and find out more about CPI.

I personally would like to thank the NCMA's President, John Heslip and its Board of Directors for their help in allowing CPI to grow and develop on its own course.

David Smith, Director of CPI recently voiced a need for help with the ASTM committee. If CPI ever wishes to see a change in current ASTM specifications, then it will take the participation of independent producers in the ASTM committee. We need better representation by our industry on this committee. Producers, please call David Smith at CPI headquarters 703/435-4900 to see how you can participate in ASTM. 

## CPI Introduces TEK Bulletin #2



CPI recently developed and published their CPI Tek #2, “Construction of Interlocking Concrete Pavements.” It contains the most updated information and specifications for the installation of pavers.

Call CPI, 703/435-4900 or *PAVE TECH* to obtain a copy of this important technical bulletin.

# New *PAVE TECH* Installation Seminar Trailer

By Stephen Jones, President, *PAVE TECH, Inc.*

## Trailer — Part I

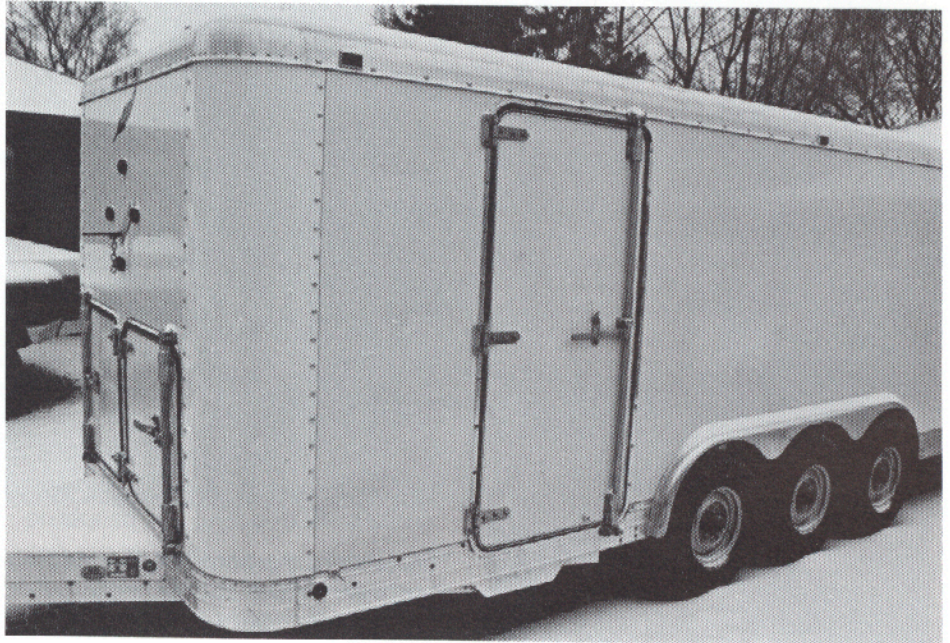
As many of you already know, *PAVE TECH* has always been accused of having or attempting to have The Best installation equipment we could afford. This proved to be a good decision for our installation business as we rarely had breakdowns or equipment failures.

Our new traveling installation trailer is an example of what we feel to be the **ULTIMATE** trailer. It also makes our Seminars much easier. In the next few issues of our newsletter I will explain many of the features we incorporated in the design and construction of our trailer.

## Objectives

- 1) make it accessible from all sides
- 2) provide ramps to make heavy equipment easier to remove and replace
- 3) make sure that every tool has a specific location
- 4) make it quick and easy to secure equipment for traveling
- 5) use materials that are strong and lightweight
- 6) build it only once!

Our first decision was to decide what type of trailer construction best fit our needs. **Featherlite™** Trailers use an FRP (fiberglass reinforced plywood) construction with aluminum frame and roof. They also use the new style



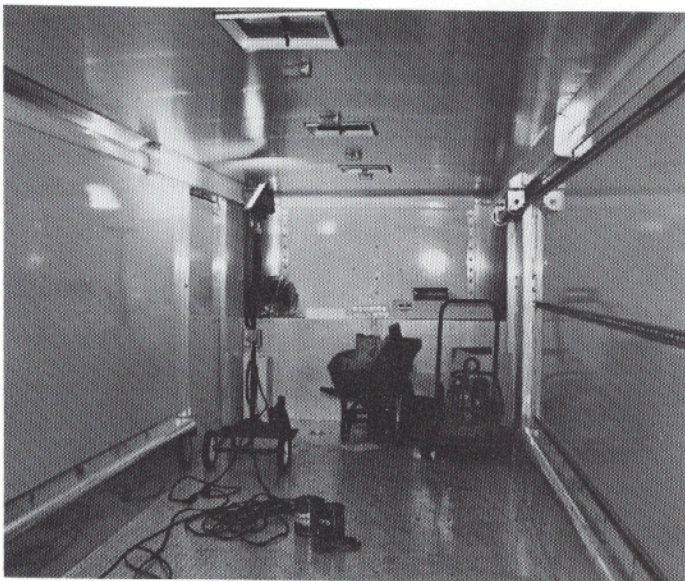
Fresh from the Featherlite Factory

**Torflex™** axles that eliminate springs. I have prepared a list of some of the non-standard items that were special order from the factory. The inside dimension of the trailer is 22' long, 8' wide and 7' high.

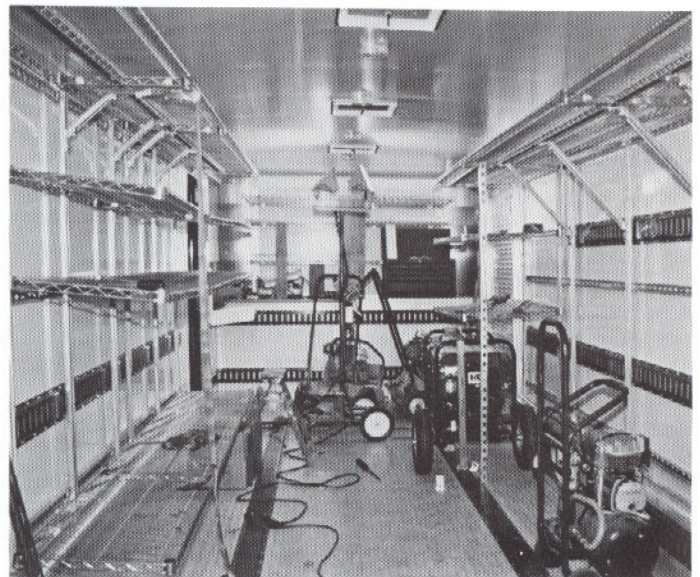
- 1) Reinforced floor — 1-1/2" tongue and groove treated wood floor with 3/16" aluminum diamond plate overlay
- 2) Insulated roof to stop cold weather condensations and hot weather heat

- 3) Two ramp doors, one full width rear ramp and a 4' ramp on right side
- 4) Separate compartments up front for spare gas, diesel and fluids. (This includes vents in the floor)
- 5) 10,000 lb. tongue jack
- 6) Extra set of tail lights
- 7) Extra long tongue — about 5-1/2 feet for tight backing up
- 8) 3 x 8000 pound axles
- 9) 4 roof vents

Next Issue Part II



A clean place to start



Some of wire shelving and tie down systems in place.



# Distributor/Contractor/Installer ALERT!

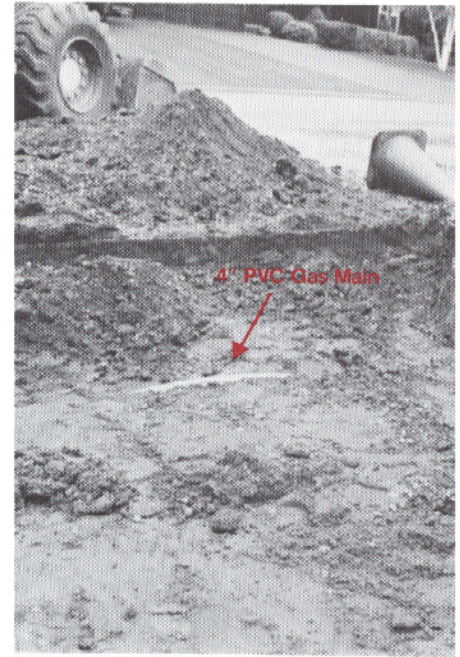
## Technical Tips

### Underground Disasters

One of the lessons a contractor must learn early on is that it is just plain dumb to take chances on underground utilities. As I found out (the hard way). From a legal standpoint, the contractor is always liable. Most areas have or soon will have a convenient — one phone call that will alert prospective utilities and get them out to mark their lines. If this service is not yet available you have the responsibility to call each and every utility concerned. Make sure that when you call that you document each call with time, date and name of person who took call and if available a report number. This will avoid many arguments in the future. Please, please no matter how well intentioned the home owner or general contractor — never, never take their word for location or depth of a utility line. Some of the underground lines to be aware of and locate are:

- 1) Main power (main power trunk line for area)
- 2) House power (feeder line to house)
- 3) Accessory power (garage, lamp post, etc.)

- 4) Gas line (main and house feed)
- 5) Auxiliary gas line (garage, barbecue, etc.)
- 6) Water shut-off (water line itself is usually too deep)
- 7) Burglar alarm system
- 8) Telephone (main and house feed — shallow near house and junction lines)
- 9) Cable TV (main and house feed — both are usually quite shallow)
- 10) Invisible fences for pets (very shallow)
- 11) Sprinkler system central wires (usually very shallow, low voltage)
- 12) Sprinkler heads and lines



4" PVC Gas Main barely missed by PAVE TECH excavators.

**Note:** Example of Minnesota Notice



**GOPHER STATE  
ONE CALL**

**Call Before You Dig —  
It's the Minnesota Law**

454-0002 (Twin Cities Metro Area)  
800/252-1166 (Greater Minnesota)

2025 Center Point Blvd., Rm. 310,  
Mendota Heights, MN 55120

Minnesota's New Underground Utilities  
Protection Center

## Sharp Edges/Clean Cuts

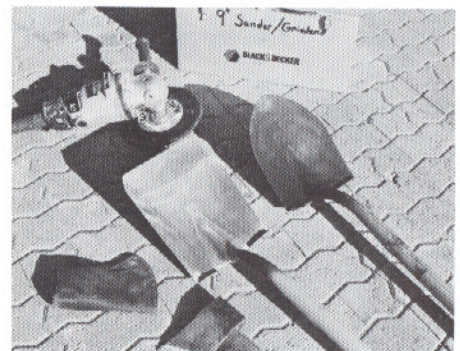
One of the most overlooked maintenance tasks for contractors is maintaining a sharp edge on all cutting surfaces (i.e., loader bucket, shovels,



Always keep your bucket edge sharp.

axes, etc.). A tool with a sharp edge is many times easier to work with. A dull tool can cause excessive wear on other components including manual labor and even pose a safety hazard. If you do serious excavating and grading with a small to medium-sized loader, you should expect to have to sharpen (grind) the edge of the bucket 2-3 times in a season and probably have a new cutting edge welded on every 1-2 years. Grind only the top edge and grind evenly all the way across. Shovels are no fun in the best of times, but a dull shovel can wear out the best of men in a short time. Touch up your shovels with a hand grinder at least once a month. Most

contractors have an axe or a hatchet for trimming roots and the like. If this tool is dull you can expect serious injuries.




Sharp shovels are always a necessity.

# WARNING!!!

It has recently come to the attention of *PAVE TECH, Inc.*, manufacturers and patent holders of *PAVE EDGE Edging*, that some contractors, landscape and building supply houses and even a few paver manufacturers are attempting to pass off Lawn/Landscape Edging as a cheaper alternative

to *PAVE EDGE*. As quoted so aptly once before — “A rose by any other name is still a rose.” Make sure your specification and proposals state clearly *PAVE EDGE* PVC Edging.

*PAVE TECH* developed *PAVE EDGE* to be the simplest and most effective edge restraint available.

A quality product that simply cannot be made more basic. *PAVE TECH'S* years of paver installation expertise designed *PAVE EDGE*: Would you really trust your pavement to garden edging even if it is marketed as a pavement restraint. 



**Bric Edge®** cannot even withstand foot pressure without bending.



**Diamond-Lok®** easily deforms even with hand pressure.



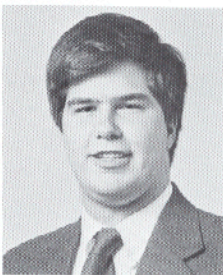
**PAVE EDGE** stands up to direct load of full size car.



**PAVE EDGE INDUSTRIAL** stands up to repeated heavy loading from large truck.



## What's Happening?




Brian Trimble

Brian Trimble, staff engineer at BIA is just about ready to release BIA's new "Paving Design Guide for Flexible Brick Pavements." Formal review for this

guide is being provided by John Knapton, Bill Schneider, LPS Pavements and Steve Jones, *PAVE TECH* and others. I wish to say that Brian has done an excellent job of bringing this project to a successful conclusion.

We are sad to announce the departure of Larry Quinlivan of Glen Gery Brick from our industry to become Executive Director of the National

Stone Association. Larry was instrumental in the formation of the BIA Paver Committee of which he was its first chairman.

Nelson Cooney, President of BIA announced that Jack Latimer of Cushwa Brick would replace Larry Quinlivan. We look forward to a term of inspirational leadership from Jack Latimer. 

# Wandering Pavers? Use **PAVE EDGE®** At the Shows!

A practical new use for short pieces of **PAVE EDGE** helps hold paving stone displays together at trade shows, etc. By applying two-sided foam tape to the bottom of either rigid or flexible edging and pressing it down on a clean floor (window cleaner works!) you've quickly solved the problem of wandering pavers caused by heavy foot traffic during exhibit hours.

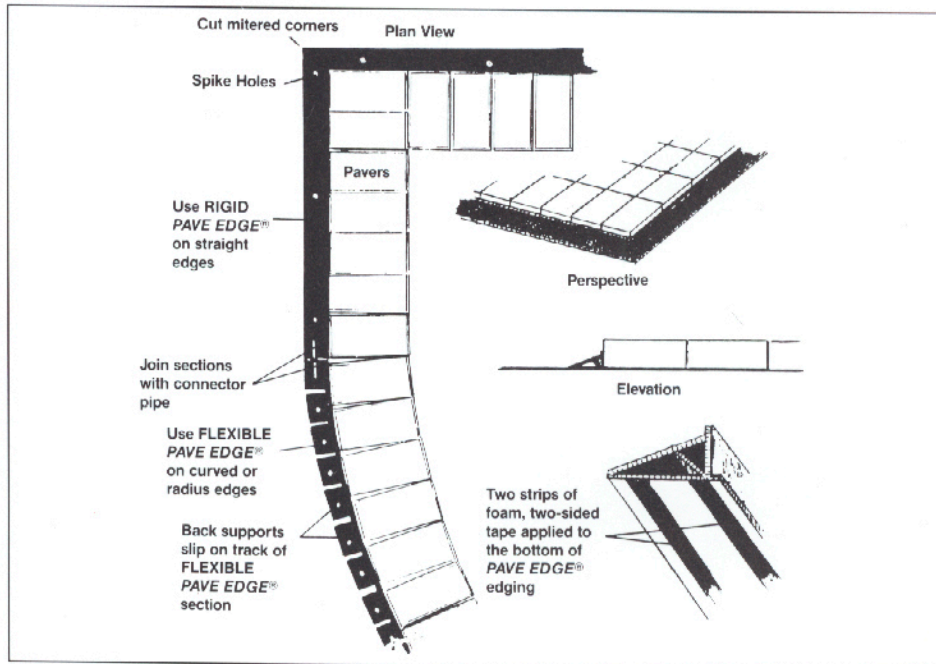
A hacksaw (for mitering corners) paper towel and glass cleaner, scissors

for the tape and a tape measure are all the tools you need. Don't forget to bring enough pieces of connecting PVC pipe, cut 4" to 5" long.

### Instructions for adhering **PAVE EDGE PVC edging to concrete floors for paving stone displays at shows, etc.**

1. Lay out pavers on clean floor.
2. Cut edging to fit display area.
3. Wipe off underside of edging and apply two strips of two-sided foam tape as shown.

4. Clean floor area where edging will be placed with window cleaner and paper towel.
5. Put **PAVE EDGE** tight to pavers, lift edge paver so that lip of edging slides underneath.
6. Press down hard on back side of edging to "set" tape to floor.
7. Cut spikes 1" long and tap into pre-drilled holes to simulate driven spike.



**Note:** You can obtain a high quality two-sided foam tape by writing or calling BrownCor International, 14101 N.W. 4th Street, Sunrise, FL 33325, phone: 1-800-327-2278 or FAX: 305-370-7168. Ask for Model 4-1655, 1" x 50' Double Coated White Foam Tape. You can charge it using MasterCard, Visa or American Express; they will also rush delivery if needed!

## Coming Next Issue...

- ...Installation Trailer, Part II
- ...Women in the Paving Industry
- ...Warning Signs of Hazardous Noise
- ...Proper Edging on Base
- ...Pigmenting Pavers
- ...Pavement Overlays
- ...and much more!

## Appropriate Quotes

The most imaginative people are the most credulous, for to them everything is possible.

—Alexander Chase, 1966



**PAVE TECH** salutes the men and women around the World in Our Armed Forces.



To the Editor:

### **PAVE TECH EDGE** **RE: NEWSLETTER MAILING LIST**

I would like the following person added to your **EDGE** newsletter mailing list.

NOTE: You must give complete information below in order to be added to mailing.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Type of Business \_\_\_\_\_

Address \_\_\_\_\_

City/State \_\_\_\_\_ Zip Code \_\_\_\_\_

Phone No. \_\_\_\_\_ Fax No. \_\_\_\_\_

## It's Easy to Reach **PAVE TECH!**

In U.S. Call:

1-800-PAVETEC  
1-800-728-3832

In Canada Call:

1-800-247-EDGE  
1-800-247-3343

Phone No. 1-612-881-5773  
Fax No. 1-612-881-2169

OR, write us at:

**PAVE TECH, INC**  
P.O. Box 31126  
Bloomington, MN 55431



# Timeless Beauty... Structural Integrity

YOU GET BOTH WITH **PAVE EDGE**® US Patent #4863307  
Canadian Patent #1267554

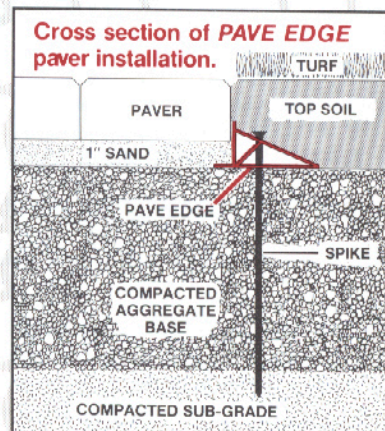
Whatever the design challenge — tight radiuses, gentle or serpentine curves, or abrupt contour changes — **PAVE EDGE** paver edge restraint system allows freedom of architectural expression... unlimited flexibility!

Available in both rigid and flexible, 15' long sections, **PAVE EDGE** edging is made of a strong PVC compound; will not rust, warp nor heave from temperature and moisture changes; remains totally invisible when in place.

Its unique design allows **PAVE EDGE** to restrain movement at the edging face while

spreading vehicular loads over a large sub base area. If the pavement moves during annual freeze/thaw cycles, an exclusive frost heave lip allows the edging to move with it, thus remaining an integral part of the paver installation, continually imparting its structural strength across the pavers and the sub base.

Because it is the only edging that provides permanent structural integrity, it is the most widely used paver edge restraint system in use today.



IN USA CALL 1-800/728-3832 — IN CANADA CALL 1-800/247-3343

**PAVE TECH, INC. ADVANCED PAVING TECHNOLOGY**

P.O. Box 31126, Bloomington, MN 55431  
Call 1-612/881-5773 or FAX: 612/881-2169

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**PAVE EDGE** is simple to install, light in weight, yet has superior strength and durability. It is the only self supporting edge restraint system designed exclusively for pavers, by a paver installation company!