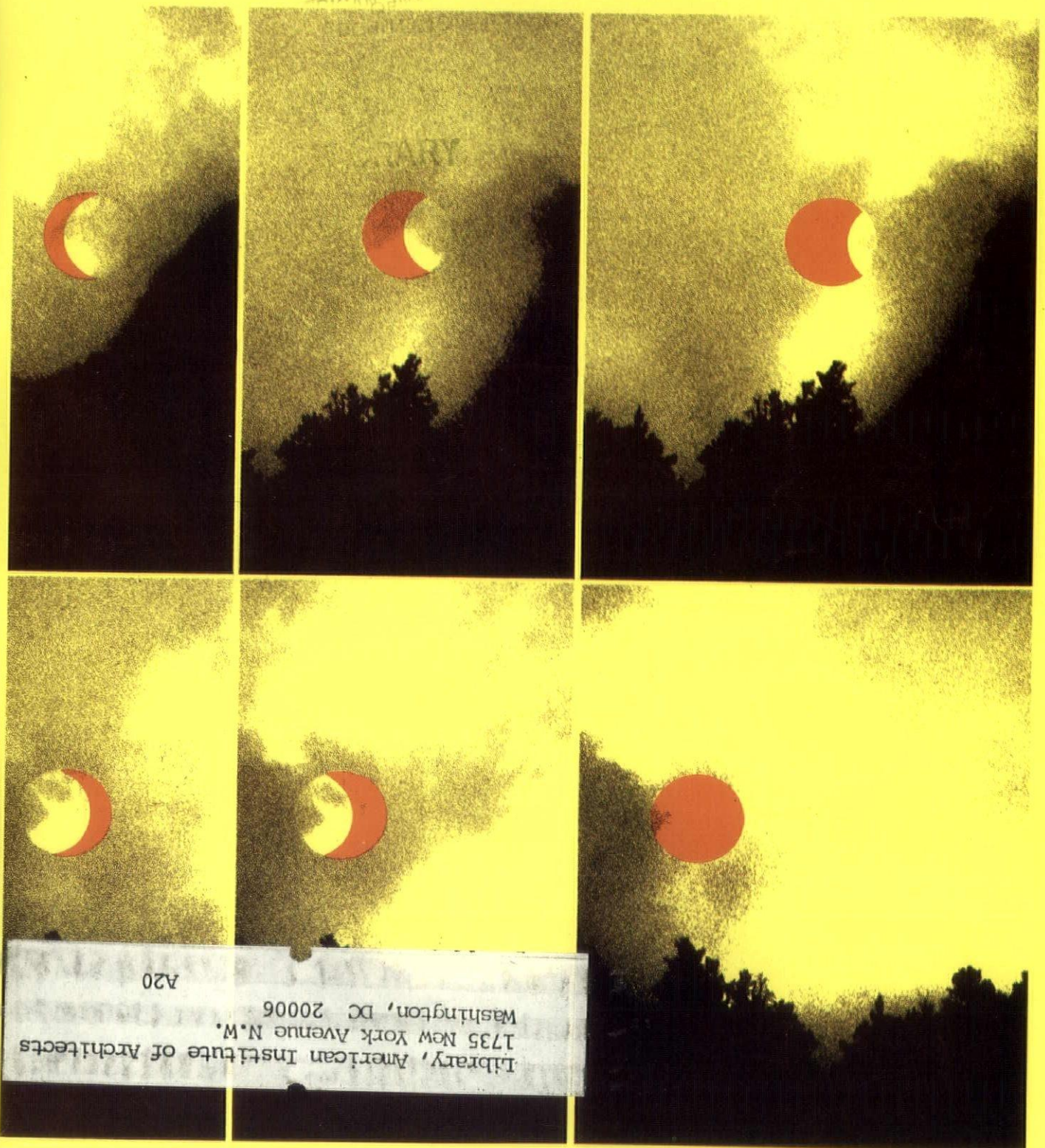


# ARCHITECTURE MINNESOTA

September October 1977



A20

Library, American Institute of Architects  
1735 New York Avenue N.W.  
Washington, DC 20006

WHAT COMES AFTER TOMORROW?

\$1.50



## CALL ON AN EXPERIENCED TEAM

For more than 25 years the people at Fred G. Anderson have worked with architects and interior designers throughout this area. Their knowledge and experience in the wall covering field is unsurpassed. Behind this team is the largest stock of commercial wall coverings in the midwest. Anderson's also maintains a large library of wall coverings and can offer prompt delivery on most items.

Fred G. Anderson's Miracle Mile Studio is your one source for service and quality.

For wall covering call on an experienced team. Fred G. Anderson, Contract Department.



# FGA

Fred G. Anderson, Inc.  
Contract Department  
5217 Excelsior Blvd.  
Miracle Mile  
St. Louis Park, MN 55420  
(612) 920-5620



# ARCHITECTURE MINNESOTA

Official publication of the Minnesota Society American Institute of Architects

**Volume 3 Number 5**  
**September October 1977**

**Editor**

Bernard Jacob AIA

**Art Director**

Kenneth M. Nelson

**Art**

Mark Wilken, Tom Boll, Sherry  
Reutiman

**Publisher**

Allan J. Duerr

**Advertising Sales Manager**

Cort Arner

**Advertising Production Manager**

Elaine Stoffel

**Circulation Manager**

Caralyne Fairchild

**Business Manager**

Ruth Carlson

*Architecture Minnesota* is the official publication of the Minnesota Society American Institute of Architects.

Minnesota Society American Institute of Architects, Executive Director, Daniel J. Sheridan, 314 Clifton Avenue, Minneapolis, Minnesota 55403, (612) 874-8771

Committee for *Architecture Minnesota*: Leonard S. Parker, chairman, Bernard Jacob, Phillip MacMillan James, James Lammers, James Lindberg, Fred Richter, Kenneth Stebbins, Milo Thompson, John Weidt, Eric Wheeler

**Editorial offices:** Bernard Jacob AIA, 4716 IDS Tower, Minneapolis, Minnesota 55402, (612) 332-5515.

*Architecture Minnesota* is published by Bill Dorn Associates, Inc., 7101 York Ave. S., Minneapolis, Minnesota 55435, (612) 835-6855.

**Advertising and Circulation:** *Architecture Minnesota*, 7101 York Ave. S., Minneapolis, Minnesota 55435, (612) 835-6855.

When changing address, please send address label from recent issue and your new address. Allow four weeks for change of address.

**Postmaster:** Send form 3579 to *Architecture Minnesota*, 7101 York Ave. S., Minneapolis, Minnesota 55435. Controlled circulation postage paid at New Richmond, Wis. 54017.  
**Subscription rate:** \$9 for one year.

---

## CONTENTS

---

What Comes After Tomorrow—Editorial	5
Once Upon A Pillow	7
Architecture At A Glance	11
What Comes After Tomorrow—Convention Program	19
Architecture Responds	23
Underground	24
Solar	32
New Tools For Architecture	53
Books	59



# "Sure, cost is a big factor. But there are more reasons than that for using ready mixed concrete in high rise buildings."



Charles McGough,  
President,  
McGough Construction,  
St. Paul,  
with Vern Jellum,  
job superintendent

"At McGough Construction, because of our experience, we're probably more interested in jobs involving monolithic concrete and masonry, or a combination of the two.

Poured concrete has a lot of advantages. Cost and time are always big factors nowadays. But, personally, I think one of the primary assets of the concrete building is its fire-resistance.

If I were occupying a building, or even constructing one for someone else, I would feel much better knowing it's basically a fireproof structure.

Another one of the unique features of concrete is its appearance. Many people look at concrete and expect it to look like plaster. But Marcel Breuer, one of the outstanding architects in the world, has the idea that concrete should look like concrete. He wants the form marks to show, the knot holes, and everything. That's the coming thing.

Once the architect decides on concrete, the next step is choosing the kind that will be most effective. When we built Booth Manor, a residence for the Salvation Army, a post-tensioned system was used in the floor slabs. This eliminated drop beams, which are costly to form, and enabled us to use a highly economical flying form system.

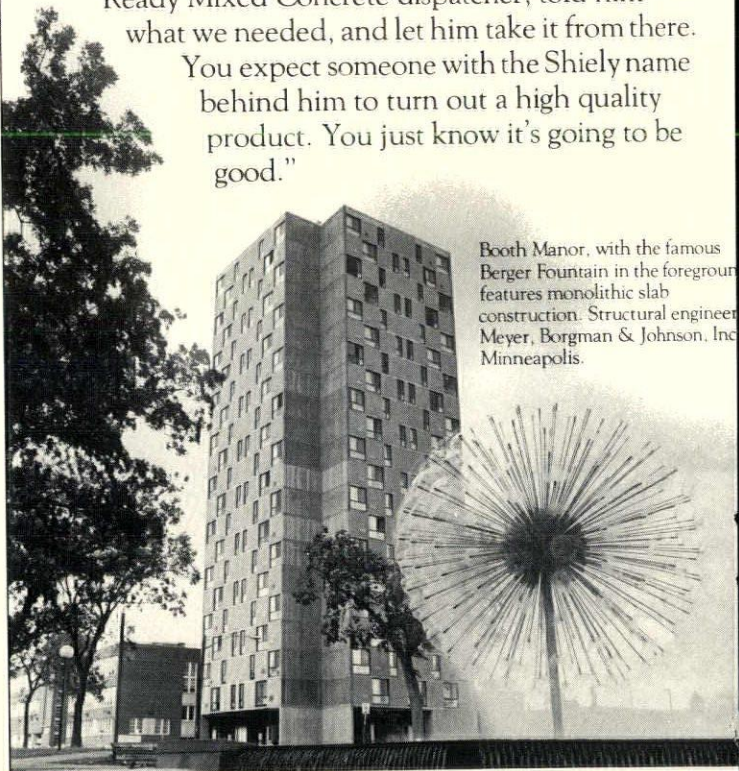
Only 5,500 cubic yards of concrete were used for the 21-story structure. The early strength of our concrete mix, combined with post-tensioning, allowed thinner slabs, without the dead weight of thicker, non-reinforced slabs. Average time from pouring to post-tensioning was about three days. And

since we lost very little time on account of rain, we were able to pour 21 supported slabs in 84 working days. That's really something.

We used three different concrete mixes on the job. These were dictated by weather conditions, weekend curing time, and whether or not we needed an especially fast cure to permit two pours from Monday through Friday.

Shiely engineers were able to design the mixes to give the results we needed. We just called the Ready Mixed Concrete dispatcher, told him what we needed, and let him take it from there.

You expect someone with the Shiely name behind him to turn out a high quality product. You just know it's going to be good."



Booth Manor, with the famous Berger Fountain in the foreground, features monolithic slab construction. Structural engineer Meyer, Borgman & Johnson, Inc. Minneapolis.



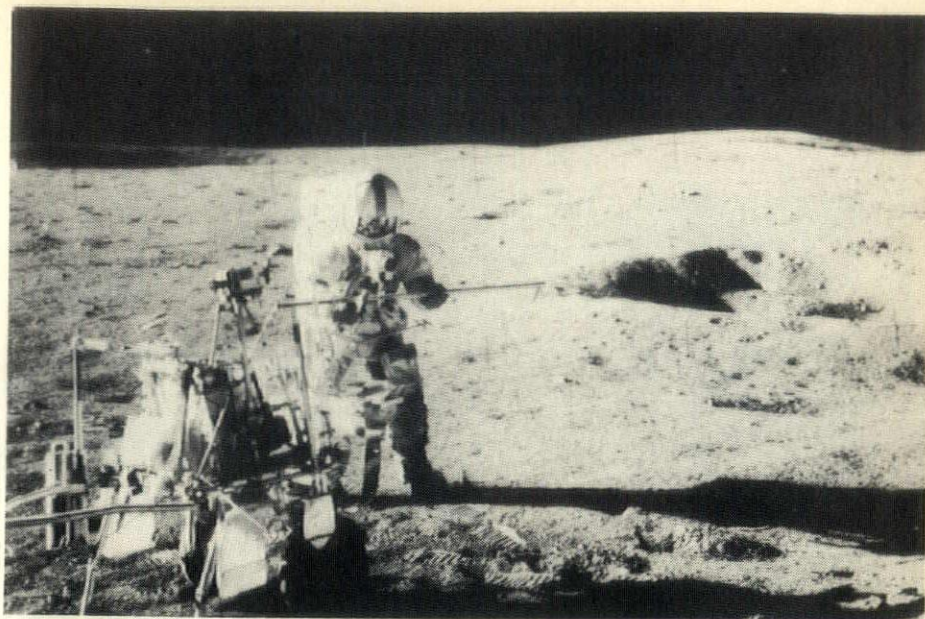
## J.L. Shiely Co.

Quality Commercial Aggregates/Ready Mixed Concrete

1101 Snelling Avenue North, St. Paul, MN 55108  
Phone (612) 646-8601



# WHAT COMES AFTER TOMORROW? \*



T.S. Eliot, the great poet and apostle of our century's intellectual malaise, almost two generations ago wrote "Time present and Time past/Are both perhaps present in time future,/And time future contained in time past...". The idea expressed here is not original with Eliot of course. It is as old as man's sense of history or time. Eliot rephrased it for us in captivating verse and in a language of "the present."

What comes after tomorrow but yesterday and today? Yesterday we had a war that was to be the last war and then we had another war. Yesterday a leader promised the moon and then our men touched the moon and tonight and tomorrow lovers will continue to kiss under the moon's light. Yesterday we began to realize, however faintly, that the world's resources were not infinite, that many people were still more equal than others and that waste was very costly.

Today we are beginning, however faintly, to improve our tomorrow. We are still manufacturing arms and selling arms to people who make wars. And we try to prevent wars. We are beginning to ration our natural resources, to limit our waste and above all, we are beginning to care a little more than before. We are perhaps a little more thoughtful.

Tomorrow we will tolerate a lot less wasted energy. We will harness and bend the sun's rays to our needs. We will use the earth's heat to warm us better. We will also re-use, revive and recycle obsolete materials. After tomorrow, and even before then, we will all begin to appreciate the nature of materials a great deal more. We will

understand that old conservative credo that quality pays. Not that quality is necessarily expensive, but that it pays to carefully consider the use of materials, the methods of construction or fabrication; because the initial effort or cost will be repaid many times by longer lasting performance. In the construction of the physical environment, the commitment to quality work is even more dramatically rewarded. Good materials will save on maintenance and upkeep, good insulation will save on heating and cooling, good design will save on remodeling expenses.

Tomorrow we will be conserving and recycling many of our existing buildings, we will be very careful about making capital expenditures thoughtfully and we will be more measured in our impatience and enthusiasm.

After tomorrow the architect will probably be even more creative than today for he will also be more conservative and he will want to do a great deal more with much less. And this is really what the best architects have always done best.

What we design today will be tomorrow and also after tomorrow. And the decisions we make today as developers, builders, bankers and architects are irretrievable.

In "Burnt Norton" (from the Four Quartets), T.S. Eliot further wrote "Time past and time future/What might have been and what has been/Point to one end, which is always present... " □

—Bernard Jacob

\* This is the theme of this year's Annual Convention of the Minnesota Society American Institute of Architects. See page 19.



**Sims has dozens of cotton shirts to choose from,  
but there's just one wrinkle.**



*Sims Ltd.*

MINNEAPOLIS, LASALLE COURT BUILDING, 43 SO. 8TH ST., PHONE 333-5275 AND WAYZATA



# ONCE UPON A PILLOW

FROM THE EXECUTIVE DIRECTOR MINNESOTA SOCIETY AMERICAN INSTITUTE OF ARCHITECTS

To address "What Comes After Tomorrow" is to stretch our thinking and to dream. I confess that I have — in addition to the passions of all men — passions for the center city, and frequently also a desire to escape to nature. I have a dream that our cities will not only be more livable and humane, but embody good urban design and architecture.

As a boy, not only did I collect baseball cards and black eyes, but I accumulated city magazines ranging from *The Washingtonian* to *The San Franciscan*, *Atlanta*, and *The Twin Citizen*. Today I collect not magazines of the city, but visions of what it should and could be.

I dream: of a tomorrow in which not only the policy makers but the citizens have special values and of cities which embody those values.

I dream: that the Return to the City will become authentic (despite what current population figures show) and that younger families will be able to return to affordable city housing. To do so is to require that housing rehabilitation efforts of the mid-1970's intensify. Yes, I dream that the city residents will also regain their faith and optimism and restore their children to the public schools. In many cases, the city schools are of higher quality than suburban schools, but it is people-perception that counts and upon which decisions are made.

I dream: that public policy makers and community leaders continue to have dreams and visions and that they strive for them. Too often public policy decision making comes down to the lowest common denominator of mediocrity or political acceptability. To the visionaries and those willing to step out and take risks society owes much. To have visions is not necessarily to be reckless. In fact to stand still is often to be reckless, because one can be run over by the passage of time.

I dream: that the nation's architectural opthamologists will come up with a cure for visual illiteracy. A large percentage of man-kind grazes through life not willing to lift its eyes to observe the beauty of our natural environment and also the richness and beauty of the built environment. To taste is to yearn. Unless we yearn for something better or strive to create beauty, our cities will soon suffer from architectural sameness. We need also to integrate into our contemporary school curriculum an appreciation and an understanding of architecture and de-

sign. We need also not to ask always what is the cheapest and the fastest ways to do things, but what is the way in which lasting values are best achieved.

I dream: that someday **Psychic Money** becomes as important a medium of exchange as currency cash. Psychic money to me is the fulfillment and gratification of knowing that you are behind something that is of value and is respected and enjoyed by those who follow you.

There are many managers in American business and industry who could follow the example of **Richard Gray**, a Twin City businessman who led the crusade to establish the **Fresh Water Biological Institute**, and continues to urge businessmen to leave behind them a better commercial and industrial/architectural environment. If each financier and major decision maker were to make a commitment to excellence, our world would be much better. This is exemplified when we note that of the cost of a building over 30 years, only 2 per cent is the cost of its construction design and its financing, while 7 per cent is the cost of its operation and maintenance. 91 per cent is the cost of the employees' salaries who will work in that building. The public and the users will long see the value of the fraction of that 2 per cent that is spent on good architectural design.

I dream: that architects and urban designers are listened to, called upon for their professional expertise and judgement whenever there is a planning or design decision of any significant consequence. No other profession makes greater demands in terms of the breadth of knowledge and length of the training that are required, and the legal responsibility that is assumed. In my appraisal there is no profession with as much talent, as much capability to contribute to society as a sensitive architectural profession. That profession must raise its voice to continue to press for energy conscious design, to urge sensitive visionary plans for our cities and to encourage clients to do the best they can. As Winston Churchill said, we shape our buildings, thereafter they shape us.

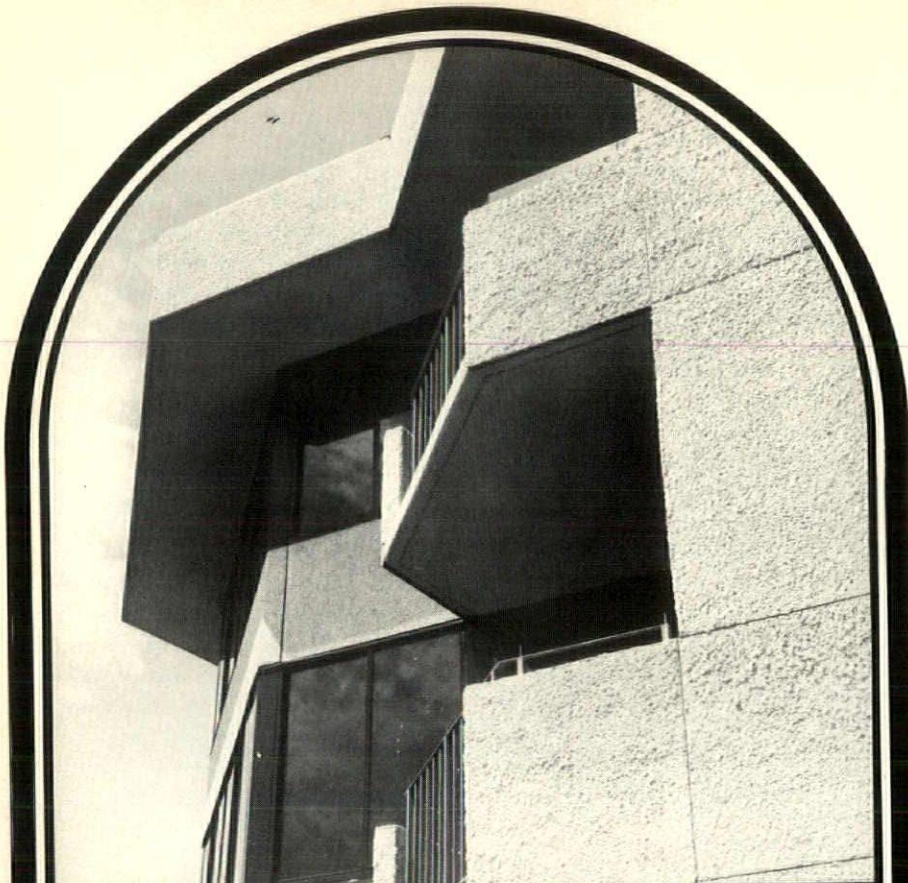
I dream: that our priorities are re-focused and that we shift our commitment to revitalizing even more rapidly our neighborhoods, communities, towns and cities. We need to refocus our dependence on the American automobile. We need to end the era of the



throw-away society. We now have a shortage of oil and critical fuels, and in the next few years there will be critical shortages of key minerals and of that vital commodity: water. We need to restructure our laws to ensure that there are not penalties for creativity and initiative, and that instead there are incentives. We need to do away with the mentality of Thou shall not, but instead issue the challenge Thou shall aspire to.

**I dream also of nature** and of the importance of each man venturing out into it frequently and treating it with sensitivity. For to be an urbanophile and yet to be a complete person one must have a respect and enjoyment for nature and serenity. □

*Daniel J. Sheridan*



*Point of France, Edina, first high rise luxury condominium in this area. Korsunsky-Krank and Joseph Phillips, architects, Kraus-Anderson of Minneapolis, general contractor.*

**FASTER OCCUPANCY** — Producing MINNE-WALL in an off site shop is efficient and fast on jobs like this with many same-size panels. Panels are ready when the job is. Erection goes fast, too. No scaffolding needed. No temporary heat or poly enclosures needed for winter. Saves costs, too.

**LIGHT WEIGHT** — MINNE-WALL can save 30 lbs. per sq. ft. compared with pre-cast systems. Means lighter footings, less cost. Has strength of much thicker walls.

**LOWER COST** — MINNE-WALL cost is 40-50% that of pre-cast systems. It's non proprietary, assuring competitive price.

**BETTER INSULATION** — MINNE-WALL protects from heat, cold and noise, with insulated stud space plus 1" Styrofoam thermal barrier and 1" solid plaster.

**For interesting facts on the Point of France job, and design data on MINNE-WALL, just call Clint Fladland, the answer man, at 645-0208.**







Bob Katchmark at remodeled Le Carrousel Restaurant, Radisson St. Paul. Designer: Herman Crawford, Contract Services Associates. Wallcovering: "Executive Wood."

## "We'll outservice any wallcovering supplier in the 5-state area."

— Bob Katchmark, Hirshfield's Contract Sales

That's our commitment to you, and to every architect, contractor and designer in the Upper Midwest.

From Hirshfield's Contract Sales.

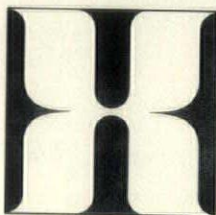
Bring us a commercial wallcovering job and we'll give you service that won't quit.

Service that won't quit until the job is done exactly the way you want.

By that, we mean:

- Prompt response to your phone calls.
- On-site consulting and measuring for rollage.

- Preparation of layout boards for client presentation.
- Complete sampling program for all commercial lines.
- Professional paint consulting.
- A beautiful Contract Sales



**HIRSHFIELD'S**  
CONTRACT SALES

Showroom for your use. Plus 5 other showrooms in the metro area.

We're out to win your next wallcovering contract by outservicing the competition. Give us a call at (612) 370-2626 and we'll show you what we mean.

Hirshfield's . . . the Twin Cities' largest and most complete decorating products supplier . . . since 1894.

**Contract Sales Showroom: 824 Hennepin Avenue, Minneapolis.**  
**Hours: Mon.-Fri. 8:00 A.M.-5:00 P.M.**  
**Telephone: (612) 370-2626.**

Distributors of: Stauffer Commercial Vinyls, Spectra Royale Vinyls and Architectural Reference File by S. R. Wood, Environmental Graphics, Geometrics for Designers by Tapeten World, Bulltex Commercial Vinyls, Fred Cole Foils, Manuscreens, Executive Wood by S. R. Wood, Vinyl Weaves by J. Josephson, Textured Vinyls by Moss, Imperial Wallcoverings, Fuller-O'Brien Paints, Olympic Wood Finishes. Representatives for: Jack Denst Designs, Winfield Designs, Albert Van Luit.



# Introducing the tile showroom with a total approach

Room Settings / Product Selection / Professional Services



As photographed at our new minnesota tile sketchbook showroom in the Leisure Lane mall in Edina

Research among architects and designers identified the need for a visual center where a wide range of better tile could be "seen and touched" in a variety of room settings and display vignettes. A place where current professional preferences in product, pattern and color could be carefully examined in one aesthetically pleasing location. The result is minnesota tile sketchbook.

We invite you to visit. Professionals who have been here say our selection has been very

beneficial in their design planning...and our displays a most appropriate setting to bring clients. Furthermore, our service has proven to be time saving when meeting their specification and delivery requirements.

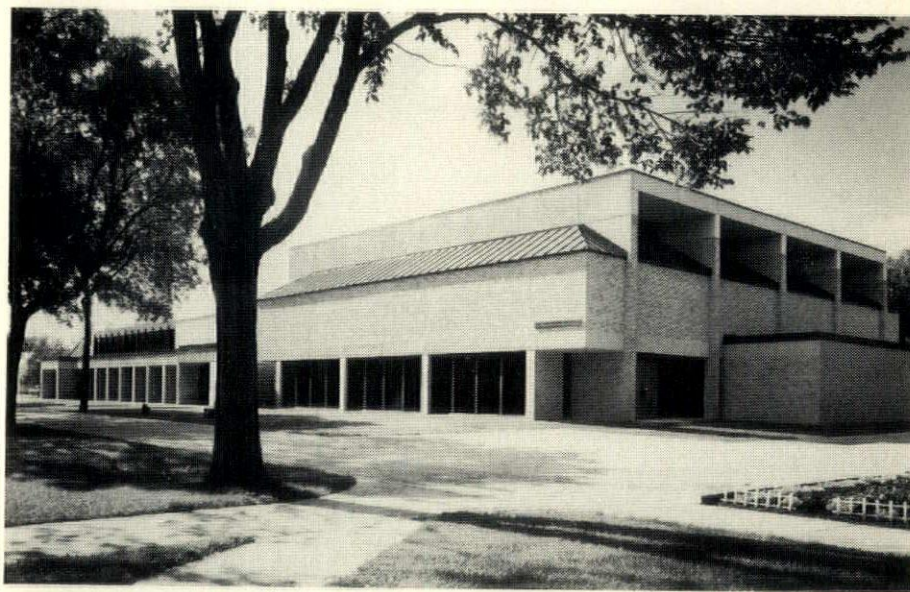
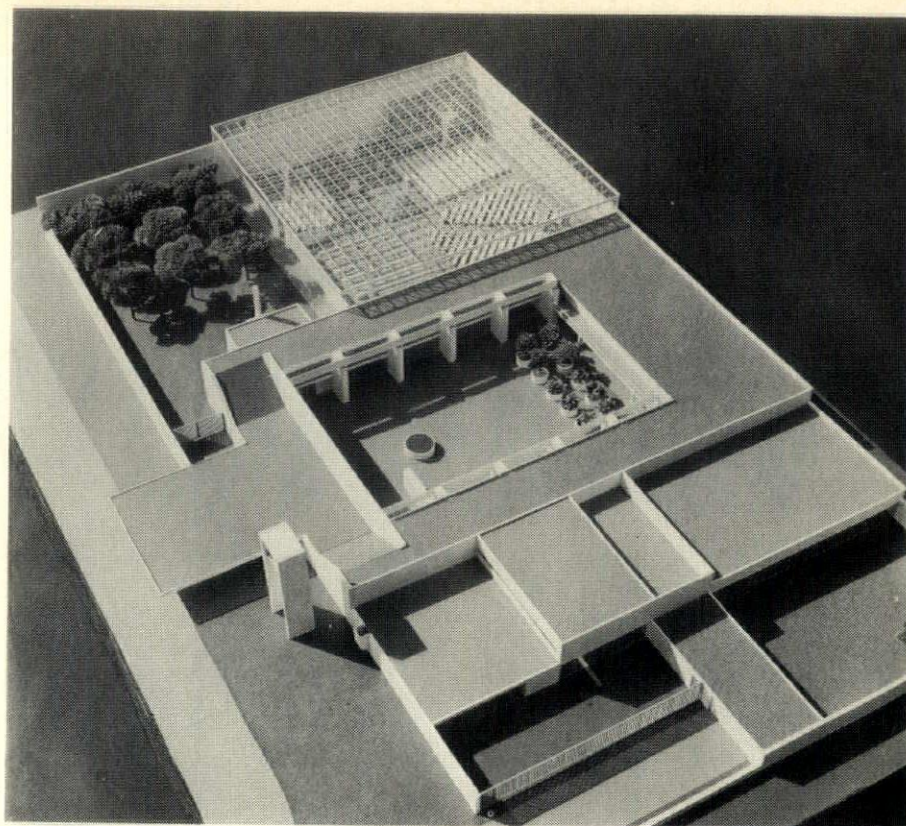
For further information CALL (612) 925-2070  
or write minnesota tile sketchbook at  
7101 France Avenue South, Edina, MN 55435

*We look forward to seeing you at our  
booth at the MSA Convention.*

 **minnesota  
tile sketchbook**  
WE COLOR YOUR THINKING



# ARCHITECTURE AT A GLANCE



Model of the Good Shepherd Community Center, Mt. Vernon, Virginia. With roof removed from the model, the truss structure over major worship space and the interior commons are exposed. The parish was recent recipient of a merit award from the National Interfaith Conference on Religion and Architecture. Architects: Hammel, Green and Abrahamson of St. Paul, Minnesota.

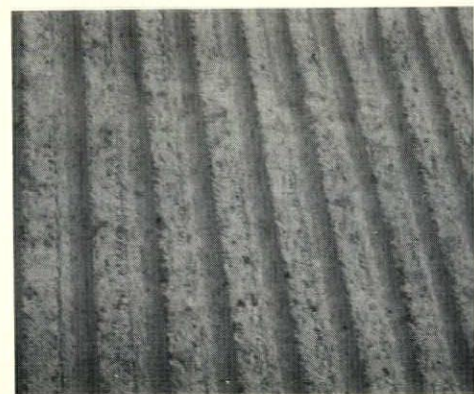
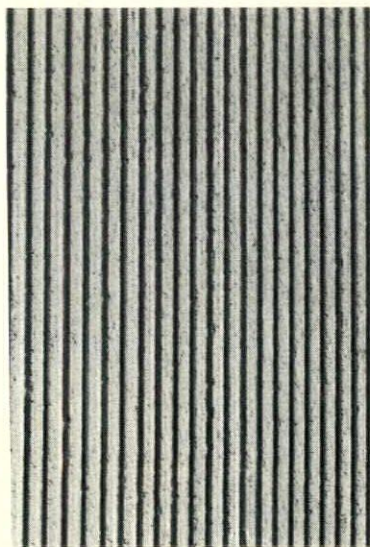
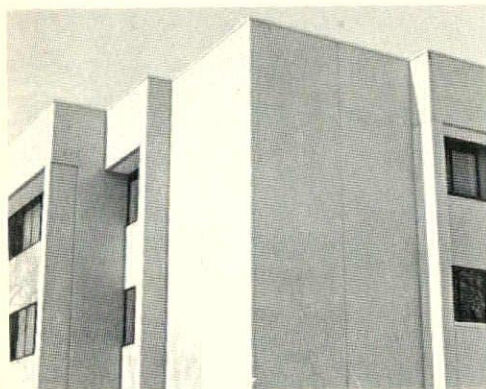
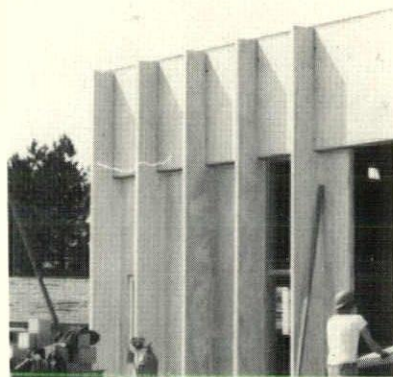
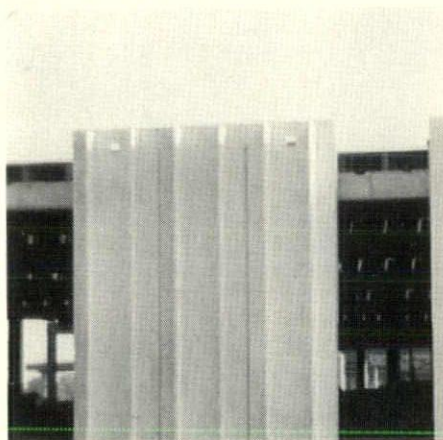
Exterior of the Knutson Center, Concordia College, Moorhead, Minnesota, recent recipient of an honor award from the National Interfaith Conference on Religion and Architecture. Architects for the project: Sovik, Mathre, Sathrum, Quanbeck of Northfield. Associates on the project were Foss, Engelstad, Foss Architects & Engineers, Moorhead.

Two Minnesota architectural firms were given awards for their religious buildings at the National Interfaith Conference on Religion and Architecture, which met in Milwaukee on July 6. An Honor Award was received by the Northfield firm of Sovik, Mathre, Sathrum, Quanbeck for the design of the Knutson Center at Concordia College in Moorhead. Associates on the project which provides a space for a variety of activities including daily chapel and meetings were Foss, Engelstad, Foss Architects and Engineers, Moorhead. St. Paul's Hammel

Green and Abrahamson received a Merit Award for the remodeling and major expansion of the Good Shepherd Community Center, a Roman Catholic parish in Mt. Vernon, Virginia. Frank Kacmarcik of Saint Paul was liturgical consultant and David R. Gallagher, AIA, of Alexandria, Virginia was associate architect. The National Conference on Religion and Architecture is an annual event that attracts interested architects, religious administrators and clergy nationwide and is sponsored jointly by several organizations including the Guild for



# WELLS CONCRETE HAS IT, PRESTRESSED CONCRETE.



BOX 37, WELLS, MINN. 56097  
PHONE (507) 553-3138



Religious Architecture, an affiliate of the AIA.

Plans to construct a \$1.8 million performing arts center on the site of the **Grand Rapids** senior high school are now underway in that northern Minnesota community. **Hammel Green and Abrahamson, Saint Paul**, are the architects for the two-level addition to the existing structure which will house a theater with a seating capacity of 700. Funding in large part will come from the Charles K. Blandin Foundation with matching amounts from Minnesota District 318. Completion is scheduled for fall of 1978.

Construction is now underway on the **First National Bank and Trust Company in Bismarck, North Dakota**. The \$2.4 million project, designed by the Bismarck firm of **Anderson, Wade, Barsness & Walter**, will have more than 1500 cubic yards of poured-in-place architectural concrete along with 2800 cubic yards of structural concrete. When the project is completed late next year, the monolithic architectural concrete exterior which contains selected aggregates and white cement topped by a light sandblast finish, will look considerably different in color and texture than many buildings in that part of the country. A two-level parking ramp will adjoin the three-story bank.

The Edina firm of **Bather, Ringrose and Wolsfeld** have developed plans for land use, transportation and policy implementation for the **Glen Lake** commercial area west of Minneapolis. It seems Hennepin County has announced plans to widen busy Excelsior Boulevard and several of the Glen Lake businesses are built so close to the street that their only parking is on county right-of-way. The solution has not yet been firmly determined but concerned area residents and merchants have been meeting with officials to formulate a plan which accurately reflects the needs of the community.

**Damberg & Peck Architects**, Virginia office, has designed a new **Iron Range Facility for Ziegler Inc.** (Caterpillar of Minnesota) at **Buhl**. Construction is underway with completion scheduled for January, 1978. The total structure is steel with exterior precast concrete insulated panels. The 70,000 sq. ft. structure will house shop, warehouse and office.

Congratulations to **Lorenzo (Pete) Williams, AIA**, who was recently elected **President-Elect of the National**

**Council of Architectural Registration Boards**. Williams, who previously had served as Chairman of the Board of Registration of Architects, Land Surveyors and Landscape Architects in Minnesota, has been active for some time in the NCARB. He is president of the Minneapolis firm of **Williams/O'Brien Associates, Inc.**

Projects in Brief . . . **Johnson, Sheldon & Sorensen Architects, Inc.**, Minneapolis, are the designers of a two-level, sixteen-plex rental housing complex for elderly citizens in **Bloomington**. . . A new resource Center for the North Dakota School for the Deaf in **Devils Lake**, has been designed by the Fargo firm of **Seifert & Stasko Associates**. . . Devils Lake residents will also enjoy a new sports arena to be built in the near future and designed by the firm of **Kielhack & Hanson Architects** also of Devils Lake. . . **The Hodne/Stageberg Partners, Inc.**, Minneapolis are serving as architects for the \$1 million plus renovation of the College of Home Economics on the University of Minnesota's St. Paul campus. . . **Patch, Erickson, Madson, Inc.**, Minneapolis have designed a new **Webber Neighborhood Park and Recreation Center** for the future enjoyment of north Minneapolis residents. . . a new **Dayton's Home Store** to be built near that company's Southdale shopping facility, Edina, has been designed by **Bentz/Thompson Architects, Inc.**, Minneapolis. . . **Williams/O'Brien Associates, Inc.**, Minneapolis, have designed an addition to the **1st Plymouth National Bank**, Minneapolis. . . A \$3 million plus student center expansion for the University of Minnesota's Minneapolis campus has been designed by **Myers & Bennet Architects/BRW**, Edina. . . **Thorsen & Thorshov**, Minneapolis, have completed plans for a new city hall for the village of **Plymouth**, Minnesota. . . **Bissel, Belair & Green**, Minneapolis are the architects for a \$23 million, 1200 capacity parking ramp and building for the Minnesota Area Vocational Technical Institute near **Hennepin and Spruce** in Minneapolis. . . **Toltz, King, Duvall, Anderson & Associates**, Minneapolis have designed a new roofing scheme for the livestock pavilion at the Minnesota State Fair Grounds in St. Paul. . .

Architects in Action . . . **Richard K. Lenci, AIA**, president of **Richard Lenci Associates, Inc.** and this year's president of the Northeastern Minnesota Chapter of the American Institute of Architects conducted a meeting in Hib-

## Carl W. Fogelberg Co.

### HEADQUARTERS FOR BUILDING PANELS

- ALLIANCE WALL — Porcelain Enamel, Laminated Veneer, Sandwich and Chalk-board Panels
- ERDL PERFORATING CO. — Three Dimensional Panels
- FERRO ENAMELING — Custom Embossed Panels, Porcelain Enamel, Aluminum, Weathering Steel, Copper
- O.O. McKINLEY CO., INC. — Specialty Panels and Enclosed Walkways
- WALCON CORP. — Metal Building Panels and Louvers

CALL 646-7306  
276 N. Snelling Av., St. Paul, Mn.  
55104



## MASONRY SURFACE RESTORATION

Safe  
Chemical Cleaning  
& Paint Removal



SURFACE MAINTENANCE SYSTEMS

SERMAC of the Twin Cities Inc.  
1920 Oakcrest  
St. Paul, Minnesota 55113  
612/631-2708



Right from the start, masonry saves you money. Engineered load-bearing masonry construction, for example, can save up to 30% in initial costs over competitive structural frame systems. The masonry serves as both structure and enclosure while providing a fire, sound and thermal barrier.

New masonry technology, such as loadbearing masonry and masonry panels, can substantially reduce con-

struction time, lowering costly construction financing and permitting earlier occupancy.

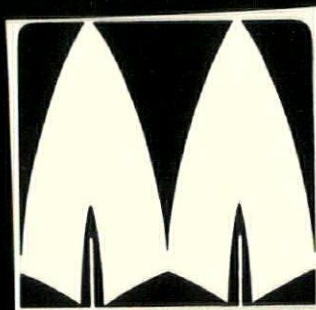
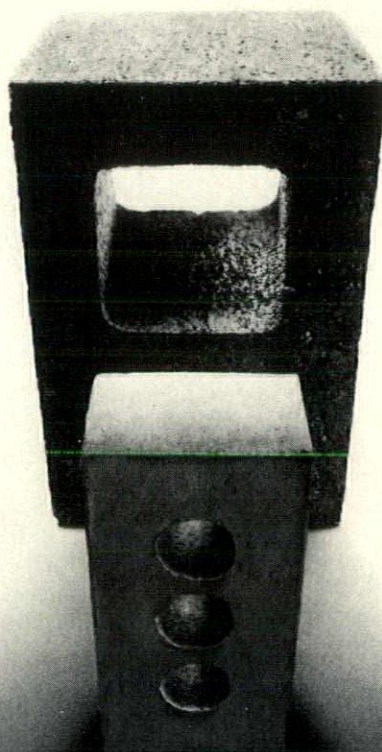
When completed, a masonry building will provide significant savings in energy costs. Because of their mass, masonry walls can reduce energy use all year long, lowering operating costs and allowing the use of smaller and less expensive heating and cooling equipment.

Finally, masonry walls save money throughout the life of the building because they require little maintenance for care and cleaning. You save money from beginning to end.

There are studies available which show just how much money masonry can save you. For free copies, write to us at the address below.

When you build with masonry, you build for keeps.

## When masonry goes up, costs go down.



# minnesota masonry institute

7851 Metro Parkway, Suite 103 Minneapolis, Mn 55420 (612) 854-0196



bing recently with members of the **Governor's Committee on Crime Prevention** concerning crime preventative design in building construction. The thrust of the effort is the reworking of the physical environment to reduce opportunities for crime to occur and eliminating, through design, the temptations for a person to commit an offense.

An architectural survey is now underway in the Minnesota communities of **Maple Grove, Lucan, Milroy, Sanborn and Wabasso** which will provide an accurate record of the most historically significant commercial buildings in those communities. Masterminding the effort are **Dennis Gimmestad** and **Jim Nestingen** who are working under a Rural Cities Administration project to examine the building styles of the five towns. Nestingen is a student intern from the University of Minnesota School of Architecture who has been working on the project for the past year. Gimmestad began his internship in June and has been studying at Metropolitan State University, St. Paul. The project basically involves establishing a profile of construction dates for all buildings in the five cities followed by the compiling of additional information on a limited number of selected buildings. The data will then be recorded on the survey form of the Minnesota Historical Society and submitted to them for possible inclusion in the Minnesota Inventory of Historic Places.

A photographic exhibition examining four works by controversial British architect **James Stirling** will be presented through September 18 at the **Walker Art Center, Minneapolis**. The exhibit consists of color prints and rear screen projections and was organized by Mildred Friedman, editor of the Walker's Design Quarterly publication and will travel to New Haven, Chicago, Seattle, Baltimore and Philadelphia in 1978. Stirling, who was born in Scotland in 1926, is noted for his pragmatic approach to building design.

An exhibition of over 40 contemporary prints by 17 artists from throughout the United States will be shown at the **Minneapolis College of Art and Design** September 1 through October 6. The exhibition, "Printmaking as an Open Medium" is an invitation for artists who are alumni of the College. Included in the exhibition are works by Brother Ron Berger, Richard Brewer, James Gregory Decker, Bill Ellingson, Harry Gottlieb, Carl Grupp, Leon

Hushcha, Paul Jasmin, Lester Johnson, Warren Knight, Clifton W. Karhu, Steve Mignone, Janet Morgan, Gordon L. Mortensen, Gary Olsen, Keith Rasmussen and Jerry Rudquist.

**Minneapolis College of Art and Design EVENING AND SATURDAY CLASSES . . .** It's time to register for adult classes at the Minneapolis College of Art and Design offered evenings and Saturdays from September 24 through December 22. **The registration deadline is September 16.** Classes this year will include a graphic design workshop, a course on preparing art for reproduction, illustration, TV production, calligraphy, photography, perspective drawing and rendering, life drawing, old master's drawing techniques, fundamental drawing, beginning painting, portrait drawing and painting, watercolor painting, printmaking, welded metal sculpture, a course in woodworking and a six week lecture series on "Egypt of the Pharaohs." For additional information and a free brochure on Evening and Saturday classes at the Minneapolis College of Art and Design, call the Registrar at 870-3316.

**Sunday Strolling Notes:** Two long blocks of turn-of-the-century family dwellings on **Minneapolis' Milwaukee Avenue** are in the final stages of renovation. Start walking south from Franklin Avenue — Milwaukee Avenue is nestled between 22nd and 23rd Avenues — and you will see about 45 two-story brick and frame dwellings proudly beaming with fresh paint, shiny, new gutters and an overall look of accomplishment. New walks, streetlights and benches line the street which is now closed to vehicular traffic . . . **St. Paul's Irvine Park** is another fine example of in-progress rehabilitation by hard working community residents and a visitor may experience the pulse of this city's pre-Summit Avenue era of the Ramseys and the Forepaughs, whose homes are now respectively a museum and a restaurant . . . **Minneapolis' Main Street**, just down river and across East Hennepin Avenue from Nicollet Island, is busily enjoying a facelift as a five-year, \$20 million project to restore the hub of Old St. Anthony moves forward. Construction is now underway on the Salisbury complex at Main and 3rd St. SE and first phase plans call for several restaurants and small shops. Architects for the project are **Benjamin Thompson & Associates** of Cambridge, Massachusetts, with **Team 70 Architects**, Minneapolis,

## BEN ROSE

A complete line of fire retardant drapery fabrics and wall coverings for all commercial applications.



CONTRACT &  
OFFICE  
FURNITURE  
SHOWROOM  
240 PARK AVE.  
MPLS, MINN.  
(612) 336-9331

*Circular, Spiral,*

**CONVENTIONAL**

*Industrial, Commercial,*

**ORNAMENTAL**

**METAL STAIRS**

*Fabricated To Architects  
Owner's Specifications*

**C. W. OLSON, INC.**

1310 QUINCY STREET N.E.  
MINNEAPOLIS, MINNESOTA 55413  
Phone: (612) 335-1143



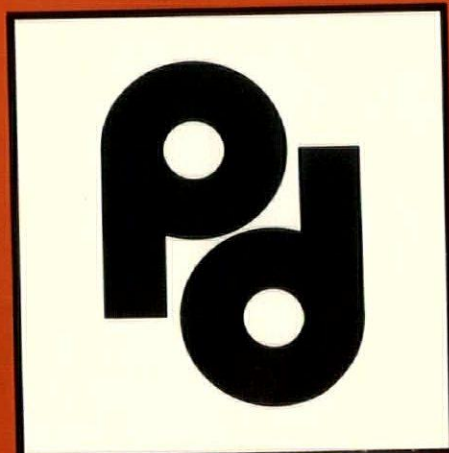
# THE FIBERGLASS SOURCE



**Our new full color CATALOG 97  
will make your planning easier.**

- over 1700 variations of planters
- sofas, chairs, tables, benches
- trash receptacles and ash urns

**Write for your copy today.**



**POULIOT DESIGNS  
CORPORATION**

as associate architects. . . admission to the above events is the price of a September afternoon.

For further information, contact the Minnesota Society American Institute of Architects, 314 Clifton Avenue, Minneapolis or telephone (612) 874-8771. □

**"I CAN HELP  
CHANGE YOUR LIFE.  
BUT I CAN'T  
HELP CHANGE YOUR  
SPARK PLUGS."**



If you want to find inner peace, come see me. But to fix a car, you must seek knowledge somewhere else.

The Consumer Information Catalog is put out by the Federal Government and lists over 200 consumer booklets that one can send away for. Most are free. And they can help you in many areas, from raising tomatoes to lowering your fuel costs.

So send for the free catalog. Write: Consumer Information Center, Dept. A, Pueblo, Colorado 81009. That way you won't have to climb a mountain to gain knowledge. You can merely go to your mailbox.

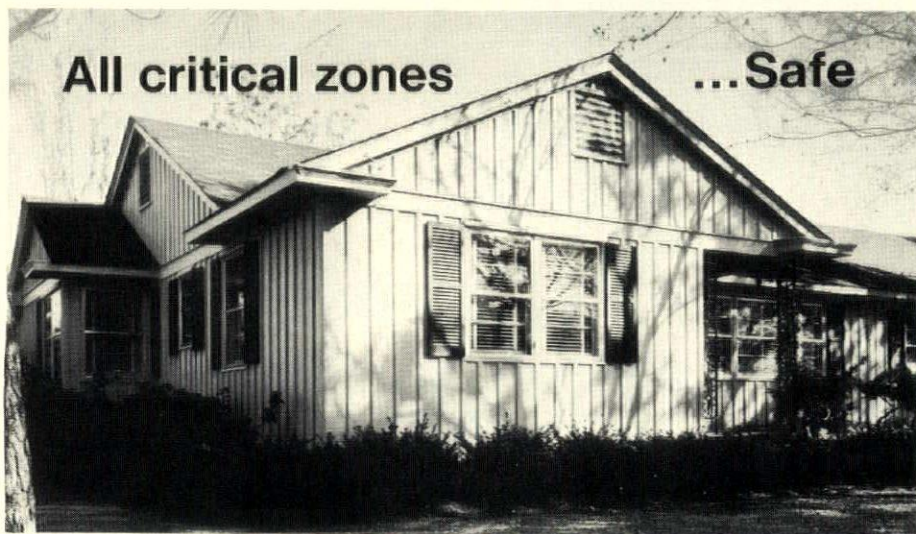
**THE CONSUMER  
INFORMATION CATALOG**  
A catalog of over 200 helpful publications.



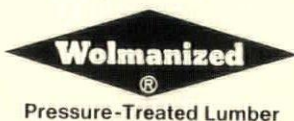
A CORDIAL  
*Invitation*

**... to Visit Our Booth!**  
during the 42nd Annual M.S.A.  
Convention, Sept. 8-10

**... SEE OUR PRODUCTS ON DISPLAY!**



**Sills, joists, sub-flooring and siding**




guards against  
damage from  
decay or termites

**G. M. STEWART LUMBER COMPANY, INC.**



(612) 378-1520

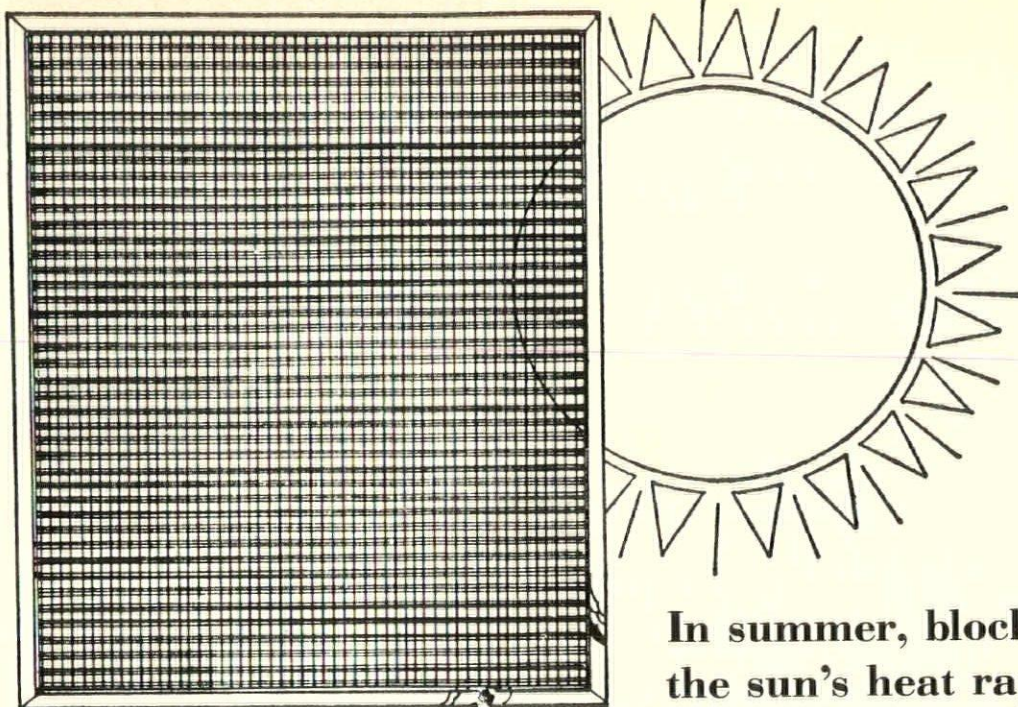
A subsidiary of  **LONE STAR INDUSTRIES**

421 JOHNSON STREET N.E. • MINNEAPOLIS, MINNESOTA 55413

UPPER MIDWEST'S LARGEST YARD







**In summer, blocks  
the sun's heat rays.**

**In winter, reduces heat loss.**

## **Save energy! Our exclusive Sun Chek solar screens save on utility bills.**

See how many ways you can save with these handsome fiberglass sun screens we can now custom-install on all your glass doors and windows:

- Save approximately 50% on air-conditioning bills. Sun Chek keeps the sun from heating windows so your air-conditioner works only half as often.
- Save approximately 30% on natural gas or fuel oil heating. Sun Chek creates a cushion of air to keep heat in, cold winds out.
- Sun Chek minimizes glare and preserves privacy; you can let sunlight in longer without fading furniture or carpets.
- And you save on upkeep. Sun Chek won't rust, burn, corrode or stain walls. It won't stretch, shrink or dent for at least ten trouble-free years.
- So effective they usually pay for themselves in less than two years in savings on utility bills.

For free home or office estimate call Dick Oliver 612/861-3351 or 471-7107 (home) Monday through Friday, 9 to 5.

Visit Us In Booth 9 At the MSAIA Convention

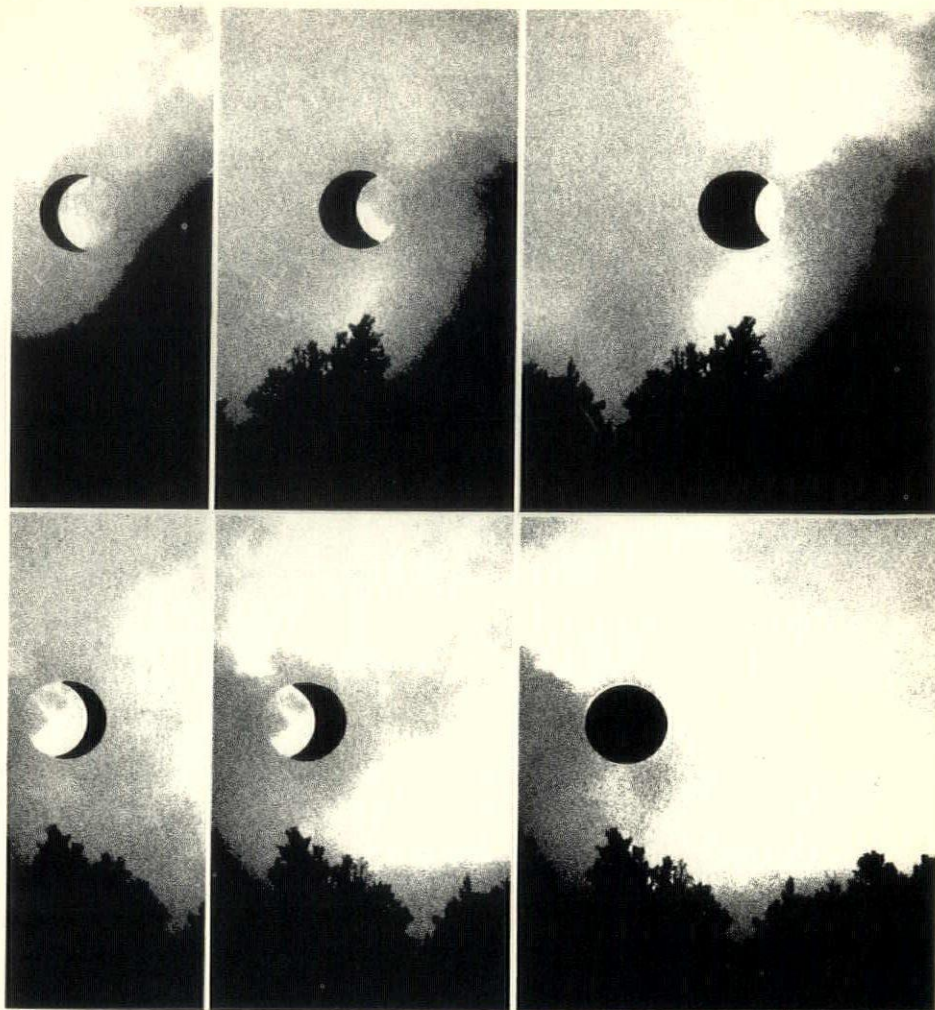


**SUN CHEK NORTHWEST**  
Solar Screen

Division of the Free Heaters  
6644 Penn Ave. South  
Richfield, Minnesota 55423



# WHAT COMES AFTER TOMORROW?



"What Comes After Tomorrow?" for architecture, lifestyles and urban development? This critical question is the theme of the Minnesota Society American Institute of Architects 43rd Annual Convention September 7 through September 9 at the Radisson South Hotel, Bloomington. Noted futuristic thinkers **Richard Meier**, **Marshall McLuhan** and **Victor Papanek** are among featured guests who will address these issues of the future of architecture.

"A Future Forecast: The City As Media" will be the presentation on Wednesday, September 7, by McLuhan, the visionary futurist who is author of **The Medium is the Message**. Richard Meier, one of the most outstanding architects of our time, will discuss "My Work and Where it is Leading Me" on Thursday. Victor Papanek, author of **Design for the Real World**, **How Things Don't Work** and **Nomadic Furniture I and II**, will talk about "how things don't work." His experience as an industrial designer, anthropologist, writer, teacher and filmmaker will highlight his presentation on Friday, September 9.

Earth-sheltered buildings, the future of downtown Minneapolis and St. Paul, solar energy, and a profile of a controversial sculptural/architectural firm are other topics the 1977 Convention program will examine.

Five individuals working in the area of earth-sheltered buildings will hold a panel discussion Thursday on the design approaches, legislation and energy features of underground buildings, and a brief overview of projects completed and underway will be presented. Leading executives from The Oxford Development Corporation and Skidmore, Owings and Merrill Architects will offer a glimpse into the future growth and development of downtown Minneapolis and Saint Paul, also on Thursday. Oxford has recently purchased the IDS Properties, and received development contracts for an estimated 100 million for downtown Minneapolis, and 45 million for downtown Saint Paul, with Skidmore, Owings and Merrill as architects.

On Friday, Dr. Richard Jordon of the University of Minnesota, one of the most knowledgeable authorities on solar energy, will speak on the





for  
over  
90 years

we've done  
right by wood

From the world's finest hardwoods, we turn out millwork any architect would be proud of -- including fine matched cabinetry executed to your exacting plans and specifications.

Contact Don Boehmer, Jr., Roger Barlau or Rod Davies and learn about some recent installations that prove we do right by wood.

**SHAW**  
**LUMBER CO.**

217 Como Ave., St. Paul, MN 55103  
(612) 488-2525

state of the art of solar energy. Following will be five - five minute reviews of solar energy projects in Minnesota, presented by the five people working on those projects.

James Wines, President of SITE, Inc. (Sculpture in the Environment), of New York City will talk on his firm's unique approach to architecture on Friday. Artists, architects, writers and technicians work together in SITE, Inc., and are exploring the new concept of public art suspended between the notions of sculpture and architecture.

Other interesting programs will include "Your Business Plan: An Action Plan for Success;" the Annual Meeting; The Governor's Crime Commission report on crime prevention through environmental design; a program with small firms and young practitioners; and a look into management issues.

Again this year, the exhibition booths will present the opportunity for design professionals to become acquainted with manufacturer's representatives, new products and techniques in the building industry. The booths will be open for several hours each day of the Convention.

Friday evening the Convention concludes with a dinner/dance, at which Honor and Special Awards will be presented. The event will be held in the historic mushroom caves of Saint Paul, the renovated underground nightclub spot of the 1930's. □

— Becky Banyas Koach  
Public Communications, MSAA





## MINNESOTA SOCIETY AMERICAN INSTITUTE OF ARCHITECTS 43RD ANNUAL CONVENTION

### WEDNESDAY, SEPTEMBER 7, 1977

- 12:45 A FUTURE FORECAST: THE CITY AS MEDIA —  
Marshall McLuhan
- 3:00 MSAIA ANNUAL MEETING: ISSUES FACING THE ARCHITECTURAL PROFESSION IN MINNESOTA
- 4:30-9:00 Guest Night — Exhibits Open

### THURSDAY, SEPTEMBER 8, 1977

- 9:30 YOUR BUSINESS PLAN: AN ACTION PLAN FOR SUCCESS  
Michael Hough, Management Consultant and Publisher of Professional Service Management Journal  
OR  
LOOKING INTO EARTH SHELTERED (UNDERGROUND) ARCHITECTURE
- 12:45 MEIER ON MEIER — MY WORK AND WHERE IT IS LEADING ME  
Richard Meier, Architect, New York
- 3:00 MOVERS AND SHAKERS — DOWNTOWNS OF THE FUTURE  
Oxford Development — SOM
- 4:30-7:00 IDEA FAIR
- 6:00 CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN
- 7:00 COUNCIL OF SMALL FIRMS/YOUNG PRACTITIONERS
1. Employee/Employer Relations
  2. Salary and Fringe Benefits
  3. An Introduction to the New MSAIA Group Insurance Program
  4. Recycling, Restoration Techniques Workshop

### FRIDAY, SEPTEMBER 9, 1977

- 9:30 MANAGEMENT ISSUES: THE REVEALING RESULTS  
OR  
STATE OF THE ART OF SOLAR ENERGY
- 12:45 ICONOCLASTS EXTRAORDINAIRE  
James Wines, Site, Inc., New York
- 3:00 HOW THINGS DON'T WORK  
Victor Papanek, Industrial Designer and Author
- 7:00 ANNUAL HONOR AWARDS DINNER DANCE  
"An Underground Speakeasy of the Thirties"

## ARRIGONI BROTHERS COMPANY

TERRAZZO • CERAMIC TILE • MARBLE

Epoxy and Cement Exposed Aggregate  
Panels cast in place or precast

### PREEMA SPECIAL WALL FINISHES

WALKS

DRIVES

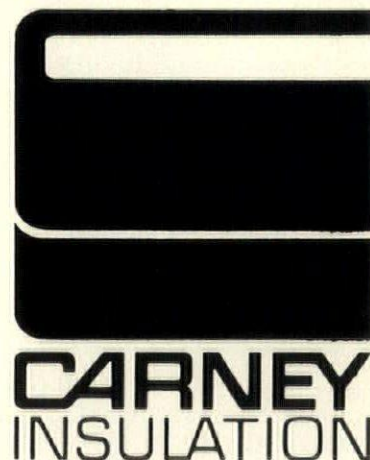
PATIOS

CEMENT FLOORS

Founded in 1927



817 Vandalia St. 645-9321 St. Paul



when you  
care to  
**Insulate**  
the  
**very best**

4930 W. 77TH ST. #359  
EDINA, MN 55435

PHONE 835-3717



# CONSERVE ENERGY

**NORMALLY LOST THRU WINDOWS**

## USE EXTERIOR ROLLING SHUTTERS

ORIGINALLY INTRODUCED BY MAHIN-WALZ AT THE 1973 AIA CONVENTION

**"ALWAYS A STEP AHEAD"**

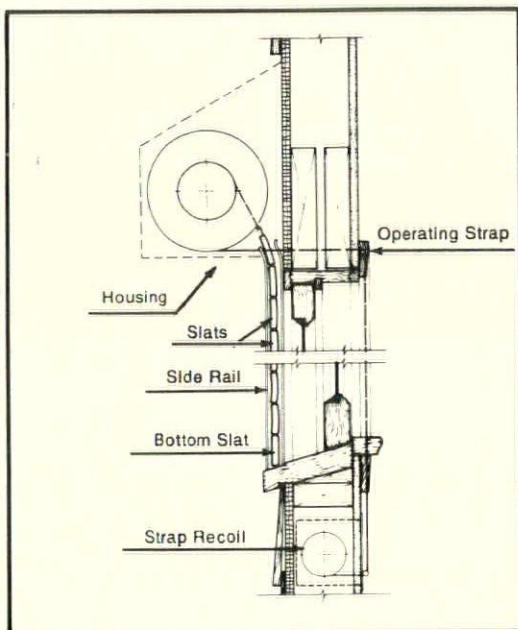
Typical editorial comments:  
Reprint from July-Aug issue  
of Architecture Minnesota.

**By Peter Pfister**

As buildings become sealed tighter and better insulated, a larger percentage of thermal losses occur through the windows. Does it pay to install triple glazing on windows to reduce these losses?

### Passive Solar

Before answering that question, the role of windows as solar collectors should be established. A single layer of plate glass transmits 90-92 percent of the incident solar energy, and insulating glass (two panes) will transmit 81-85 percent of the energy. On an annual winter heating basis adjusted for cloudiness, a south facing square foot of insulating glass will transmit



160,000 BTU while losing about 100,000 BTU out through the glass. The net energy balance for that square foot of glass will be about 600,000 BTU, and this can be substantially improved by covering the windows during non-daylight hours with an insulating fabric or shutter.

### Performance facts . . .

Thermal properties as tested by an independent testing laboratory.

	Glass only	Glass plus shutter (Winter)
"U" Values		
Single glass	1.13	.405
Double insulating glass (1/2" air space)	.58	.301
Single glass and storm window	.56	.296
"R" Values		
Single glass	.88	2.47
Double insulating glass (1/2" air space)	1.72	3.31
Single glass and storm window	1.78	3.37

**SEE US  
IN BOOTH 58 AT  
A.I.A.  
CONVENTION**



**mahin  
walz**

14324 Stewart Lane  
Minnetonka, Minnesota 55343  
Phone: 612-935-7759

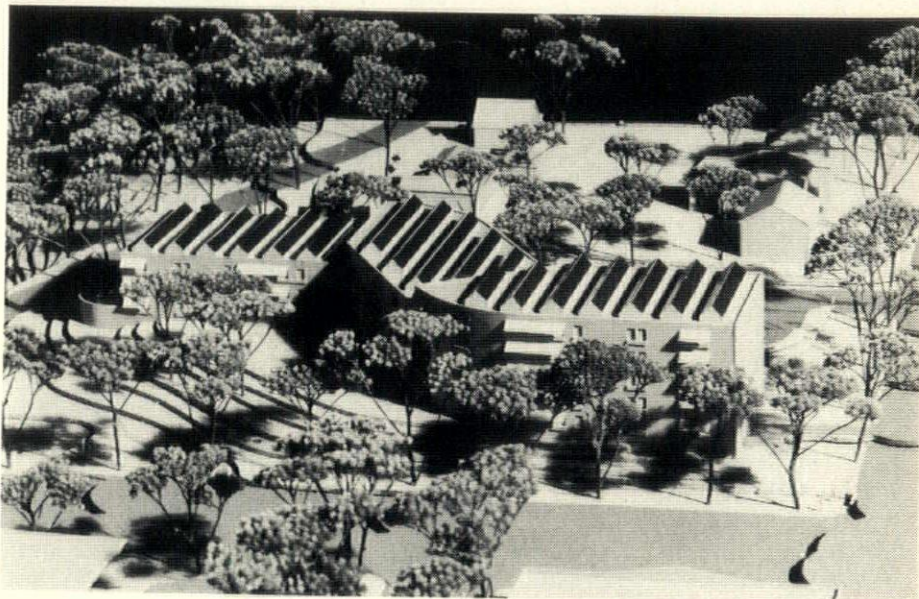
## EXTRA BENEFITS WITH EXTERIOR ROLLING SHUTTERS

INCLUDE: LIGHT-NOISE CONTROL, SECURITY, PRIVACY, WEATHER PROTECTION.



# ARCHITECTURE RESPONDS

Wallace Neil



Minnesota's architects and engineers and their associates in the construction industry have responded strongly to today's pressing need for energy-saving buildings and alternate energy sources. They have launched innovative systems for energy-efficient buildings, many without government funding incentives.

*Architecture Minnesota* plans to reflect this new thrust in its editorial coverage. Our last issue included Peter Pfister's "Conservation by Design," a feature on the principles of solar architecture.

To what extent are new approaches to energy being employed in construction in Minnesota right now? This issue focuses on two areas — solar and underground architecture. MSAIA recently surveyed members and writer-consultant Wallace Neil researched a number of sources to develop what is apparently the first comprehensive compilation of solar and underground projects in the state.

The paired articles on solar and underground architecture set forth the "state of the art" in Minnesota today for those two technologies. The article on underground architecture, following the lead of last issue's solar article, also outlines the principles involved in earth-sheltered construction.

The third segment of energy coverage in this issue includes profiles of specific projects featuring solar or underground applications. Neil selected profile subjects to represent various technical approaches, building types, sizes and degrees of energy independence.

Future issues will explore wind conversion, waste utilization, alternate fuel systems and other energy aspects of architecture. □



# UNDERGROUND— THE PRAIRIE SODHOUSE RETURNS

Anyone who has not visited the University of Minnesota campus for a few years has a pleasant surprise coming. The dreary World War II vintage "temporary" buildings south of Folwell Hall are finally gone. You can now stand where they were and look at the new and very attractive **Williamson Hall**, housing the east campus bookstore and admissions and records offices.

But for this building you don't look up. You look down, and what you see is a pleasant terraced mall, planters and in the center a sunken vine-draped court. There's more, however. Beneath you, extending two stories below ground level, is an 83,000 square foot building.

Users of this building don't emerge, mole-like, blinking at the bright sunlight. The summer sun's natural light, shade-filtered by Engelman Ivy drooping over sun-screening planters, flows coolly into the interior underground spaces. The low winter sun radiates warm light through the courtyard windows unimpeded by the planters and the now-fallen vine leaves.

Underground buildings like Williamson Hall show that buildings can burrow into the earth to conserve energy without being like caves or tunnels. In fact they can be downright pleasant, enjoying natural light and views of the trees, plants, birds and weather outside. Besides, the open space and ground level contours of the building site can be preserved.

Underground or earth-sheltered buildings conserve energy by utilizing the near constant temperatures of the earth a few feet below the surface. Exterior walls above ground face temperature swings from 100°F to -30°F in the Twin Cities area. Heating and cooling equipment inside must contend with wide differentials between desired interior comfort levels and the outside weather. On an extreme -30°F night insulation and the heating plant must fight a 100° spread.

However, going underground even a little bit with less than a foot of soil overhead, short term day-night temperature changes have almost no effect. And at about 20 feet underground the year around temperature varies only slightly — from 47°F to 50°F in the Twin Cities area. That means having to deal with only about a 20° spread year around.

So building underground obviously means less heating in winter and less cooling in summer is required. On a

frigid -30°F day, for example, heat loss rate for an above ground wall with four inches of insulation is ten times greater than for an insulated wall underground. If wind chill factor is considered, the difference is even greater.

Going underground for shelter and for insulation from heat and cold isn't new, of course. That's what early cave and cliff dwellers did. Even today there are courtyard-facing subterranean dwellings in China and North Africa. In parts of Minnesota prairie settlers used hillside dugouts and sod houses. Root and ground cellars are still in use today to store fruits and vegetables for longer keeping in summer and to prevent freezing in winter. And need we mention wine cellars?

Besides energy savings, underground building helps preserve the natural surface environment and it offers occupants isolation from noisy surroundings and from vibrations. There are maintenance savings, too, since there are no roof or exterior wall surfaces to protect from the ravages of weather extremes.

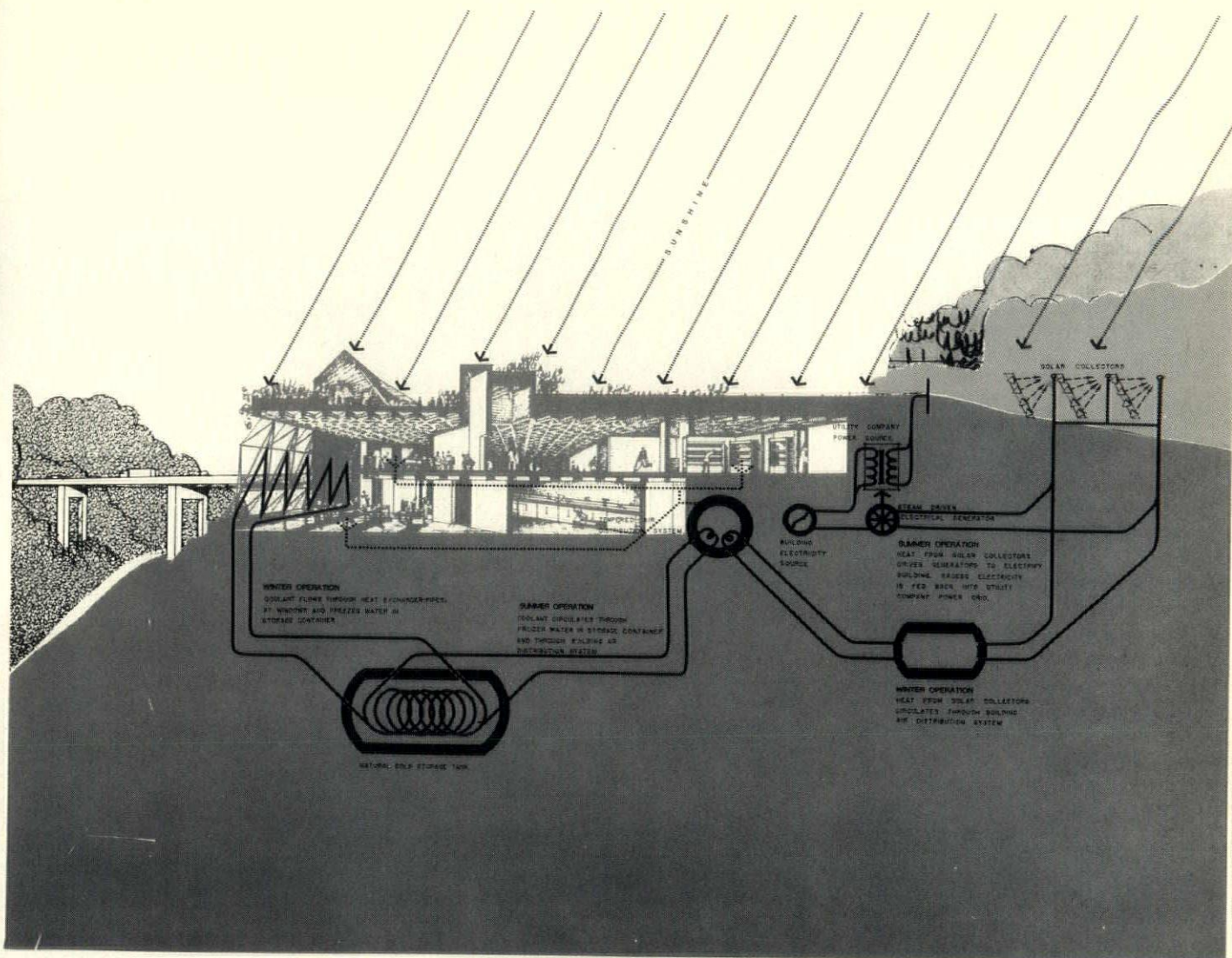
Faculty in the Department of Civil and Mineral Engineering at the University of Minnesota have been active in underground technology and are known nationally for their expertise in this field. Last year they issued a proposal that a university engineering building be designed as a demonstration underground facility. Regarding the energy-savings efficiency of such buildings, their proposal stated, "It seems entirely possible with existing technology to design earth-sheltered buildings that will be **totally self-sufficient** in energy for heating and cooling at an initial cost that is no greater than an equivalent aboveground structure."

What's needed, the experts say, is not technological advancements in underground construction. Most of the techniques are known from mining, tunneling and construction of underground buildings in the past. Values of earth-sheltered structures are pretty well nailed down, too. The need, they say, is to gain rapid acceptance of having homes, commercial, industrial and institutional buildings placed underground as a major and long term way to reduce energy consumption.

In response to that idea, professionals in several areas related to underground technology formed in 1976 the **American Underground Association**. The new group's goals are to promote "the great potential of underground space," and also to promote research

The Fort Snelling Center, Fort Snelling, Minnesota Historical Society, Myers and Bennett Architects—BRW, Edina, Minnesota. See page 27.





and exchange information on technical, legal, economic, social and political problems in the use of the underground. The group publishes a bi-monthly journal **Underground Space**. The fourth issue, due in September, will feature underground architecture.

AUA evidences Minnesota-based leadership. Its president is Charles Fairhurst, head of the Department of Civil and Mineral Engineering, and its executive director is Thomas C. Atchison, professor in the department.

Persons interested in underground architecture may want to attend a conference co-sponsored by AUA and the Science Museum of Minnesota. Its lengthy title is, "Going Under to Stay on Top — Use of Underground Space to Save Energy and Enhance the Environment." It's scheduled for October

14-15 at the Radisson Hotel, Minneapolis.

Underground buildings sometimes incorporate solar energy units for heating. It is a good combination because heat loss efficiency in underground space means much smaller areas of collector surface are needed and yet the space can be fully heated with no external energy requirements. In summer, however, even with the lesser cooling load underground, the smaller solar units can't handle all the cooling.

The answer to year around energy independence for underground space may lie in an ice air-conditioning system developed by Thomas P. Bligh, also in the Department of Civil and Mineral Engineering. Prototype testing is underway with a grant from the Minnesota Energy Agency. The system

uses the insulating capacity of earth to store winter cold for summer use. Liquid chilled in an outside shady area circulates to an underground storage tank of water. The water slowly freezes. In the summer, the slowly melting ice cools fluid circulating through air conditioning chiller coils.

The Department of Civil and Mineral Engineering has a Minnesota Energy Agency-administered grant to study design of earth-sheltered residential buildings. Target completion is January 1978. The department then plans to issue a design manual for earth-sheltered houses. The department expects to receive an added grant to expand studies to commercial-size projects.

Research for this article and responses to the MSAIA survey disclose



a variety of earth-sheltered buildings built or planned in Minnesota. They're not all new. The all-underground **College Center at Southwest Minnesota State College, Marshall**, was completed three years ago. Some could be called futuristic. Some are thoroughly humanistic. All appear to be highly liveable, providing natural light and view. They range from buildings fully below grade to those with elements considerably above grade but with earth cover, bermed earth sides or hillside protection.

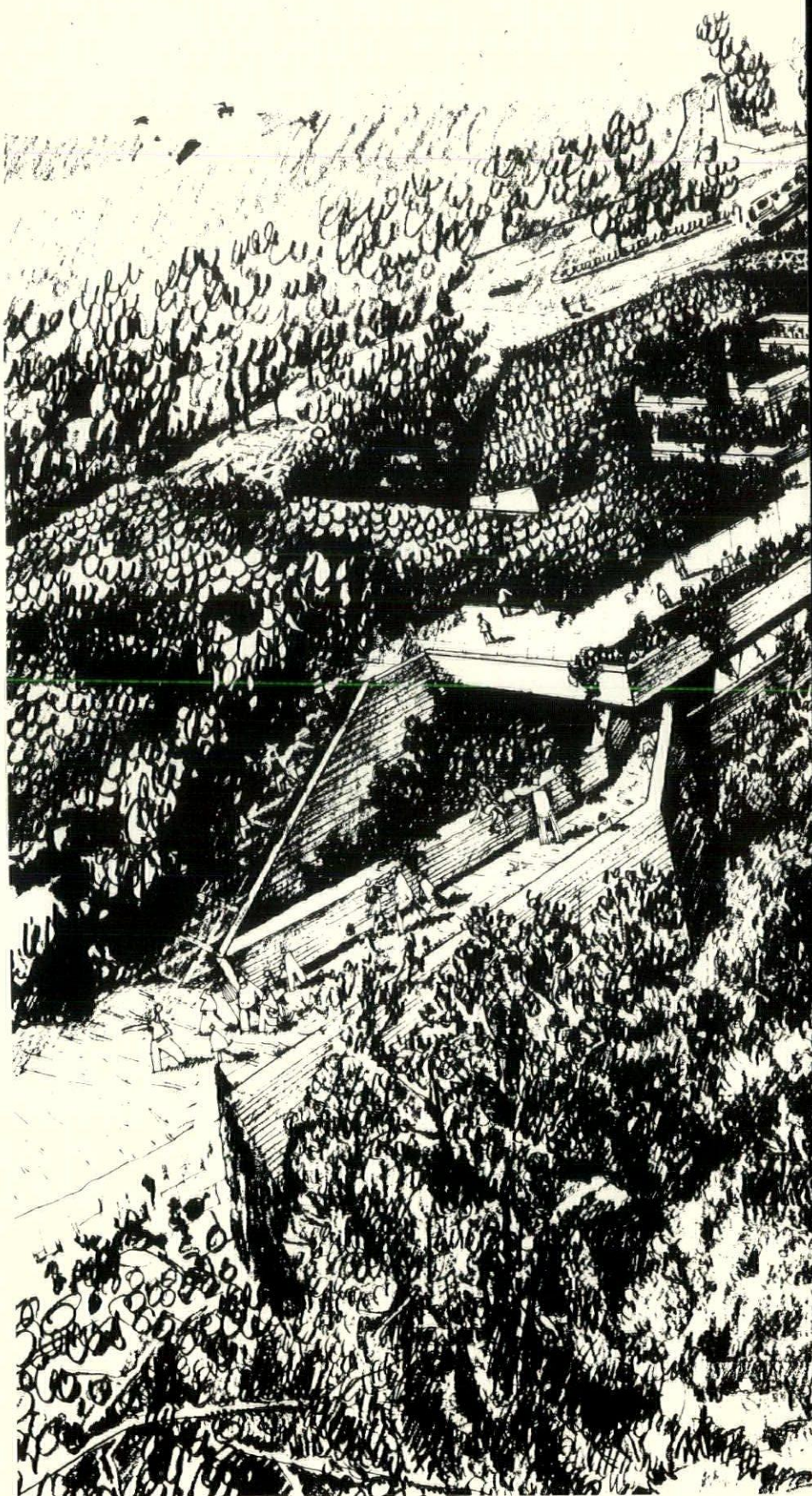
Underground projects surveyed often include other energy-conserving features — solar heat, waste heat recovery, wind generated electricity, secondary uses of water and use of greenhouse areas for air freshening.

Interest of the legislature and state government shows up not only in the University buildings reported. The 1973 session funded the **National Territorial Competition for the State Capitol Government and History Center** to be located beneath the Mall in front of the Capitol. More recently a partial underground scheme is being considered for the **Minnesota High Security** detention facility near Bayport.

Some of the underground projects are being monitored to provide better data for energy demand calculations. The Williamson Hall project includes measuring equipment placed in five different backfill materials to see what happens in a wide range of soil conditions. The \$350,000 monitoring cost is funded by an ERDA research grant. Data from the earth probes is processed by analysis equipment in the building and fed to an ERDA central data collection facility in Bethesda, Maryland. It is one of nine major energy projects around the country being monitored by that facility.

The Williamson Hall data will be used to learn about the "heat balloon" effect. The space is maintained at warmer temperatures than that of surrounding earth. Heat slowly migrates into the earth and creates a slowly expanding "balloon" of warmer earth. This progresses for perhaps three to four years before reaching an equilibrium state. Because the earth is in effect storing heat, presumably declining levels of energy are needed to maintain comfort levels as the equilibrium state is approached. □

**Right: The Fort Snelling Center, Fort Snelling Minnesota Historical Society. Myers and Bennett Architects—BRW, Edina, Minnesota.**







**The Fort Snelling Center, Fort Snelling  
Minnesota Historical Society**

**Myers and Bennett Architects — BRW,  
Edina, Minnesota**

This proposed 50,000 square feet interpretive center and research/administrative facility for historic Fort Snelling is designed as an energy independent building supplying its own heating, cooling and electrical needs. Its two levels are underground but exposed at the north face of the cliff overlooking the scenic Minnesota River.

An array of linear slat sun-tracking concentrating solar collectors provides high temperature circulating fluid for winter space heating and domestic hot water. During summer, an ice air conditioning system is used (see article). The solar system continues to function, but generates 400-650°F steam to drive a turbine generator. During mild months it produces power in excess of building demand. The excess flows into the NSP grid at a time when the utility's needs are high. In effect, the center sells electricity in summer and buys it back in winter.

The center is seen as a "non-building" — entry to the site is unobtrusive and the exterior is primarily landscaped courtyards and terraces. Its impact on the historic setting and the natural environment is minimal.

The designers see the center as an "appropriate place for self-reliance," since energy independence for the original fort was a normal condition. The estimated \$2.4 million project awaits funding by the 1978 legislature. □



**Studio—Workshop—Residence for  
Criteria . . . Saint Paul**

**Criteria, Inc., Saint Paul**

Criteria's Jerry Allan characterizes their new building as "an urban experiment which integrates alternative energies and social concepts within an earth shelter structure."

Two 20 feet high open-side corrugated steel culverts form the earth-supporting structure with five feet of earth above the highest ceiling point. Both are about 100 feet long. Between them is a greenhouse garden covered with a large translucent fiberglass roof. Insulating shutters below and at all windows close at night to prevent heat loss and open fully on sunny winter and fall-spring days. In the summer shutters will be angled to reflect radiation and allow the chimney effect to take hot air out through roof vents. Major end windows can swing up with surfaces shuttered to act as shading awnings.

Air system solar collectors provide heat, stored in a water system, and also pre-heat domestic hot water, designed for final electric heating at the point of

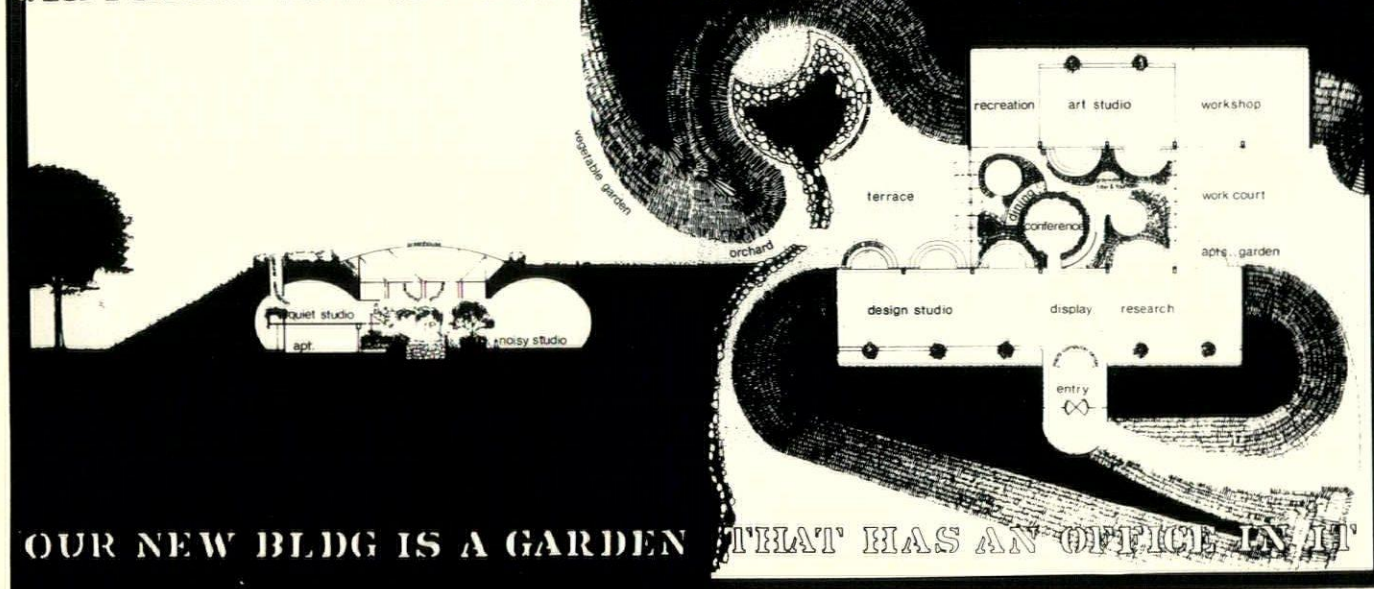
use. Allan says the garden will get about 50 per cent of its heating from the greenhouse effect. A back-up gas fired unit will get about 75 per cent of its needed fuel from a pyrolysis system using paper and garden waste. An ice air conditioning system (see article) is being considered.

"Gray water" from bathing and dishes goes through a heat exchanger to draw off latent heat, then an aerobic gravel filter and aerating fountain. The filter pool has water hyacinths which Allan says thrive on nitrates, phosphates and other impurities. This water is reused to water greenhouse plants. Partly for fun, the entry revolving door pumps some of the water. A significant environmental benefit is the use within the site of two-thirds of its run-off water, collected in a rock garden pool and distributed to the vegetable garden and orchard.

A micro-computer monitors and controls automatically temperature for each space, measures watering needs and waters plants, opens and closes shutter system in response to the sun and performs other environmental measuring and control.

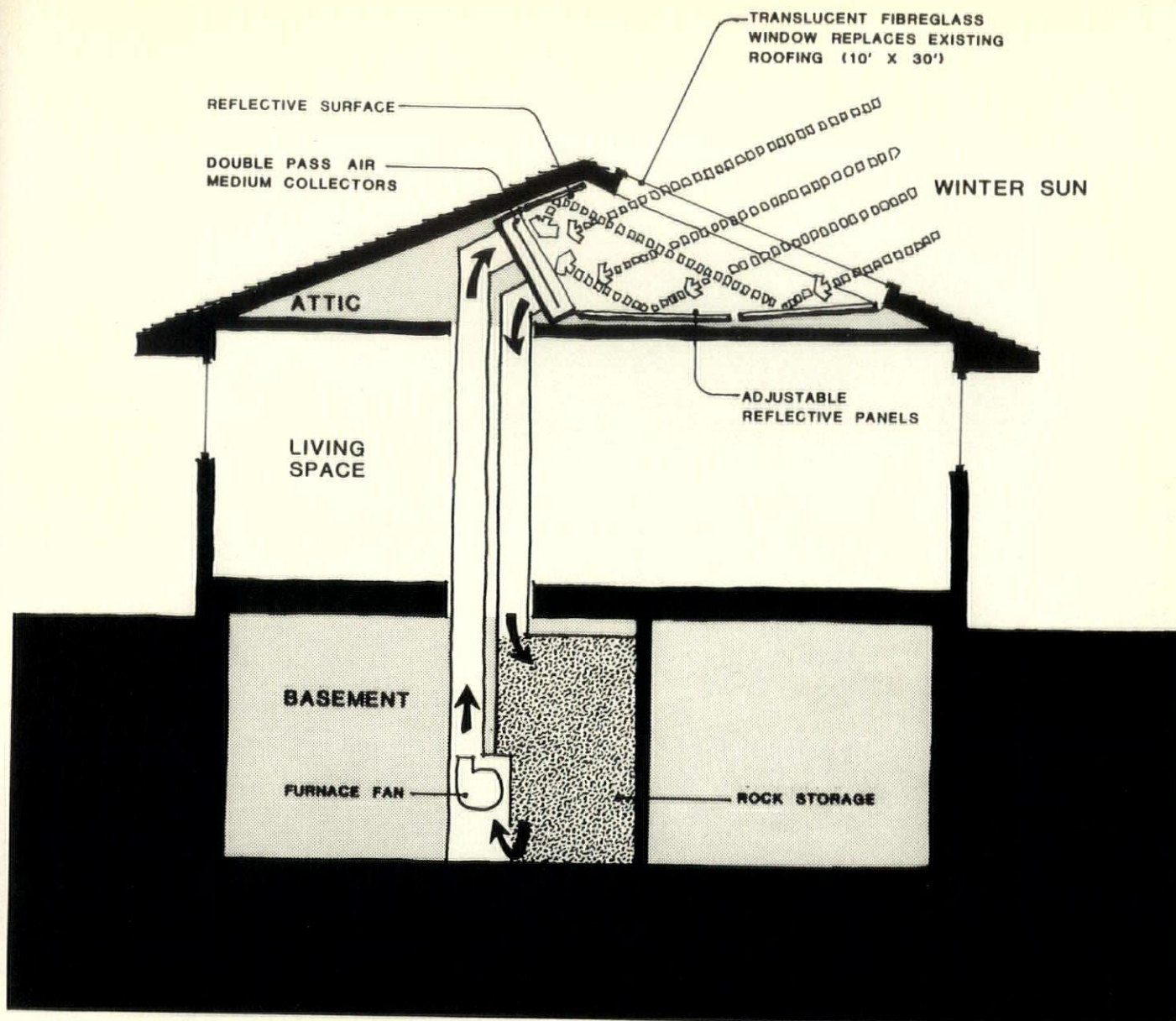
Current plans are to start construction in late October. □

**CRITERIA WAS AN OFFICE THAT HAD A GARDEN IN IT**



**OUR NEW BLDG IS A GARDEN THAT HAS AN OFFICE IN IT**





**Solar Retrofit, Duplex,  
South Minneapolis**

**The Architectural Alliance, Architects,  
Minneapolis**

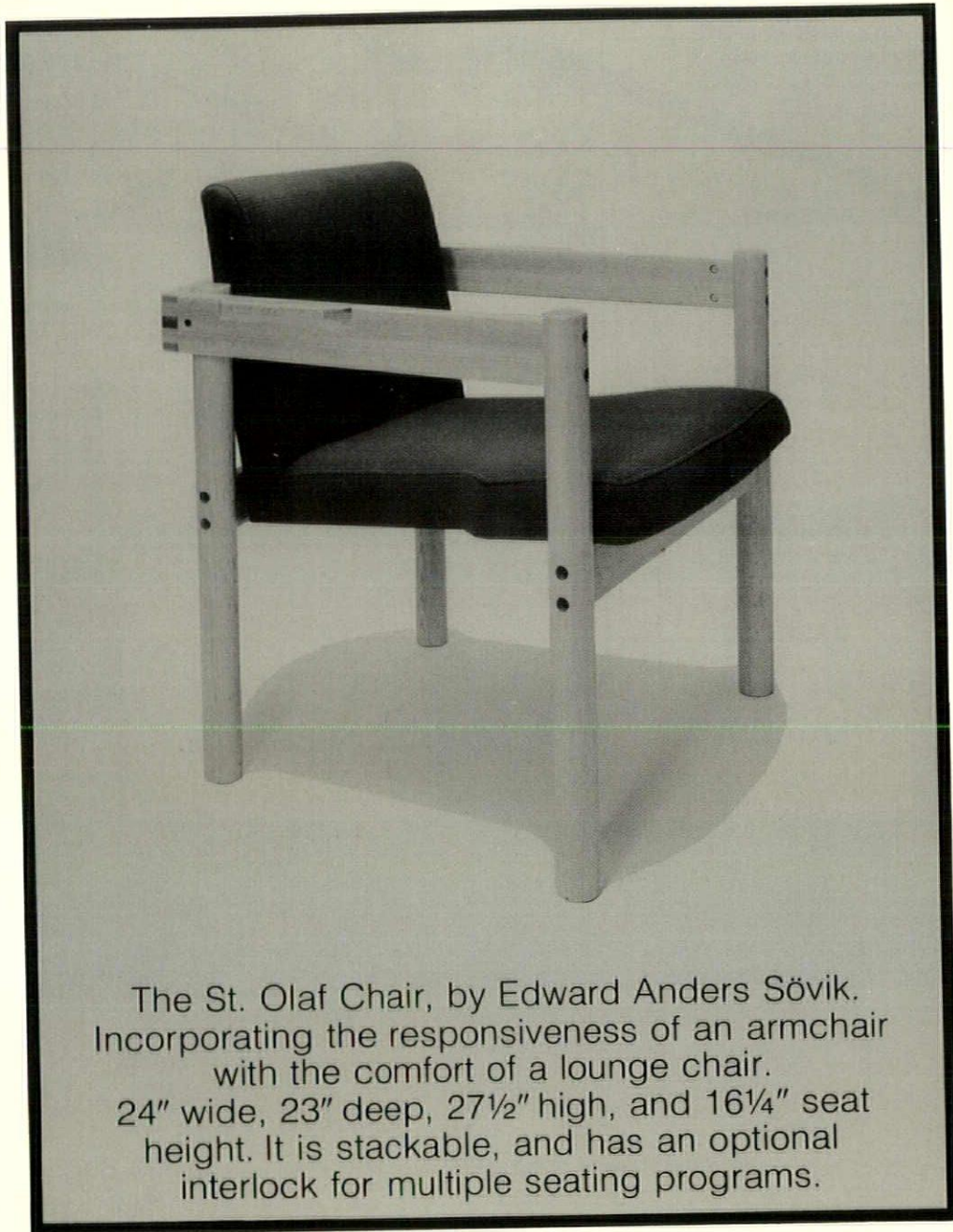
The architect has been awarded a Minnesota Energy Agency grant to retrofit one half of a typical post World War II duplex with a "Wormser" type solar installation. The system applies to many such residences that have low slope roofs. Translucent corrugated fiberglass replaces most of the south facing roof. An air system solar collect-

or is placed near the center of the attic at an appropriate angle and the inside surfaces of the attic are covered with reflective material. The home's forced air system circulates heated air to rock storage in the basement and through the existing distribution system.

The air collector is a do-it-yourself type design and the entire system is low technology, low cost, making it a realistic application for retrofitting such homes. The demonstration project is expected to be ready for try-out during the upcoming heating season. The system is to provide more than half the energy needs for space heating and domestic hot water. □



# StOlaf Chair



The St. Olaf Chair, by Edward Anders Sövik. Incorporating the responsiveness of an armchair with the comfort of a lounge chair. 24" wide, 23" deep, 27½" high, and 16¼" seat height. It is stackable, and has an optional interlock for multiple seating programs.

**Tuohy**

42 ST. ALBANS PLACE, CHATFIELD MN 55923  
REGIONAL SALES OFFICE:  
905 PARKWAY DRIVE, ST. PAUL MN, 612-774-1584



**Williamson Hall, East Bank  
University of Minnesota  
University of Minnesota**

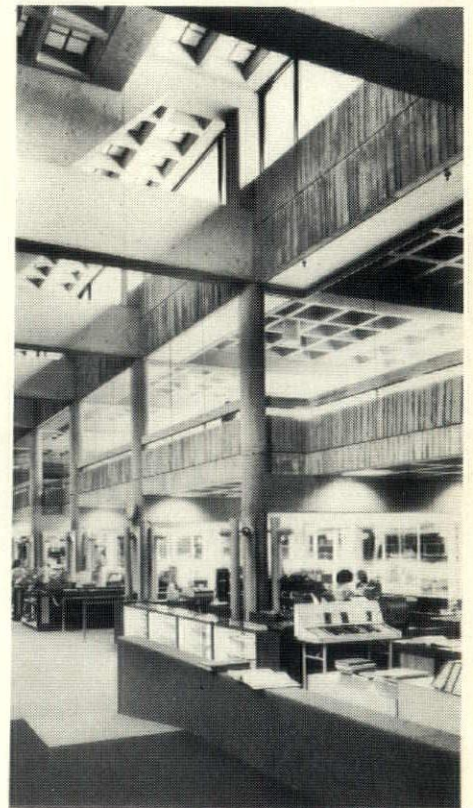
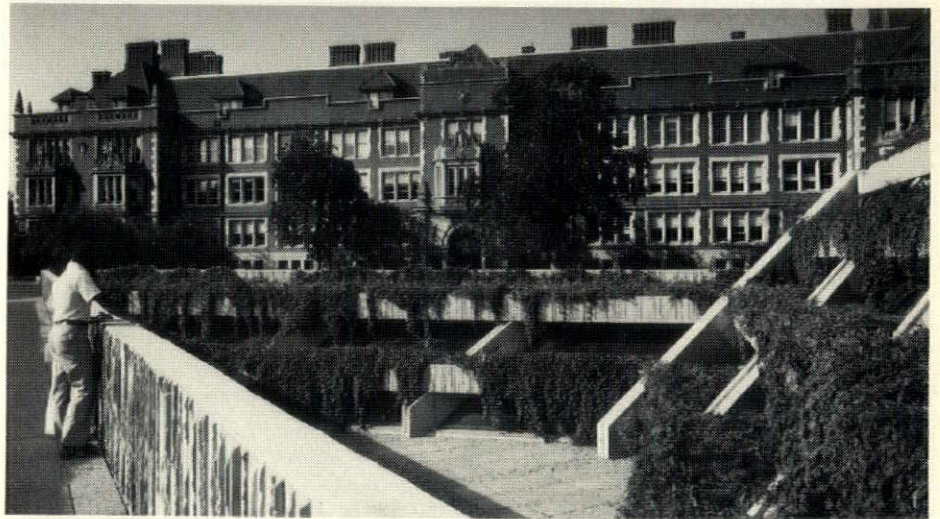
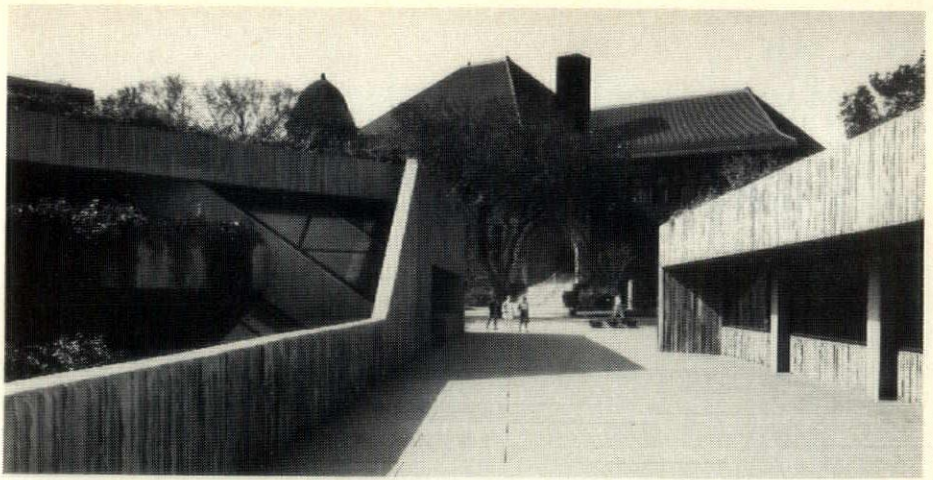
**Myers and Bennett Architects — BRW,  
Edina, Minnesota**

Even without energy benefits, the underground placement of this now-occupied book store and admissions and records facility would have been desirable. Removal of "temporary" wood buildings built in the 40's and creation of terraced open space over the underground building give once again an open view to the eclectic brick-limestone decorative facade of Folwell Hall's turn of the century architecture.

The two stories of the 83,000 square feet building are 95 per cent underground. A sunken court provides natural light with ivy draped planters shading high summer sun.

With 80 per cent ERDA demonstration funding a solar heating-cooling system has been designed by the University's Mechanical Engineering department and is contracted for installation this year. Collectors are a series of 110-foot slats curved to focus sunlight on liquid circulating tubes. The high temperature medium is used for space heating, circulating to a 8000-gallon water storage tank. Designers say energy from people and lights is sufficient to heat the building during winter work days. The stored energy is used for night heating. A back-up steam system is installed.

In the summer, the solar-heated liquid medium goes to absorption chillers for air conditioning. Estimated yearly total energy supplied by the solar units is expected to exceed 50 per cent of requirements. □





# SOLAR- EXPANDING FAST IN THEATER OF SEASONS

Architects and their clients in Minnesota aren't waiting for tomorrow to use solar energy, and they are not just toying with small test projects. Many major buildings in use and others under construction or starting soon incorporate solar systems for a portion of their energy needs. Some are designed to be 100 per cent energy independent, including electric power.

MSAIA's survey and research for this article unearthed hotel, university, school, bank, apartment and major corporate headquarters buildings among major projects using solar systems. There are many solar-fitted homes, even do-it-yourself backyard solar collector projects.

In fact, architects and the construction industry in Minnesota appear to be showing leadership in solar applications, as they have before in other construction trends, compared to many other states.

Minnesota's fast expanding solar architecture technology is especially remarkable considering the factors not working in our favor. Clouds are not uncommon. Winter days are short. Those super below zero nights (and days) are a special challenge.

Some projects have very sophisticated systems for collecting and utilizing the sun's radiant energy. Most, however, are basic flat plate collector systems using liquid or air as a circulating medium, water tanks or rock beds for storage and various distribution methods.

Several projects use concentrating collectors with sun-tracking mechanisms. These highly reflective parabola-shaped panels focus concentrated solar rays on an absorber tube. The resulting higher temperatures make more feasible the use of solar energy for cooling as well as for more efficient heating.

At the other extreme, some systems are totally passive. A large expanse of south-facing windows gets the sun's heat into interior spaces. Benefits are prolonged by storing heat in rock beds and interior mass such as concrete floors and walls.

A desire to teach people the benefits of using solar energy has prompted some building owners to expose working parts and in other ways demonstrate how their system works.

Many solar experts say that solar cooling is not economically practical today but must await further research and product development. Despite such opinions, several Minnesota projects are employing a variety of tech-

niques to stretch the usefulness of solar equipment through the hot weather months.

Grants from ERDA, HUD and the Minnesota Energy Agency help fund a number of installations which are demonstration or experimental projects. It is noteworthy, however, that many owners took the step to solar using only their own money. They know it's a long term payback. They know solar components later on are going to be more refined in technology and are likely to be less costly. They are not waiting.

Still, government money incentives undoubtedly are spurring development of solar fitted buildings. In addition government programs such as monitoring installations and sponsoring research and demonstrations will accelerate growth of solar technology. Results of these efforts should hasten much broader use of solar energy in buildings.

An indication of Minnesota's key role in solar development was its ranking as final contender for the site of ERDA's Solar Energy Research Institute. Colorado won out. However, in early August ERDA announced a \$799,326 grant to prepare during the next six months plans to implement a Mid-American Solar Energy Research Center. The award goes to a joint venture of the Minnesota and Michigan groups which were originally set up to seek the national institute site. The person who headed the Minnesota group, Dr. Donald E. Anderson, a former University of Minnesota engineering professor and director of research at Sheldahl Inc., was named director.

The regional center is intended to focus on the solar research needs peculiar to the 14-state area due to such factors as climate and topography, and also to develop coordination among the programs of the various states.

At the practical applications level, Minnesota may soon have the nation's first energy systems vocational-technical center. On June 30th the Red Wing School board selected the 345-acre Tower View farmstead, a landmark at the junction of highways 19 and 61, as the site for the proposed "Energy Center" for the Red Wing Area Vocational Technical Institute. Toltz, King, Duvall Anderson and Associates Inc. and Criteria . . . Inc. are jointly prepar-





ing schematics in preparation for funding requests by the district.

The proposed center will teach solar techniques along with all other alternative energy techniques to plumbing, heating and electrical mechanics; students planning careers in energy systems; teachers in in-service training; persons who design energy installations or products; and the general public. Construction of the planned facility will incorporate state of the art systems.

An example of what's going on in Minnesota at an even more pragmatic level is the Center for Self-Reliance in the Powderhorn community of Minneapolis. A group of concerned residents formed the group to bring techniques of small scale technology to the area's low income people. The program, aided by grants obtained through the Minneapolis Housing and Redevelopment Authority, includes providing insulation and winterization materials along with technical assistance, and designing and installing alternative energy demonstration projects.

The center has designed and helped build and install two solar units. One is a concentrating collector made of

curved plywood with a shiny metal film surface. It focuses sunlight on a black painted pipe and the heated air in the pipe is blown into a gravel storage bed converted from a coal bin and into the home's forced air heating system. Cost of the 100 square feet of panels is three dollars a square foot "plus sweat," according to its designer, Darryl Thayer, technical advisor to the center.

The other installation is a 700 square foot flat plate collector array which circulates liquid to a hot water heater for an apartment building. The units are now being installed by owner-residents of the building. The center is teaching them how to build their own collectors and is providing the materials.

Specific solar projects shown in this issue illustrate the various technologies in use and varying scales of complexity and costs. The profiles point out each project's unique approach to utilizing solar energy, but not the general energy-related principles which all share.

It is important to note that all employ a concept of total energy efficiency. They are extra well insulated,

most of them quite in excess of Minnesota's energy code minimums. Solar input is combined with measures to conserve energy use and raise levels of energy efficiency. Some projects recycle heated air through secondary areas such as parking and service areas. Some use heat exchangers to recapture heat from exhaust air. Reduced level, task-directed lighting, low-energy light sources and variable controlling are often used to trim electric energy and minimize heat output from light fixtures.

Quite often solar applications are combined with buildings built underground or at least partly earth-sheltered. Some combine other alternative energy sources with solar, such as wind-driven generators. Usually the buildings with active solar-collector devices also employ designs which maximize passive solar input and omit or minimize windows on all sides except south-facing surfaces.

A number of projects are being extensively monitored. Some of the results go directly to ERDA's data center, others to Northern States Power or other private or public organizations. □



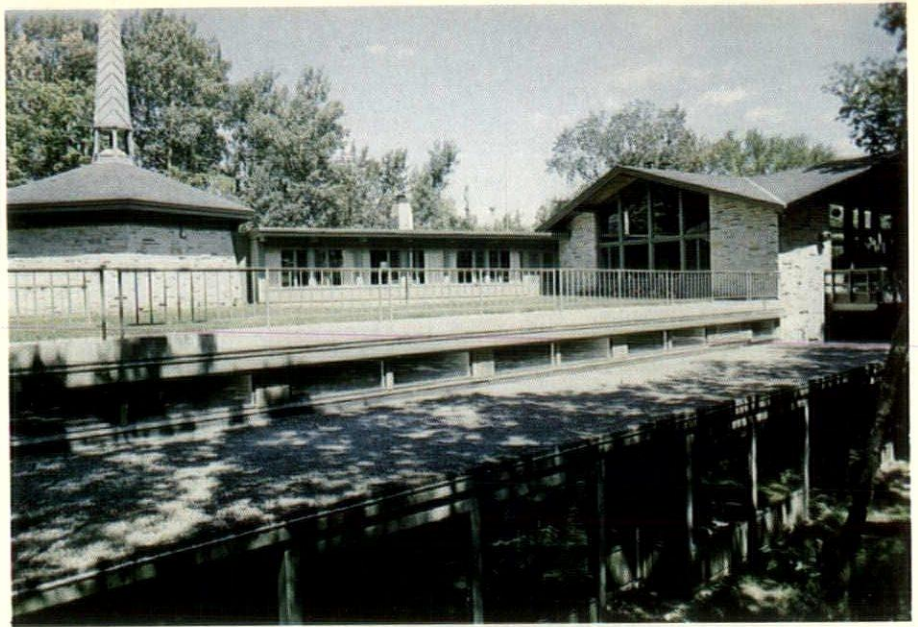
Meeting Room Facilities, Koinonia  
Retreat Center on Lake Sylvia  
Hennepin Avenue United  
Methodist Church

McEnary, Krafft, Birch and Kilgore,  
Inc., Architects, Minnetonka, Minn.

Preserving view to the lake for the buildings above it on a hill, and infringing the least on the woods were what motivated the earth sheltered design of this 3800 square feet building. It is nestled into the hill with earth covering three sides and the roof. Earth from 14 to 28 inches covers the concrete plank roof.

Passive solar energy helps heat the interior. A glass wall gallery on the south exposed side of the building collects heat which is distributed through forced air ventilation into the meeting room space. During the first heating season last winter, with conventional heating turned off, the interior maintained a 53°F temperature while outside it dropped to -30°F.

During summer tree foliage shades the glass area and helps reduce heat gain. □



African American Cultural Center (proposal),  
Minneapolis, Fredrick Bentz/Milo Thompson & Associates, Inc., Architects, Minneapolis. See page 37.



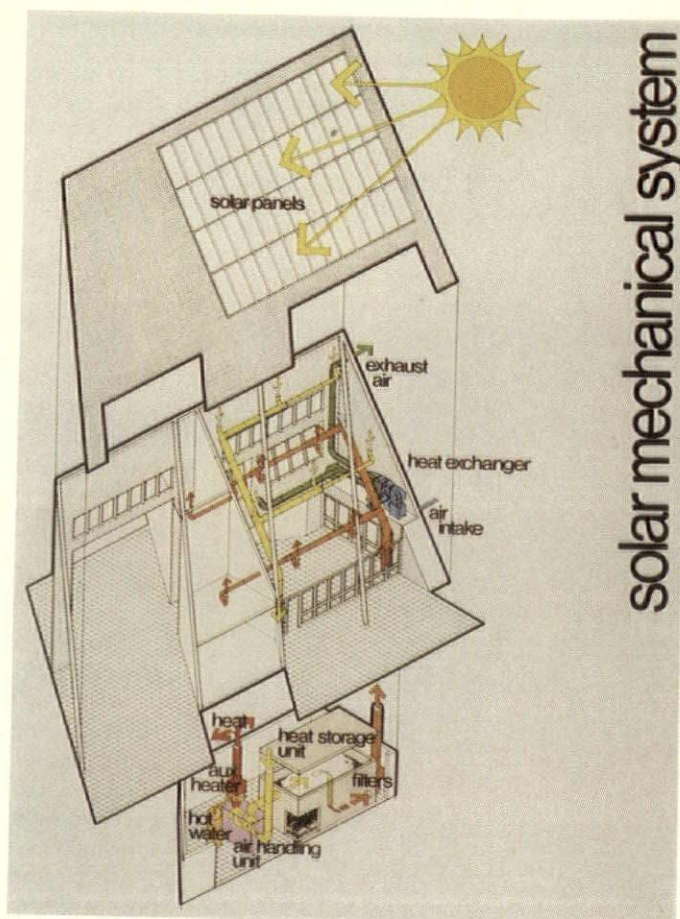
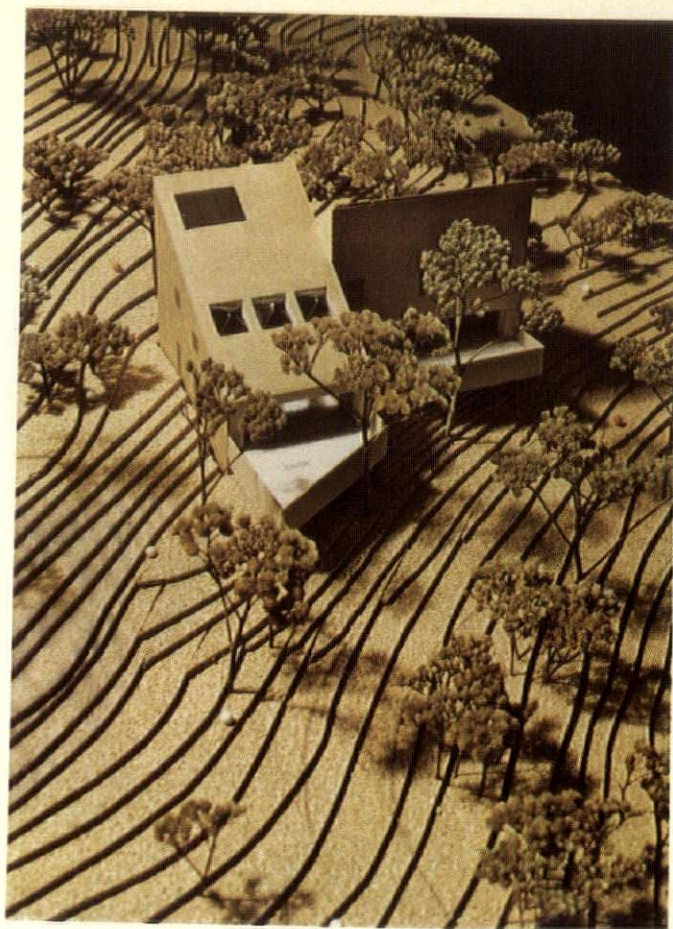
## Lindeberg Residence, Minnetonka

The Architectural Alliance, Architects,  
Minneapolis

Passive solar energy will supply more than half the space heating for this home. Heat from the sun comes in through about 400 square feet of south facing windows and a row of skylights in the roof. Radiant energy will be picked up by: on the second floor level, a black-painted metal surface with air ducting behind; on the main level, a rock storage bin; the concrete floor slab and other interior mass; and circulating air. A precast concrete hollow plank main level floor, insulated on the bottom, becomes an "air floor." Air drawn from the high point of the house flows through collecting surfaces, the rock storage and the "air floor," storing heat or withdrawing it from the mass as conditions change. Open interior spaces allow heat to circulate naturally to the high point of the ceiling.

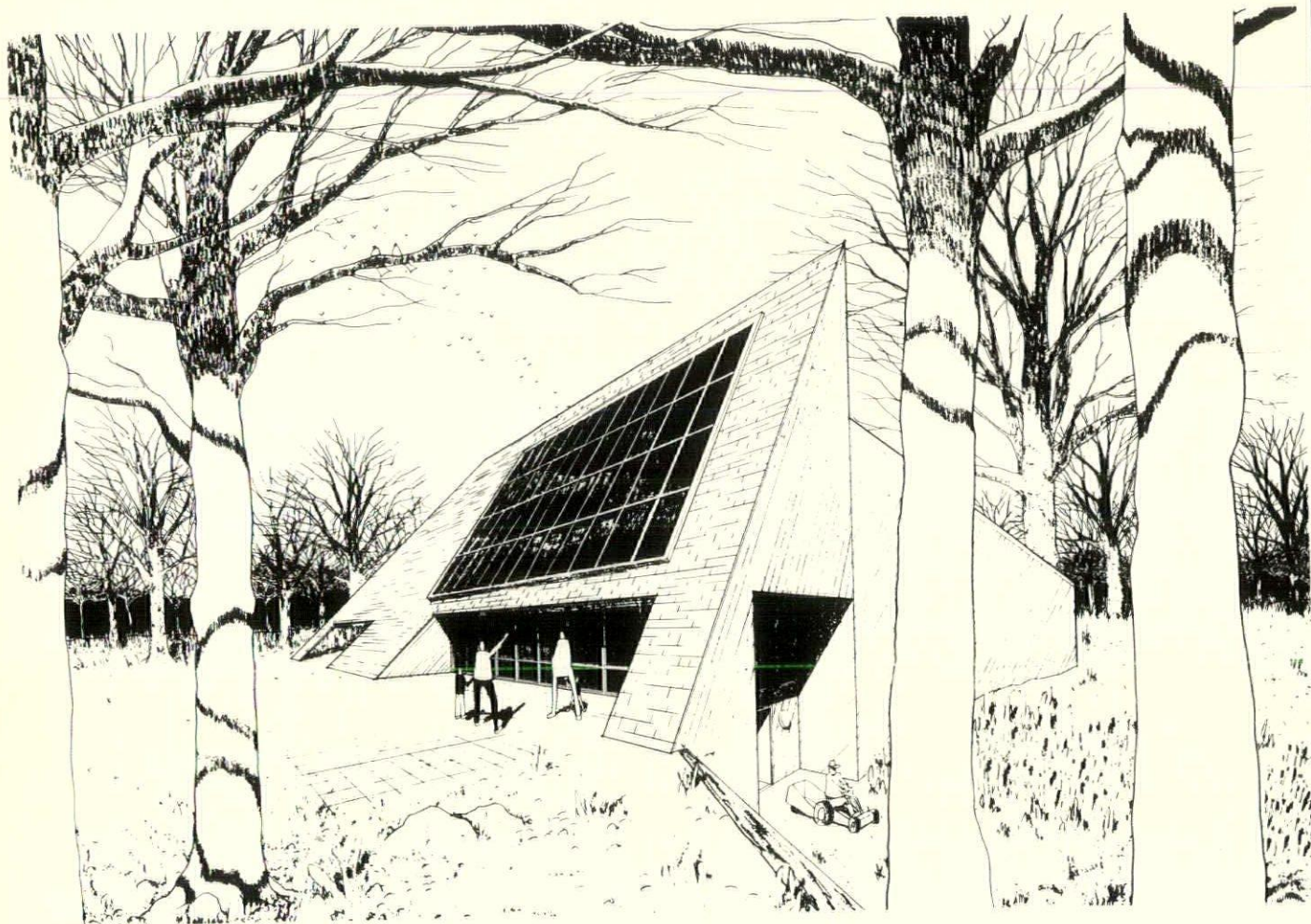
In summer, cool night air circulates through the interior mass to aid daytime cooling. Roof mounted liquid circulating solar collectors supply the majority of domestic water heating. A conventional gas fired furnace provides back-up space heating. At night movable insulation covers south facing glazing and closes off skylights to prevent heat loss.

An ERDA grant funds the passive system and mini-computer monitoring equipment which prints out daily and weekly summaries of energy performance. Construction is planned for this fall. □



Highway Rest Area Buildings, I-35 South of  
Owatonna, Minnesota Department of Trans-  
portation, Smiley Glotter Associates, Archi-  
tects, Engineers, Planners, Minneapolis. See  
page 36.





**Highway Rest Area Buildings,  
I-35 South of Owatonna  
Minnesota Department of  
Transportation**

**Smiley Glotter Associates, Architects,  
Engineers, Planners, Minneapolis**

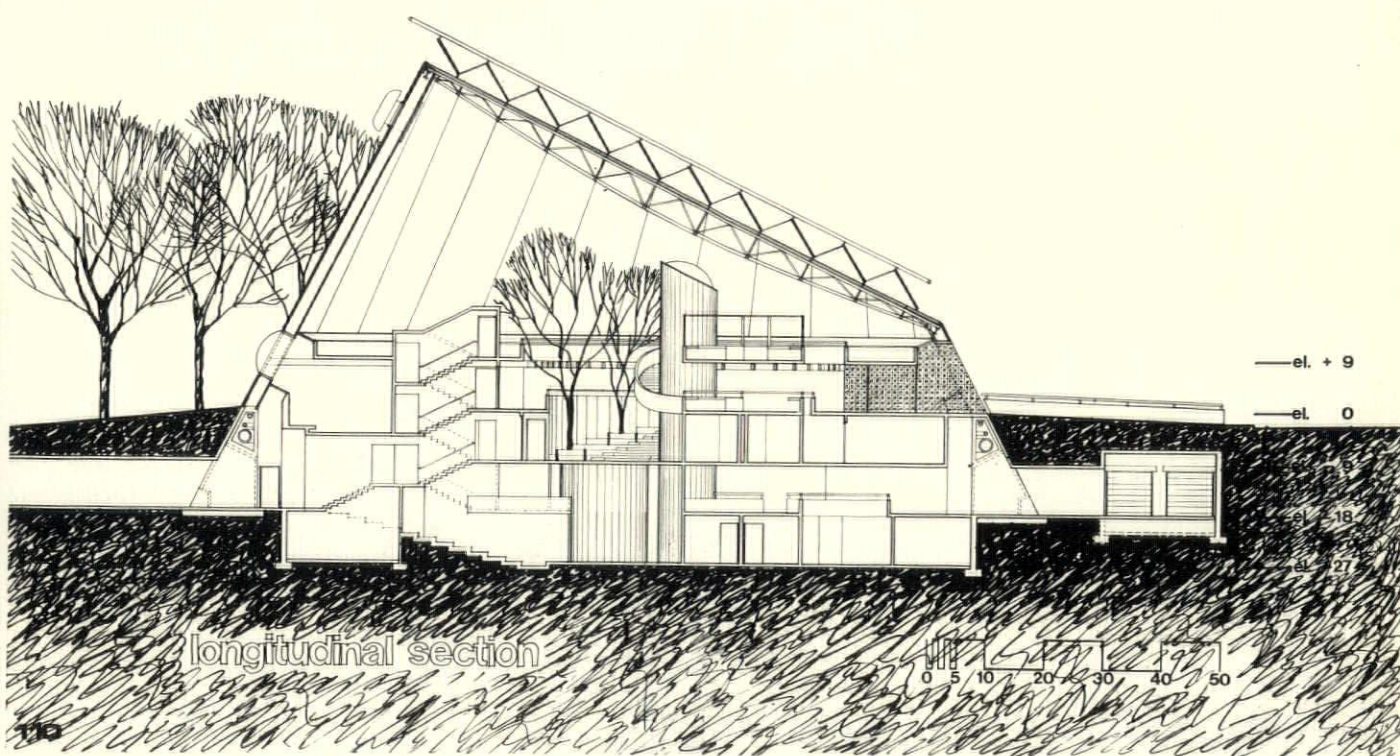
These two rest area and information display buildings are to be on the wooded north slope of the Straight River, on opposite sides of I-35 just south of Owatonna. They are built of wood construction with exposed timbers and natural materials to reflect the forested environment.

A solar and heat recovery system is proposed for the northbound unit,

and conventional fossil fuel system for the southbound unit. The architects suggest that this will provide an opportunity for quantitative testing with two identical buildings. The system is to be air medium solar collectors and air distribution and would provide about half the space heating needs and three-fourths of domestic hot water heating.

The solar fitted building is an opportunity to display a working installation to many people — an estimated 60,000 will visit the location yearly. For this purpose, the system's ducts, controls, heat exchangers and fans are to be exposed in the lobby and brightly painted for identification. A graphic display board will explain the system's workings.





**African American Cultural Center  
(proposal), Minneapolis**

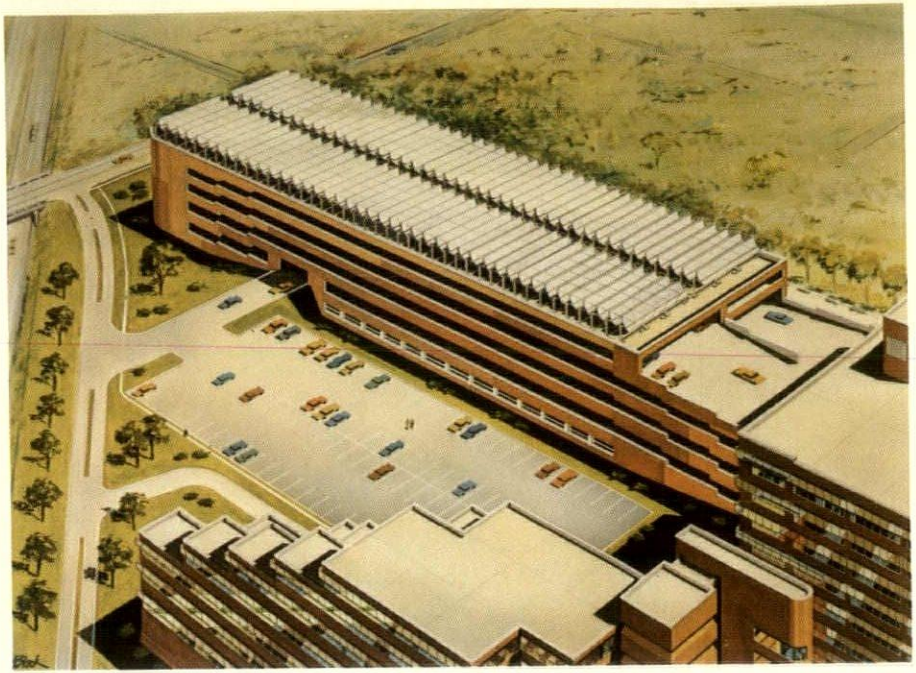
**Fredrick Bentz/Milo Thompson &  
Associates, Inc., Architects,  
Minneapolis**

The proposed center is to offer instruction in the arts, exhibits and other activities for blacks to build on their rich cultural heritage. The round shape of the building is in keeping with traditional African structures. About 50 per cent of the volume is underground, and the cone shape presents a minimum exposed mass to the elements.

At the top of the cone are strips of liquid circulating solar collectors. They are positioned louver fashion to shield the interior from direct sun. Beneath them a large 100 foot diameter translucent, low heat loss skylight provides natural light for exhibits on the upper level, and for an elliptical shaped atrium which can accommodate full size trees. Natural light also penetrates into lower levels through glass areas at the periphery. Heat storage is in an underground water tank.

Design development for the center was funded by a Minneapolis community development block grant. The project is dormant at present. □





**Office Building, General Offices  
Expansion, Minneapolis  
Honeywell**

**Hammel, Green and Abrahamson, Inc.,  
Architects & Engineers, Saint Paul**

Solar energy provides more than 60 per cent of heating-cooling energy and 100 per cent of hot water for Honeywell's new eight-story office building. The 100,000 square foot facility is under construction and will be in use by mid 1978.

It's a large solar installation. The 20,250 square feet of advanced design solar collectors are placed on top of a new adjacent parking ramp. When the sun is out the units are to provide all energy needed for the building.

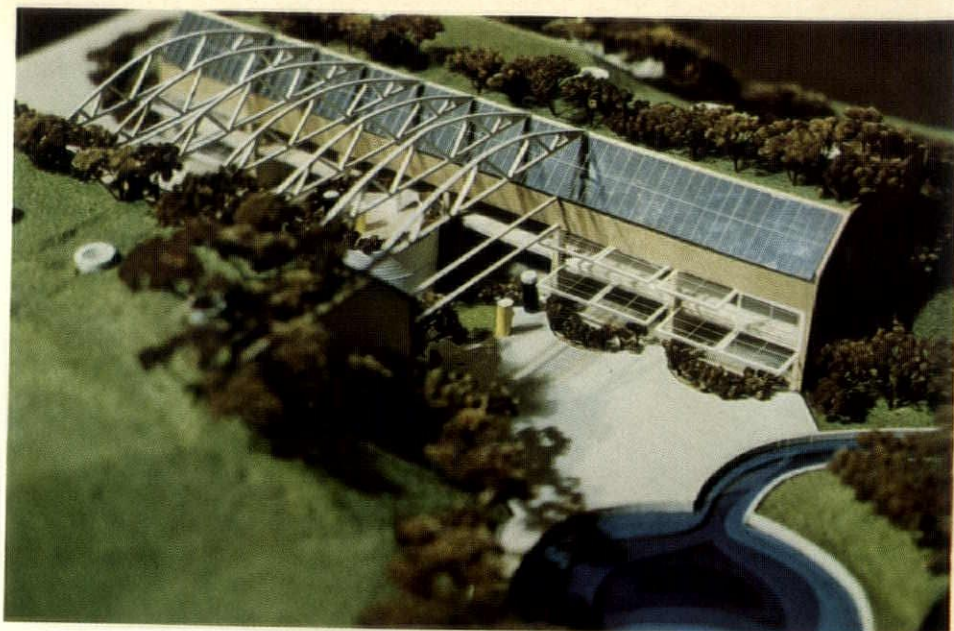
Parabolic trough collectors track the sun and concentrate sun energy to heat heat-transfer oil to 350°F. The heat transfers directly to heating, cooling or hot water subsystems and transfers excess collected solar energy to two 18,000 gallon storage tanks. The subsystems then draw on the storage during night or cloudy days. The fully charged storage can heat the building for two typical winter days or cool it for one typical summer day.

The large underground storage tanks contain by volume 60 per cent of washed rock and 40 per cent heat transfer oil. The rocks increase thermal

capacity and reduce oil volume needed.

For cooling, solar heat goes to equipment that converts it to mechanical power to drive two 100-ton water chiller air conditioners. The "Rankine Cycle" system uses the heat to vaporize a refrigerant which expands to drive a turbine. Honeywell officials say theirs is the first high temperature HVAC installation for a major commercial building. □

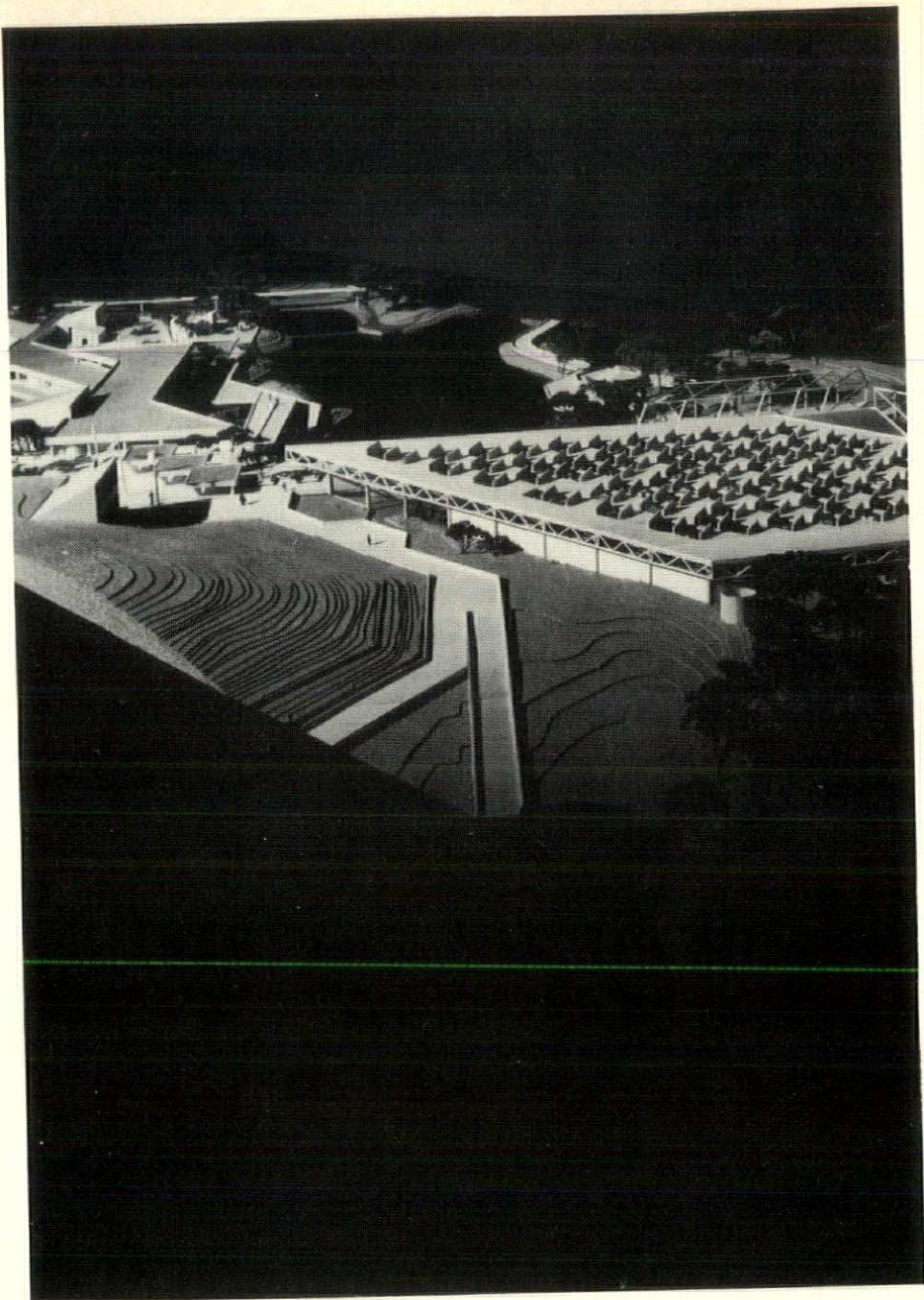




Studio—Workshop—Residence for Criteria . . .  
Saint Paul, Criteria, Inc., Minneapolis. See  
page 28.

Williamson Hall, East Bank, University of  
Minnesota, Myers and Bennett Architects—  
BRW, Edina, Minnesota. See page 31.





**Solar Exhibit, Minnesota Zoological  
Garden, Apple Valley  
Minnesota Zoological Society**

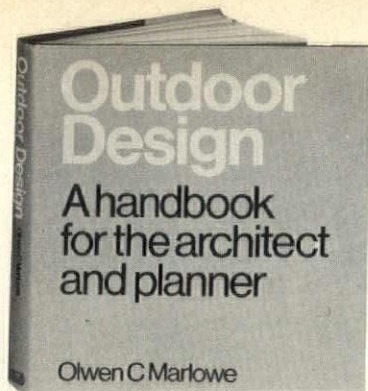
**InterDesign Inc., Architects,  
Minneapolis**

Aided by an ERDA grant, a major solar energy exhibit is being planned for the Zoo Ride transit station. The proposed installation has 12,000 square feet of flat plate liquid circulating collectors and 14,000 gallons of water storage. During winter the system heats the transit station and rest stop, plus four Mini-Zoo buildings: Nursery/Tiger Den, Animal Barn, Ex-

hibit Barn and Pony Barn. The system supplements conventional electric heating used for the zoo. By using thermal storage, however, off-peak electric heating of the storage tank is planned. This minimizes demand on the zoo's electrical distribution during peak operating.

During non-space-heating months the solar system will temper incoming domestic hot water for the zoo's main building complex. The main complex, incidentally, is two-thirds underground or earth-covered. To reduce energy demands the zoo will lower thermostat set points to 50°F in animal buildings, have night set-back in all buildings and give solar load priority to ventilation air. □



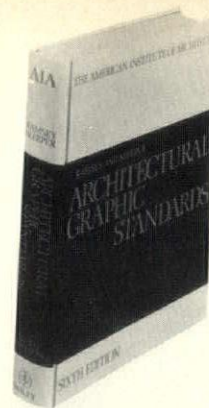
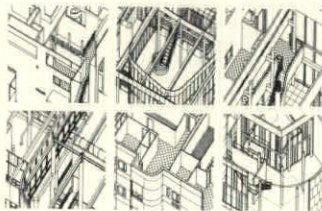


## OUTDOOR DESIGN

A Handbook for the Architect and Planner, by Olwen C. Marlowe. A comprehensive working manual for those engaged in planning and building our environment, from the architect and town planner to the landscape designer and ecologist. Whitney Library of Design, \$37.50.

**RICHARD MEIER, ARCHITECT**  
Today, as everything is required to have a message, Meier and his architecture do. It's solid and dense, it's an old message, clear and useful. Most of all, it's transferable, it's simple, and it's devoid of convoluted intellectual musings. The message is that architecture can lift up the spirit and make life a little better." John Hejduk, Oxford University Press, \$15 paperback, \$35 hardcover.

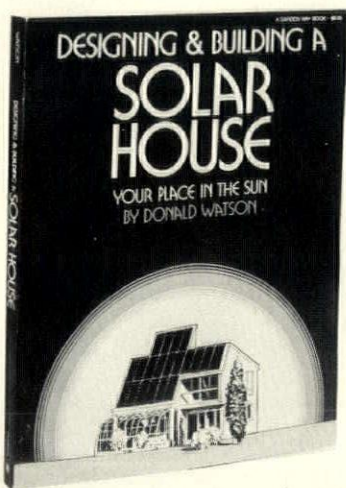
Richard Meier Architect



## ARCHITECTURAL GRAPHIC STANDARDS

by Ramsey and Sleeper  
Includes guidelines for foundations, sitework, concrete and masonry construction, metals, thermal and moisture protection, curtain walls, doors, windows, furnishings, air-conditioning and more. John Wiley and Sons, \$47.25.

# THE ARCHITECTURAL CENTER



## DESIGNING AND BUILDING A SOLAR HOUSE

by Donald Watson

This is not just another philosophical discussion about the promise of solar energy. It is a practical how-to book that clearly demonstrates the most sensible ways to marry good house design with contemporary solar heating technology. Garden Way, \$8.95.

Books by the convention speaker's also available at the book center:

**DESIGN FOR THE REAL WORLD** by Victor Papanak, Bantam, \$2.95.

**HOW THINGS DON'T WORK** by Victor Papanak and James Hennessey, Pantheon, \$4.95

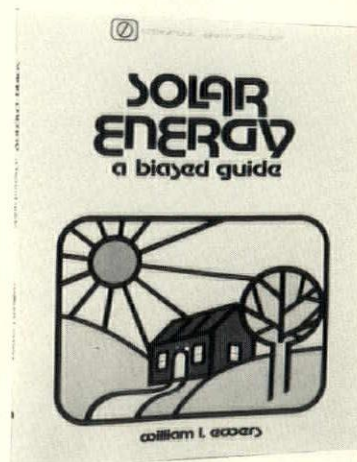
**NOMADIC FURNITURE I**  
**NOMADIC FURNITURE II**  
by Victor Papanak and James Hennessey, Random House, \$4.94 each.

**UNDERSTANDING MEDIA**  
by Marshall McLuhan, McGraw-Hill, \$1.95.

**GUTENBERG GALAXY**  
by Marshall McLuhan  
New American Library, \$1.50

VISIT THE CENTER'S TWO LOCATIONS AT THE CONVENTION AND BROWSE THROUGH OUR WIDE SELECTION OF BOOKS.

FOR INFORMATION OR TO ORDER A BOOK CALL SUSAN DAVIS, 227-0761.



## SOLAR ENERGY: A BIASED GUIDE

by William L. Ewers  
Ewers surveys innovative uses of solar technology in schools, libraries, residences and other institutions. He takes a look at the future and shows how satellites and other technology will be used to build reserves of solar energy on a mass scale. Includes an extensive bibliography and an international listing of manufacturers of solar equipment. Domus, 4.95.







# Long, low, linear light.

**Sterner's Illuminated Rail-Lite is the ideal solution to stairway and walkway lighting problems.**

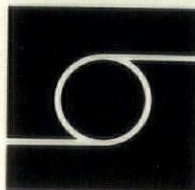
**LONG.** For interior and exterior malls, pedestrian overpasses, stairways, path systems . . . wherever you need a uniform light source that can go the distance, consider Sterner's Illuminated Rail-Lite. It is constructed of heavy gauge extruded aluminum in one-piece sections up to 16 feet long. It can be mitered to change direction and go around corners. Also available non-illuminated to provide continuity of design throughout the project.

**LOW.** A Sterner Illuminated Rail-Lite puts the light right where you want it — down low, close to the steps or walkway — not up on top of a pole where it can interfere with the mood you have created. Available as free-standing or wall mounted railings. They satisfy OSHA requirements for safety and construction.

**LINEAR.** The usual solution to stairway and walkway lighting has been the use of standard step and riser lighting fixtures. But the light distribution from these fixtures is unsatisfactory because they create mere pools of light. The best solution is the linear light path laid down the entire length of the stairway or walkway by Sterner's Illuminated Rail-Lite.



A. MAXWELL  
TY ARCHITECT  
ND STATE UNIVERSITY



**JERRY CARNES  
ASSOCIATES**

Manufacturers Representatives  
7036 Willow Creek Road  
Eden Prairie, Minnesota 55343  
612/941-5040



SINCE 1902

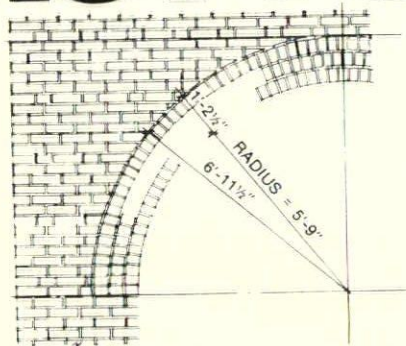
# Premier does it right electrically.

Installation and maintenance of industrial machinery and equipment - printing presses, rolls, process control, computer control, assembly line control, in-plant distribution systems; to makers' requirements or engineering plans and specifications. Any electrical need.

PREMIER  
ELECTRICAL CONSTRUCTION CO.  
115 East Grant Street  
Minneapolis, Minnesota 55403  
(612) 332-7393

Aurora • Chicago •  
San Juan, Puerto Rico

# brick...



we represent  
more than 20  
of the highest  
quality brick  
and brick paver  
maufacturers

call • or visit our showroom

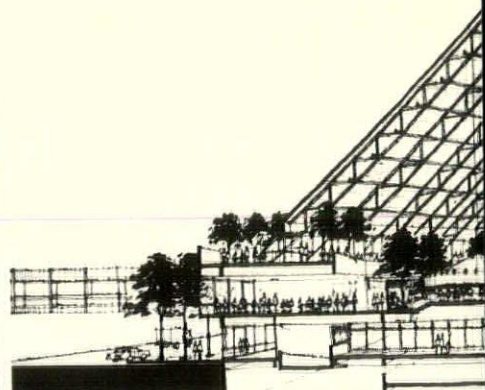
**WUNDER • KLEIN • DONOHUE CO.**

1123 GLENWOOD AVE.

MPLS., MINN. 55405

**612 • 374 • 5050**

**cement / dry wall / insulation**



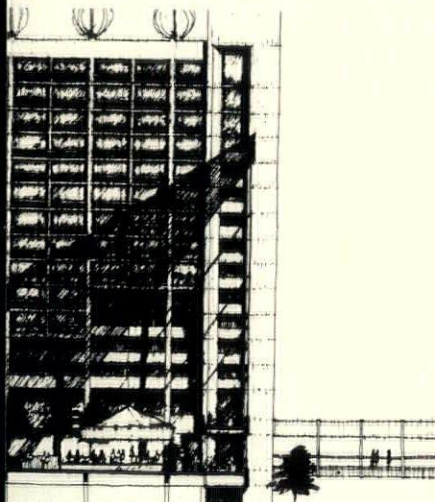
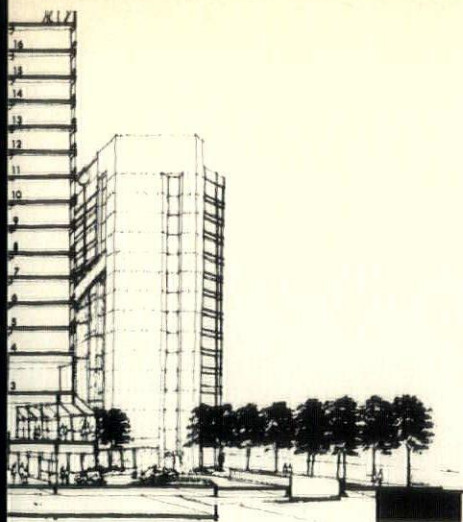
Radisson Plaza, Sixth and Minnesota,  
Saint Paul  
Saint Paul Joint Venture

Bergstedt, Wahlberg Bergquist  
Rohkohl, Architects, Engineers,  
Planners, Saint Paul

Radisson Plaza will be the first hotel in the U. S. to use solar and wind energy systems to meet a significant part of its energy needs, according to its architect. About 9000 sq. ft. of collectors will provide an estimated 35 per cent of the energy to heat domestic hot water and ventilation air. Costs of the solar installation, about \$400,000, will be 90 per cent funded by an ERDA grant.

About 5000 sq. ft. of circulating liquid collectors will form a slanting triangular roof over an interior court alongside the hotel's 16 story tower. Their purpose is to heat water for 250 guest rooms, laundry and kitchen. Hotel use of hot water for such purposes is significant with an energy de-





mand greater than that for heating of ventilation air.

Air-circulating collectors for pre-heating fresh air will be placed vertically, covering an entire angled facet of the hotel tower on the south side. The two collector systems are to be interconnected so that each can draw from the other.

Engineering studies are still under way for later incorporation of vertical axis wind generators on the roof of the tower. These are expected to be quite efficient, being 16 stories above ground where air velocities are high. They may also benefit from the air currents generated by tall buildings. The alternating current generated could connect directly with the electric utility grid and so that excess supplies would backflow into the utility's system. Whether the utility would simply allow the meter to run backwards or would make other arrangements is the subject of current negotiations.

Construction of the \$10.5 million hotel project is to begin in early fall for spring 1979 completion. □

# FOR FULL SERVICE

## REPRODUCTION AND SUPPLIES

minnesota  
**blueprint**

BROADWAY AND MISSISSIPPI RIVER  
MINNEAPOLIS



210 W. MICHIGAN ST.  
DULUTH

MINNESOTA **K & E** DISTRIBUTORS

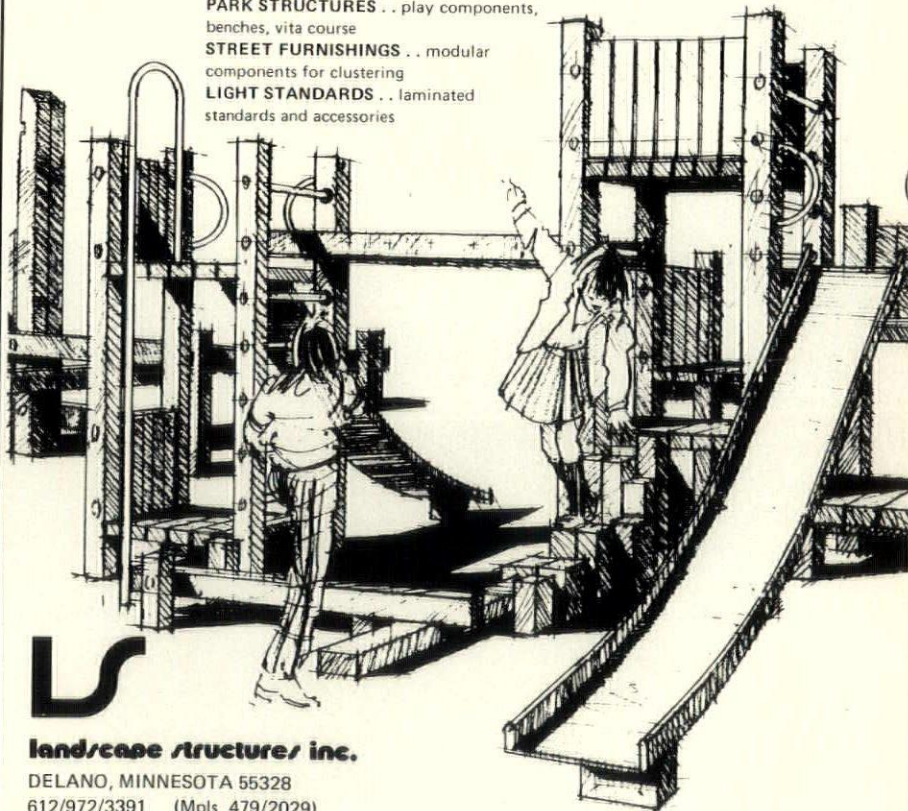
## landscape structures

SPECIALIZING IN THE DESIGN AND PREFABRICATION OF QUALITY WOOD PRODUCTS

PARK STRUCTURES . . . play components,  
benches, vita course

STREET FURNISHINGS . . . modular  
components for clustering

LIGHT STANDARDS . . . laminated  
standards and accessories



**landscape structures inc.**

DELANO, MINNESOTA 55328  
612/972/3391 (Mpls. 479/2029)



Besides Lutefisk, Volvos, and Beautiful Women . . .

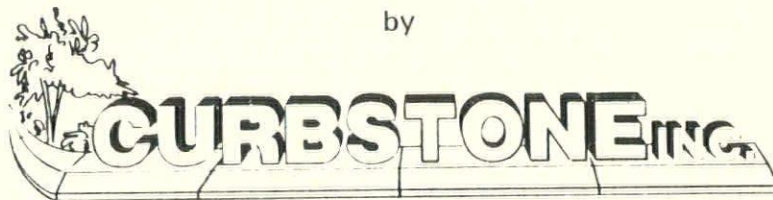
## SWEDEN

Also Invented Pre-Cast Concrete **CURBSTONES** ! !

In the Country of SWEDEN, 90% of all road and parking lot curbing are pre-cast concrete  
**CURBSTONES,**

We have the patent, the production facilities, and the manufacturing  
expertise to build and deliver the best and most economical curbs  
this side of Stockholm.

So, CURB your costs and cover the ground with quality curbing  
by



A NEW CONCEPT IN QUALITY CURBING

(A subsidiary of Chandler-Wilbert Vault Co.)

2280 N. Hamline Ave., St. Paul, MN 55113 (612) 631-1234

Stop by and see us at our booth at the Architects' Convention  
Sept. 8-10 at the Radisson South Hotel, Minneapolis, MN

## If you use dry transfer materials you should be using Geographics products

**GEOTYPE** The 12" x 16" transfer lettering sheet that's heat resistant, can save you up to 50% and has an unconditional shelf life guarantee. Over 180 styles in black or white plus 9 popular styles in red, green, yellow, blue and gold.

**GEOSYMBOL** 45 different sheets in black or white. Hundreds of commonly used symbols and signs.

**GEOEX** 20 patterns of instant shading and tonal effects in black or white.

**GEOSPECIALS** Transfer sheets made from your own art in 1 color or up to 8 colors. Corporate colors can be matched.

**GEOTAPE** Superb quality precision slit charting tapes for use in art, drafting, design, printed circuits,

etc. Variety of sizes, finishes and colors. 1/64" to 1" wide plus point sizes. Heat resistant.

**GEOSIGN** Easy to apply adhesive vinyl letters and numerals in black or white from 9/16" to 6". Ideal for signs, identification, displays, and exhibition work.

### Visit Our Booth at the 1977 AIA Convention



Distributor for Geographics Products  
200 12th Avenue South  
Minneapolis, Minnesota 55415  
612/332-5434



**GAMMA COPY**  
PLYMOUTH BUILDING  
MINNEAPOLIS, MINN. 55402  
339-7231

Pre-press Graphic Services for the Business and Graphic Communications Industry



College Center, Marshall  
Southwest Minnesota State University  
Stegner, Hendrickson, McNutt, Sullivan,  
Brainerd, Minnesota

This student center went underground partly as a logical solution to a need to tap four ways into the campus' extensive underground passageway systems, to retain on grade pedestrian patterns and to maintain the scale of open spaces with buildings. Planners, however, were well aware of the energy savings spin-off. Construction was completed in 1974.

The building has 39,000 square feet on one level, with average earth cover of about three feet. Natural light comes mostly from a 30 foot diameter skylight dome over the lounge which is over a structural poured concrete tree, making it a focal point.

Willard Isfeld, director of facilities, says there's no way to determine accurately energy savings. The entire campus uses all electric energy. The center's kitchen is also all-electric but not separately metered. However, the building's electrical demand per square foot is comparable to above ground buildings on campus with no kitchens.

□



**New Energy Code!**

## How Much Insulation?

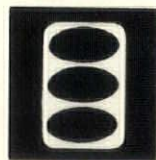
We have the answers for:

**ROOF**  
INSULATION

**WALL**  
INSULATION

**PERIMETER**  
INSULATION

**UNDERSLAB**  
INSULATION



**7 Thermal and  
Moisture Protection**

Call us. We can help.



**SNOW-LARSON, INC.**  
CONSTRUCTION MATERIALS

1221 No. Second Ave., Minneapolis, Minn. 55405  
(612) 374-1216

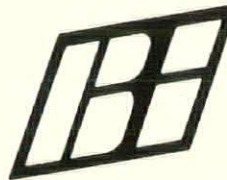


# When You Think of PANELS...Think of US!

Preformed Steel Siding ..... Inryco and Elwin G. Smith  
 Standing Rib Roofing & Siding ..... Kaiser Zip Rip  
 Porcelain on Steel ..... Kaiser Mirawal  
 Porcelain on Aluminum ..... Mapes  
 Copper Laminated to Plywood ..... Revere Copper  
 Colored Aluminum Laminated to Plywood ..... Panel "15"  
 Stone Aggregate on Plywood ..... Sanspray  
 Formica Clad Interior Walls ..... TMI Systems  
 Insulated Closure Panels for Double Tee Decks ..... Benoit Closure Panels  
 Cement Asbestos Wall Systems ..... We Have Them All

We will fabricate any laminated panel combination or shape you can think of.

**WE DISTRIBUTE, FABRICATE & ERECT!**



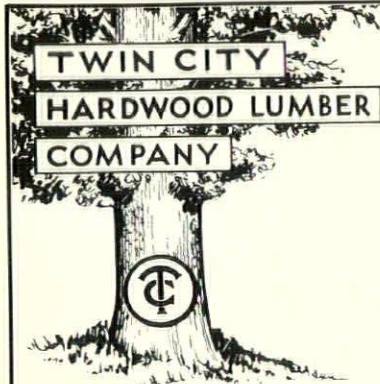
**Benoit Inc.**  
 635 North Prior Avenue  
 St. Paul, Minnesota 55104  
 Inter State (800) 328-1436  
 Intra State (612) 646-1387

Northview Junior High School,  
 Brooklyn Park  
 Independent School District 279

Matson, Wegleitner, Abendroth,  
 Architects, Inc., Minneapolis

Three years experience with this solar installation shows it to be reliable, with no maintenance problems. Actual performance in energy provided slightly exceeds estimates.

The installation was funded by a National Science Foundation grant. The 246 liquid circulating collectors (5000 square feet) were placed on a sloping bank adjacent to the pool and athletics part of the school building complex. Their primary purpose is to heat water for the 25-yard indoor pool and to heat ventilating air in the pool area. The system also supplements water heating for kitchen, lavatory and shower use. Excess energy generated is also used to supplement ventilating air in nearby physical education spaces. Records show the system accounts for seven per cent of heating energy needs for the entire complex. The system provides for heat storage in a 3000 gallon tank. The installation saves about 12,500 gallons of oil annually. □



**TWIN CITY  
 HARDWOOD LUMBER  
 COMPANY**

*Specialists in  
 Hardwood Lumber*

509 NO. CLEVELAND  
 ST. PAUL, MINNESOTA 55114  
 BRANCH YARD — FARGO, NO. DAK.

Call your orders in collect



ST. PAUL ..... 612/646-7156  
 FARGO ..... 701/232-3361

Distributors of

## Hardwood Lumber

There is no substitute for the warmth and beauty of real hardwood.

## Hardwood Floors

Hardwood strip floors with a choice of grades to fit every building budget.

## Prefinished Floors

Parquet — Plank Floors.

## G & K Cedar Closet Panels

Aromatic Red Cedar Panels.

## Townsend

Solid Hardwood Plank Paneling.

## Wood Kote

Clear or Color Wood Finishes  
 & Gelled Stains.

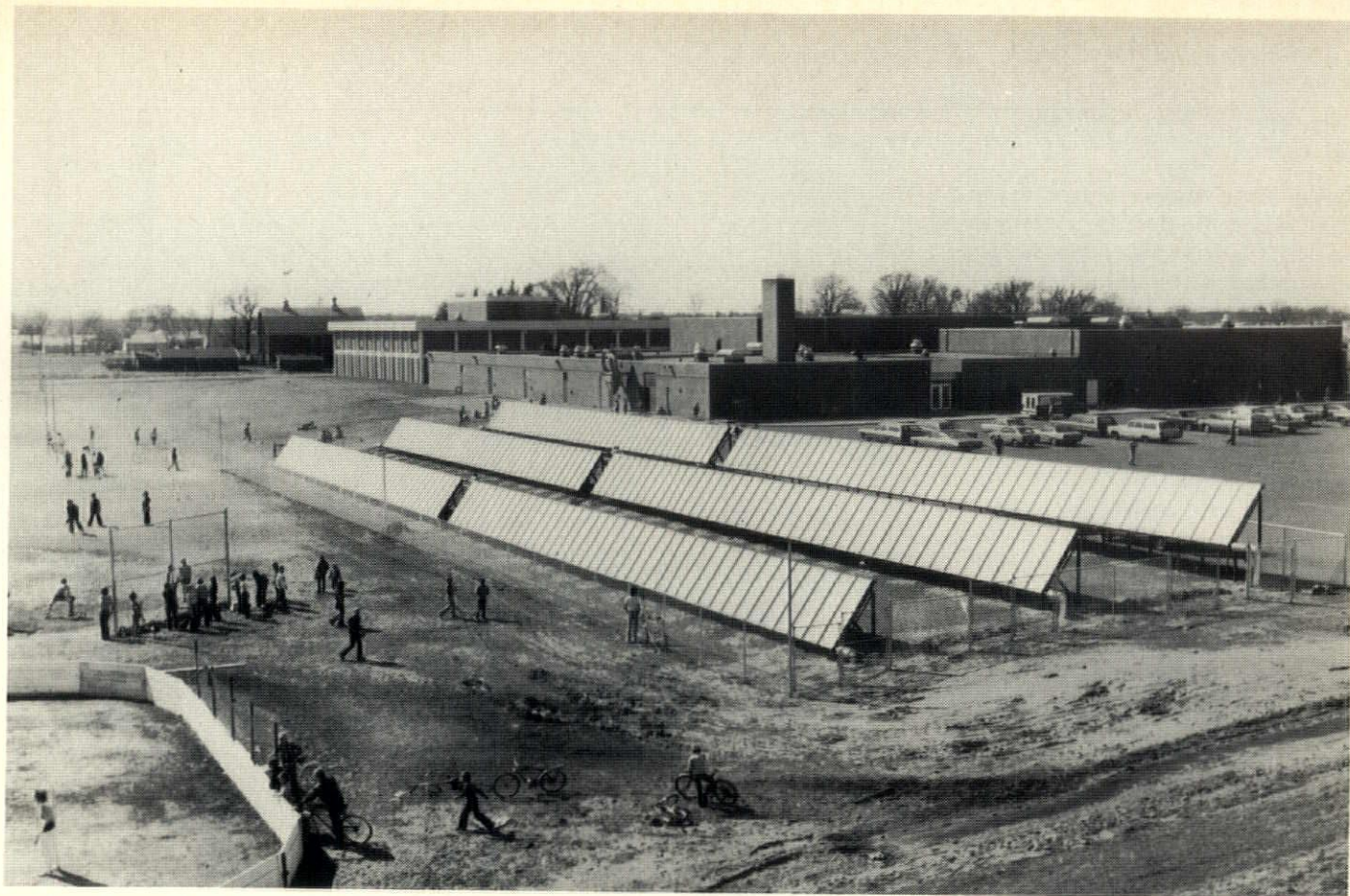
# VISIT US AT BOOTH 118

MSAIA CONVENTION

**AUTOMATIC  
 GARAGE  
 DOOR COMPANY**

7901 Beech St. N.E.  
 Fridley, Mn. 55432  
 786-5497





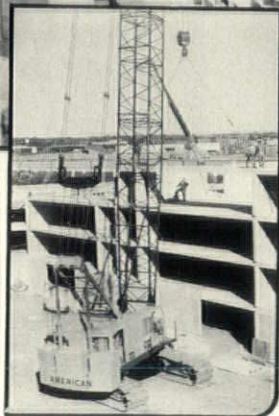
## IT'S THE SATISFIED CUSTOMERS WHO COME BACK

And we've had a lot of repeat business! They were certainly satisfied at York Plaza apartments back in 1974. That's why they called us back late in 1976 to build the York Plaza condominiums. Over 371,000 sq. ft. of Fabcon product were used in the latest effort, and it went up in two months. We've had similar experiences with clients building commercial, industrial, educational and recreational structures.

Can we satisfy you?

For full information about Fabcon and its products, call (612) 890-4444.

Developer and builder: Metram Properties Company, Inc.  
Architect: Korsunsky Krank Architects, Inc.



# FAB CON<sup>®</sup>

**FABCON, INCORPORATED**

6111 WEST HIGHWAY 13  
SAVAGE, MINNESOTA 55378  
(612) 890-4444



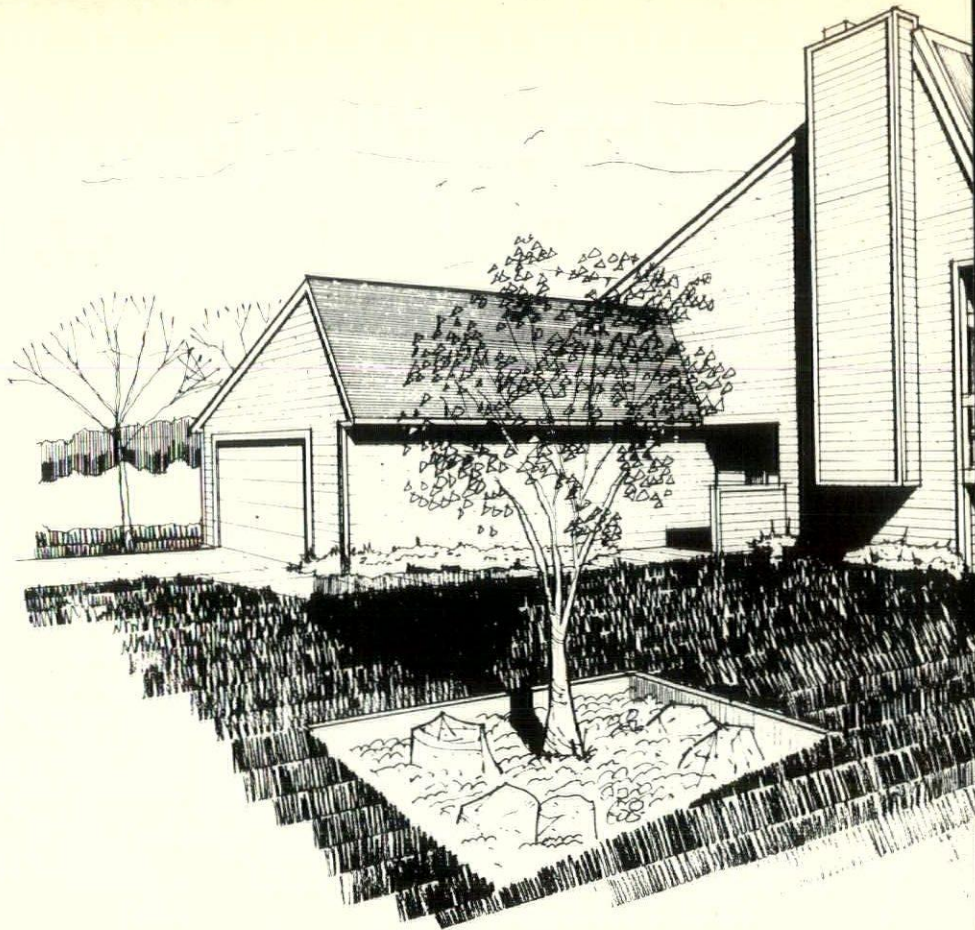
Demonstration Home, Minnetonka  
Hobmar Homes

Schwarz-Webber, Inc., Architects,  
Minneapolis

Designed in cooperation with Honeywell and Boise-Cascade and funded by a HUD grant, the demonstration builder home has a hybrid active-passive solar heating system which provides an estimated 60 per cent of heating and hot water energy. After allowing for heat energy input of the passive system, a new type air medium collector provides 44 per cent of the remaining heating energy needs.

In the solar panels circulating air flows through air jets causing more efficient absorption of heat from the collector surface. The collectors are said to be 20 per cent more efficient than comparable air medium systems presently marketed. The units are scheduled to be a production item by Lennox Industries under agreement with Honeywell.

The solar home design was designed for compatibility with future Boise Cascade home production. The firm now has 25 solar homes built or under construction using liquid circulating collectors. □



**CAN ★ TEX**  
INDUSTRIES  
BRICK & TILE  
DIVISION

**FACE BRICK**  
**FLOOR BRICK**  
**GLAZED**  
**BRICK**

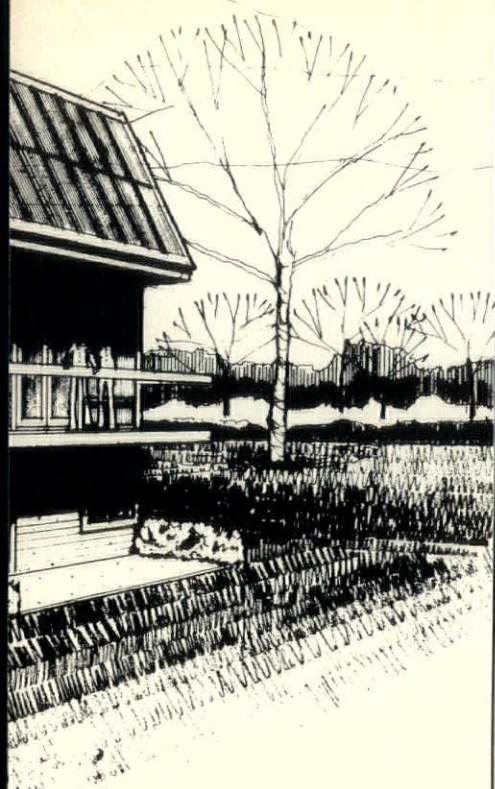
101 ASHWORTH ROAD  
WEST DES MOINES, IOWA 50265

A DIVISION OF **Harsco** CORPORATION

**WE HAVE  
QUALITY  
PRODUCTS,  
EXPERIENCED  
PERSONNEL,  
FULL SERVICE &  
LOCAL  
DISTRIBUTORS**

**CALL OUR SALES OFFICE  
515/223-1450**





## Mutschler's the best!



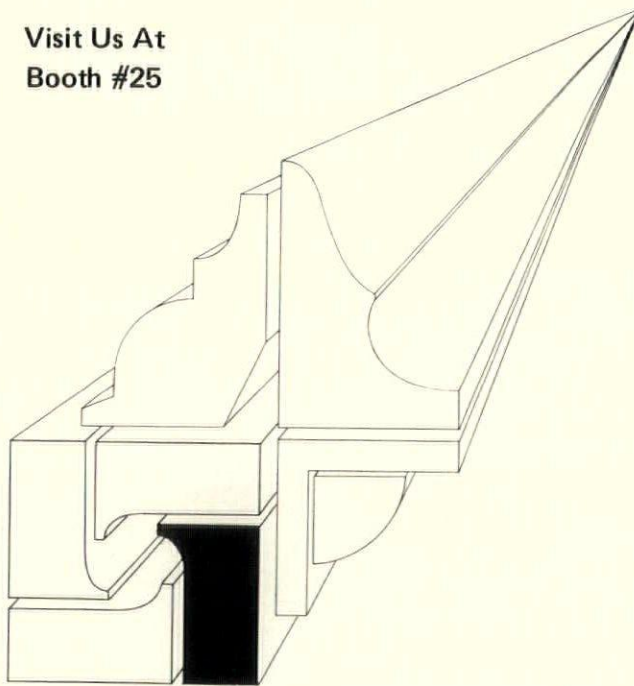
Form follows function. And, good kitchen design isn't easy. We're ready to assist you with your design. Come to our showroom, meet our professional team and see Mutschler . . . the finest (and most expensive) wood kitchen cabinets.



**Mutschler Kitchens of Minneapolis**

3940 West 50th • Minneapolis, MN 55424 612/926-7631

Visit Us At  
Booth #25



**INTERIOR  
WOOD  
PRODUCTS**

858 TRANSFER ROAD  
ST. PAUL, MINNESOTA 55114  
PHONE (612) 646-8841

**WOOD SPECIALTY  
DISTRIBUTION  
SINCE 1889**

*Wallace Neal is a freelance writer, business consultant and research specialist, with a background of 22 years in construction industry management and marketing. He writes regularly for the Specifier, national publication of Construction Specifications Institute, Marina Management/Marketing and other business publications. He is a member of Associated Business Writers of America.*





**BUILT-UP ROOF SYSTEMS**

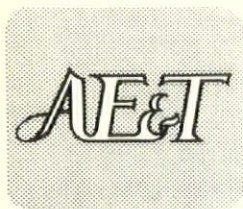
Surveys — Reroofing Design  
Engineering — Inspection — Tests

3410 Winnetka Ave. N./Minneapolis, Mn./55427  
612-546-3434

**GAUSMAN & MOORE, Inc.**

CONSULTING ENGINEERS  
Mechanical and Electrical Systems Design for  
COMMERCIAL, INSTITUTIONAL, INDUSTRIAL

700 NORTH ROBERT STREET  
ST. PAUL, MINNESOTA 55103  
612/225-6577



ENGINEERS  
SURVEYORS  
SOIL TESTING

515-232-7231

**ames engineering and testing co**

a subsidiary of ~~AME~~  
2010 east 13th street • ames, iowa 50010



*An Expansion of  
Soil Engineering  
Services, Inc.*

MINNEAPOLIS/ST. PAUL 6800 S. County Rd. 18, Mpls., Mn. 55435/612 941-5600  
NORTHERN MINNESOTA 3219 E. 19th Avenue, Hibbing, Mn. 55746/218 263-8869

Test Borings, Inspection of Construction, Material Testing  
of Soils, Concrete, Bituminous and Building Components.



**SOIL TESTING SERVICES  
OF MINNESOTA, INC.**

Consulting Geotechnical  
and Materials Engineers

2405 ANNAPOLIS LANE, SUITE 280 • PHONE 612-559-1900  
MINNEAPOLIS, MINNESOTA 55441



**SOIL EXPLORATION  
COMPANY**

662 CROMWELL AVENUE  
ST. PAUL, MN 55114  
PHONE 612-645-6446

**SUB-SURFACE INVESTIGATIONS**

**ENGINEERING**

- Analysis
- Recommendations
- Consultation

**FIELD INVESTIGATIONS**

**LABORATORY TESTS**



**twin city testing  
and engineering laboratory, inc.**

662 CROMWELL AVENUE  
ST. PAUL, MN 55114  
PHONE 612/645-3601

COMPLETE TESTING SERVICES IN:  
soil mechanics, foundation engineering;  
construction materials; NDT  
and metallurgic analysis; chemical  
analysis.



**ALPHA DYNE**  
INCORPORATED

2119 GRAND AVE. ST. PAUL MINN. 55105 (612) 698 5561

**CONSULTING ACOUSTIC ENGINEERS**

Control of Sound and Noise  
Commercial/Industrial/Institutional  
Environmental Impact Studies  
Field Testing and Certification



# NEW TOOLS FOR ARCHITECTURE MATERIALS — EQUIPMENT — SERVICE

Edited by James A. Kellett AIA CSI

## Coating Absorbs, Diffuses Light —

A black enamel coating developed for optical use is finding new applications today in solar energy systems. The reason? Its light absorbing properties.

Nextel brand flat black velvet coating, from 3M Company, is an optical black enamel which provides both a light absorbing and a light diffusing surface. At 25 degrees C., its solar absorption rate is 0.98, and its infrared emittance is 0.89.

Developed by 3M more than 15 years ago, "Nextel" brand 101-C10 coating helps you create a surface which is resistant to the burnishing normally associated with conventional coating materials.

The excellent weather-resistant qualities of Nextel coating makes it ideally suited for applications such as glare shield nose exteriors on aircraft and infrared absorbing coatings for thermal control. With a Gloss reading of less than 1 at 60 degrees F., it has been widely used in optical equipment requiring highly controlled minimizing of stray light reflections.

More recently, Nextel coatings are being used on solar energy applications. Within the past several years, they have been successfully applied on solar energy absorbers — both the flat type and the concentrating type — where operation is below 350 degrees F. (And they have proved themselves on tubing carrying liquid to be heated.)

Easily handled without the need for special tools or equipment, Nextel coatings can be applied to almost any firm, clean substrate, including aluminum, copper or steel.

In most cases where absorber temperatures do not exceed 200 degrees F., an increase in absorptivity is more effective in improving the cost effectiveness than corresponding decreases in emissivity. This is why "Nextel" Black Velvet Coating with its absorptivity of 98 percent continues to be valuable even though it is not a "selective" coating, 3M explained.

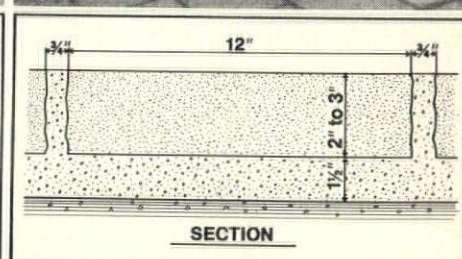
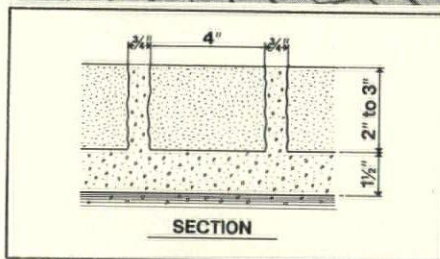
Relative freedom from degradation at normal operating temperatures of flat plate collectors is another desirable

quality of Nextel coating.

For more information on Nextel brand flat black velvet coating, write 3M Company, Decorative Products Division, Department DE6-24, 3M Center, St. Paul, Minn. 55133.

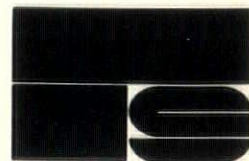
**New Design Manual Available for Structural Pipe** — A new manual that provides design rules for the use of structural pipe and tubing, is now available from the Committee of Steel Pipe Producers of American Iron and Steel Institute (AISI).

## Granite. Beautiful for heavy traffic areas.



Cold Spring granite is a natural for landscape applications. Its warm colors and natural textures blend beautifully with the environment. And at the same time, granite provides the designer with the flexibility he needs to create areas of unusual and lasting beauty.

At Cold Spring we now have a wide variety of Module Pavers and Durax Blocks available. For more information, plus a packet of full color literature illustrating our products in use, call toll free **800-328-7038**. In Minnesota, call (612) 685-3621. Or write to the address below.



**Cold Spring Granite Company, Dept.**

202 South 3rd Avenue, Cold Spring, MN 56320



The handbook is entitled, "Tentative Criteria for Structural Applications of Steel Tubing and Pipe." It offers specific criteria for the design of round and rectangular rolled or manufactured steel tubular sections used as tension, compression, or torsion members in buildings. The information applies solely to unstiffened tubular sections and, in limited cases, to stiffening at connections and locations of concentrated forces.

Author of the 64-page manual is Dr. D.R. Sherman, professor of

structural engineering at the University of Wisconsin-Milwaukee, and consultant to the Committee. It is intended as a supplement to the existing 111-page "Design Manual for Structural Tubing," which offers technical assistance in the selection of the best structural components for a given application.

Copies of the "Tentative Criteria" manual (\$2.00) and the "Design Manual" (\$2.25) are available from the Committee. For one or both of these manuals, please enclose check or

money order and send to Committee of Steel Pipe Producers, American Iron and Steel Institute, 1000 16th St. N.W., Washington, D.C. 20036.

**New Precision T-Square** — Ulano Companies has introduced the Ulano Glideliner, a patented graphic arts tool designed to outperform the T-square or parallel rule while overcoming the disadvantages of both.

The Ulano Glideliner attaches to a light table, drafting table, or drawing board, leaving the user's hands free, unlike the T-square. In contrast to the parallel rule, the Ulano Glideliner has a hinged blade that raises off the table, so the operator can get under the blade easily without having to move papers, pencils, knives, or other materials.

"The Ulano Glideliner is a precision device," says a spokesman for Ulano. "There are no strings or wires. The blade moves on a precision ball bearing-guided vertical glide. The blade is made from hard-anodized aluminum that resists rust and nicks. The whole device is designed for long, accurate service."

For more information on the Glideliner, write Ulano, 210 East 86th St., New York, N.Y. 10028.

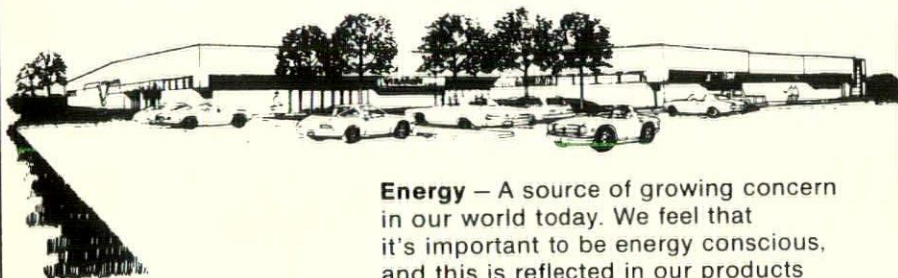
**Artificial Turf Available in 18' Widths** — Instant Turf Industries, Inc. recently became the first major producer of synthetic turf to purchase an 18' tufter. The machine, which is now operational, augments the company's standard 6', 12', and 15' width equipment.

The new home of the 18' tufter, one of only three in the entire U.S., is at Instant Turf's mill in Dalton, Georgia. Instant Turf Industries, a manufacturer of synthetic turf, offers 27 different constructions and colorations including stripes and tweeds.

Instant Turf fiber is made from 100 percent polypropylene olefin, pigmented throughout to reduce the chance of color fade or change. The fiber is also stain and static resistant, allowing many commercial and residential applications both in and out-of-doors.

**Office Chairs** — A new line of 26 office chairs for executive, professional, managerial and clerical employees in virtually every category of business, industry and profession has been an-

## The Glass Fabricators that care about your future.



**Energy** — A source of growing concern in our world today. We feel that it's important to be energy conscious, and this is reflected in our products and services.

We manufacture architectural glass products, including insulating units to conserve energy in residential and commercial buildings. And, we carry a full line of laminated products to help curb noise pollution and security problems.

Viracon also fabricates foreign car windshields, helping to sustain an energy saving means of transportation.


Even our new manufacturing facility reflects our concern. Designed to be energy efficient, the structure incorporates solar energy collectors.

We're more than just a glass fabricator. We're concerned citizens, working for a better tomorrow — for us, and for you.

Visit Us At Booth 133 — MSAIA Convention



800 Park Drive, Owatonna, MN 55060  
Attn: Architectural Services Dept.  
Phone (507) 451-9555

Glass Fabrication Division of  Enterprises, Inc.



# How New Jersey Saved \$12,000,000

In New Jersey in 1976, contracts were let for 51 public construction projects in the range of \$100,000 or more. By law, all publicly financed construction in New Jersey must call for both separate and single bids. In 48 of last year's 51 projects, the separate bids were lower; 9.7% lower than the total amounts submitted on a single contract basis. Because of separate bids, New Jersey taxpayers were saved \$12,204,284.\* It follows that proportionate savings can be achieved in private construction.

That's why architects, engineers, and owners should make the comparison. *Separate* the mechanical, electrical, and general construction bids, and *save*.

\*Source: Mechanical Contractors Association of New Jersey. For complete details, write or call the Twin Cities Piping Industry Fund, Suite #304, 2829 University Ave. S.E., Minneapolis, Mn. 55414 (612) 378-7600.

METRO ASSOCIATION OF  
PLUMBING • HEATING • COOLING CONTRACTORS



NATIONAL ASSOCIATION OF  
PLUMBING • HEATING • COOLING CONTRACTORS



TWIN CITIES  
PIPING INDUSTRY ASSOCIATION



NATIONAL ASSOCIATION OF  
PLUMBING • HEATING • COOLING CONTRACTORS

---

**PIPING INDUSTRY DEVELOPMENT COUNCIL**

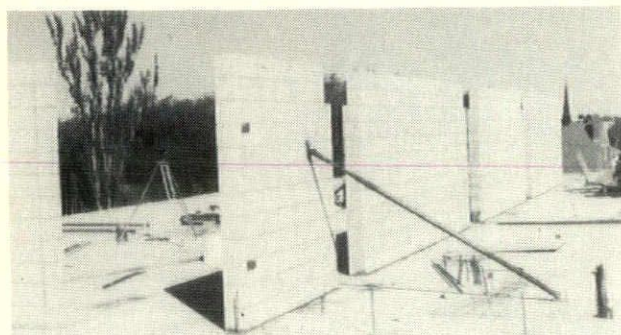
---

OF MINNEAPOLIS AND ST. PAUL



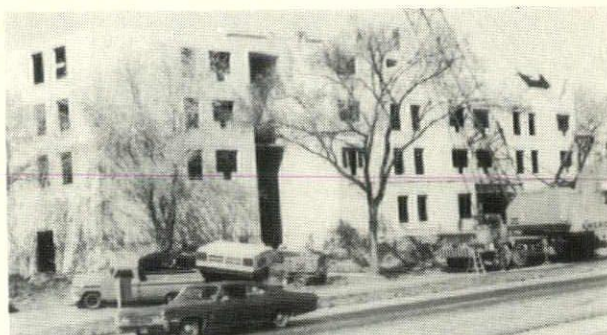
Spancrete announces

# TOMAX<sup>TM</sup> a new way to do an old job



Tomax is a machine manufactured masonry wall panel utilizing standard concrete masonry units and mortar. It offers maximum design flexibility in conventional wall construction, and is suitable for low, medium and high-rise buildings.

Preconstructed at the plant, Tomax is delivered to the job-site ready to assemble. No complicated drawings are necessary for installation because Tomax wall panels connect in accordance with standard masonry codes. Tomax offers other advantages, also. It's safe.



The fire rating meets standard masonry codes. It's economical. Tomax wall panels can be installed rapidly, reducing rising job-site labor costs.

Tomax is manufactured in sizes up to 12 feet by 24 feet, using standard size blocks in 6 inch, 8 inch, 10 inch and 12 inch widths.

For more information on the Tomax preconstructed wall panel, its uses and potential, call or write us. We'll be happy to give you the facts.

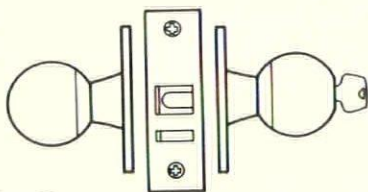
Your complete supplier of prestressed products

## SPANCRETE MIDWEST COMPANY

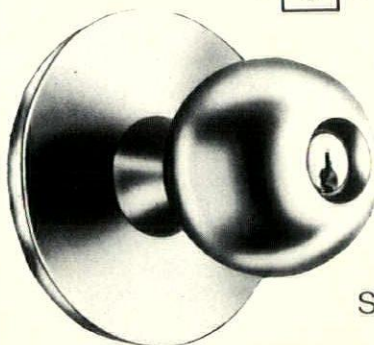
P.O. Box AA Osseo, Minnesota 55369 (612) 425-5555



### Architectural Hardware



SARGENT



CORBIN

SCHLAGE



**arners Contractors Supplies**

A DIVISION OF WARNER HARDWARE CO.  
15 So. 6th St., Minneapolis, Minn. 55402  
612-339-1919

### NEAL DEMOUNTABLE PARTITIONS & LANDSCAPE DIVIDERS ARE:

- 1 DESIGNED TO ALLOW ARCHITECTURAL INPUT
- 2 PRICED COMPETITIVELY
- 3 MANUFACTURED, INSTALLED & SERVICED BY DEPENDABLE LOCAL PERSONNEL

# neal

**w. a. neal slate co.**

7975 WALLACE ROAD  
EDEN PRAIRIE MINNESOTA 55343  
TELEPHONE (612) 941-2440



nounced by Harter Corp., Sturgis, Mich.

The line, the 7600 Series Seating, which was featured at the International Interior Design Show in Toronto in early November, is in the moderate price bracket throughout the range of models, Harter said.

All units in the series are based on the "Harter Comfort Concept," each chair representing a design which resulted from extensive study of male and female physiology and biomechanics, work practices and office environments.

The 7600 Series is a complete seating system which includes executive models with upholstered arms, managerial and supervisory seating with open arms, armless clerical chairs, and highbase chairs with footrings, for tellers, switchboard operators and draftsmen.

**Unique Air Handlers** — The first of three series of unique air handlers is now being marketed by the Climate Control division of The Singer Company.

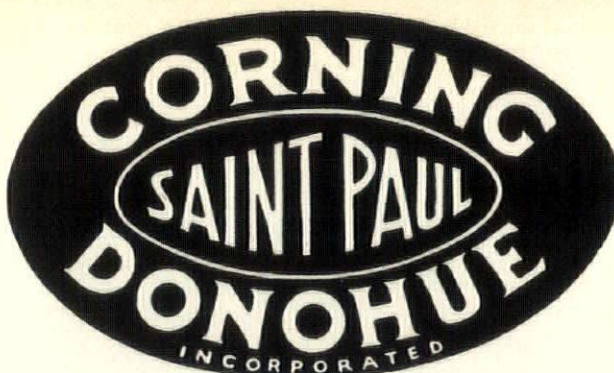
Available in cooling coil capacities of 3½, 4 and 5 tons, the new equipment is the first air handler ever developed that both features a modular concept and can be used for up-flow, down-flow and horizontal applications, according to Thomas J. Moakley, marketing manager for Climate Control's Comfortmaker product line.

Two other series of air handlers are scheduled for introduction in 1977 also. The next will be for required capacities of 2½ and 3 tons and the third for capacities of 1½ and 2 tons.

Discussing the flexibility of the air handlers, Mr. Moakley says that for each capacity size in a series two evaporator coils will serve for either heat pump or straight cooling, one for either up-flow or down-flow application, the other for horizontal. All coils are slide-in design for easy field installation either immediately when the air handlers are installed or at a later date.

Singer's air handlers are designed also to accept field installed slide-in electric heating units that feature quick-connect electrical plugs for internal circuits and factory installed fuse protection that meets UL and NEC requirements.

**New Drapery Hanging System** — The Rohline Drapery System uses only flat drapery panels, saving the cost



THE LARGEST AND MOST COMPLETE STOCK OF  
BUILDING MATERIALS IN THE NORTHWEST

FACE BRICK  
INDUSTRIAL PAVERS  
FLOOR AND PATIO BRICK  
STRUCTURAL GLAZED FACING TILE  
DECORATIVE CERAMIC FLOOR AND WALL TILE

GENERAL OFFICES & DISPLAY ROOM

MIDWAY WAREHOUSE

1407 Marshall Avenue

Saint Paul, Minnesota 55104

Telephone: (AC 612) 645-6631

## DALE TILE CO- CERAMIC TILE PROFESSIONALS

AN APPROPRIATE USE OF A BEAUTIFUL DURABLE  
MAINTENANCE FREE CERAMIC TILE STONEWARE  
FLOOR.

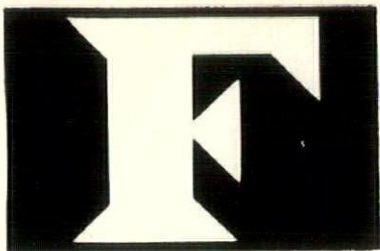


ST. CLOUD COLLEGE MATH & SCIENCE BLDG.  
CORRIDOR AND LOBBY FLOORS

Highway 100 & France Avenue North Minneapolis, MN 55429 • Phone: 533-8631

**BISSEL BELAIR & GREEN ARCH-**





THE CHAS. M.  
**FREIDHEIM  
COMPANY**

3601 PARK CENTER BLVD.  
ST. LOUIS PARK, MINN. 55416  
(612) 927-4611

**DO SOME IMAGINEERING  
CALL US**

We have the capabilities to do custom autoclave masonry units — special finishes and shapes.

We also maintain the largest inventory of standard masonry units in covered storage.

Ready mix concrete to meet your specifications.

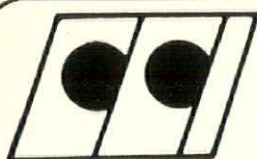
For any assistance, call our sales department — 927-4611



**3 Concrete**



**4 Masonry**



See Tomorrows  
Storage Answer —

**BOOTH 110**

M.S.A.I.A.  
Sept. 7-8-9

of pinch pleats and vane sewing, pins and buckram. The high cost of cleaning and rehanging pleated drapes is eliminated. Special nylon tape with 4 snaps per fold is sewn to the top of a flat panel and snapped on to the linkage. There is a choice of three available fullnesses.

For information and price list call or write: Roy Graber, VP Sales, OHline Corp., 1930 W. 139th St., Gardena, CA 90249.

**Whyteboard Walls** — L & N Railroad Transportation Control Center is using AllianceWall porcelain-on-steel WhyteBoard walls and a system of magnetic symbols to plot movements of trains. WhyteBoard walls also form a dust-free writing system. Color markers write clear and clean. Writing disappears with swipe of dry cloth leaving no tell-tale signs or smudges. Walls also double as projection screen. Writing surface is virtually indestructible and is guaranteed for 50 years. For details write: AllianceWall Corporation, Wyncote, Penn. 19095. □

*Mr. Kellett is President of Architects, Inc., Saint Paul, consultants to the design and construction professions in design development, specifications and contract administration.*



**BOLD  
CRAFTSMEN**  
SINCE 1873

**KOHLER  
DISTRIBUTORS  
ARE**

**Baker Mfg. Company**  
Minneapolis

**Bartley Supply Co.**  
St. Cloud and  
Brainerd

**Goodin Company**  
Minneapolis and  
St. Paul

**Graybow-Daniels Company**  
Minneapolis

**Heles Supply Company**  
Worthington

**A.J. Koch Company**  
St. Paul

**Marshall Northwest Pipe  
Fittings, Inc.**  
Marshall

**A.Y. McDonald Mfg. Co.**  
Minneapolis and  
Rochester

**North State Supply Corp.**  
Duluth

**Wilson Supply Co.**  
Albert Lea and  
Mankato



# SAVE UP TO \$160 PER YEAR

## with Kohler plumbing products that save water, energy and money

Saving water makes good sense:

- Fresh water supplies are being exhausted faster than man and nature can recycle them;
- Water rates in most communities are rising;
- Costs for gas and electricity used to heat water are also increasing;
- Sewer service charges for pumping and treating sewage are either being levied or increased;
- At the same time, most municipal and private sewage treatment systems are overburdened.

To meet these problems, Kohler Co. offers a variety of toilets, faucets and showerheads that are designed to save you water, energy and money.

These products use less water without loss of efficiency while saving some 36,500 gallons of water and up to \$160 in water bills and water heating costs per year for an average family of four . . . assuming five toilet flushings and a five-minute shower per day for each family member.

### Water-Guard toilets

Kohler Wellworth Water-Guard toilets are designed and engineered to make more efficient use of a smaller volume of water while still providing a positive, thorough flushing action.

Bricks, bottles, dams and other so-called water-saving devices sometimes recommended for the toilet tank often waste more water than they save because multiple flushes are required to clean the bowl.

Water-Guard toilets are designed to flush with some 36% less water than most conventional toilets. Water-Guard flushes with 3½ gallons of water; conventional toilets flush with an average of 5½ gallons. That 36% savings could add up to more than 14,600 gallons of water saved annually by an average family of four.

Because Water-Guard toilets reduce the amount of

water used in the home, they also reduce the amount of waste water that must be treated.

Water-Guard toilets are available with elongated or round-front bowl designs, and in a wide choice of colors to complement other Kohler fixtures. They cost no more to install than conventional toilets.

### Showers, Faucets Too

Kohler Automatic Flow Control (AFC) showerheads can reduce water use 50% or more. A conventional showerhead uses 6 to 8 gallons of water per minute. Kohler AFC showerheads limit flow to just 3 gallons per minute.

At either volume, the bather gets a drenching, thoroughly satisfying shower. But with Kohler, water use is reduced 50% or more . . . energy consumption is lower because there's less hot water required . . . and there is also less waste water.

Replacing a conventional showerhead with a Kohler AFC showerhead could save a family as much as 21,900 gallons of water annually. The family could also save an average of \$13.85 in water bills, \$138 in "fuel dollars" that would otherwise be burned in the water heater, and "sewer service dollars" where rates apply.

Kohler also helps save water with lavatory and sink faucets that reduce water use as much as 25%.

Kohler's Automatic Flow Control feature is built into faucet cartridges, making it simple, effective and trouble free. Because it is part of the faucet and not an addition to the supply line, it adds no installation costs.

Kohler Co. has the toilets, showerheads and faucets to help you save water, energy and money . . . up to 365,000 gallons and as much as \$1,600 in a 10-year period. Now it's up to you.



ALTERNA, FLAIR, TRITON II AUTOMATIC FLOW CONTROL FAUCETS

RIGHT: WELLWORTH WATER-GUARD  
K-3500-EB ELONGATED BOWL



CITY CLUB K-7351-3 GPM SHOWERHEAD

ABOVE CENTER: WELLWORTH  
WATER-GUARD K-3500-PB  
ROUND FRONT BOWL







## BOOKS

Susan Davis

*Guide to Fabrics for Historic Buildings,*  
published by the Preservation Press

Where do you go for new upholstery fabric when a family heirloom chair is thread-bare? How do you go about selecting draperies for a 100-year-old house?

Now there's help from *Fabrics for Historic Buildings*, a new book from the Preservation Press of the National Trust for Historic Preservation.

Written by Jane C. Nylander, curator of textiles and ceramics at Old Sturbridge Village, Mass., the guide is both a readable introduction to fabrics used in the United States from the 18th century to 1900 as well as a catalogue listing 225 reproductions available from 16 manufacturers.

Professional restorationists, decorators, old-house owners and anyone interested in the history of fabrics and design will find the book an indispensable reference tool.

The 64-page book covers such topics as reasons for using reproduction fabrics even when the originals are available, undertaking documentary research before picking a fabric, pointers for ordering custom reproductions and the construction and installation of fabric furnishings.

The catalogue provides information about the original fabrics as well as the reproductions. It is organized into five periods, each of which is introduced by a discussion of its characteristic fabrics. Through 37 photographs, readers can see the evolution of technology and changing tastes.

Included are such fabrics as tobacco cloth, an inexpensive cotton similar to muslin, and *Urn Damask*, a reproduction of an 18th-century French design that is woven from the original cards. Among other listings are the earliest known signed product of an American textile printer, commemorative designs celebrating American independence and fabrics from Monticello, Thomas

# Ray Lite

## The Professional's Professional Insulation.

Raylite expanded polystyrene offers you all the versatility you are looking for in a building insulation material. It can be purchased as a rigid boardstock or as a water repellent masonry fill.

**Commercial • Industrial • Residential**

- low thermal conductivity
- low moisture-vapor permeability
- high strength to weight ratio
- dimensional stability
- easy installation
- economical

**Manufacturing, fabrication, design, consulting, technical assistance.**

**MINNESOTA DIVERSIFIED PRODUCTS, INC.**

St. Paul, MN Phone (612) 645-4654

**MODERNIZE YOUR  
BUILDING,  
REDUCE  
MAINTENANCE,  
CUT EXPENSIVE  
HEAT LOSS WITH . . .**

**RUSCO**

**COLOR KEYED**

Replacement Windows  
Double Hung, Horizontal Slider,  
Projected, Window Wall

MINNESOTA **RUSCO** INC.

401 East 78th St.,  
Minneapolis, Minnesota 55420  
Telephone: 888-3120



## Silicone Construction Sealants

The Silicone Products Department of the General Electric Company manufactures a complete line of products for the construction industry.

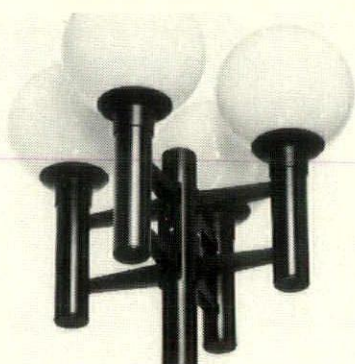
Drop By And See Us  
During the M.S.A.I.A.  
Show—Booth No. 95

Authorized Distributor

**GENERAL ELECTRIC**  
Silicone Construction Sealants

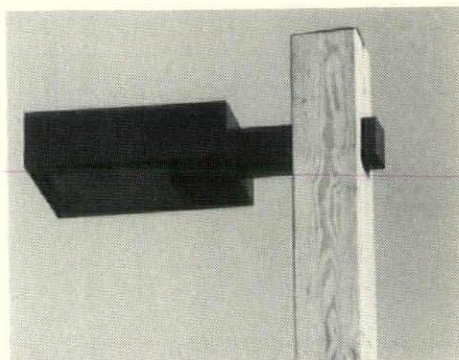


# BRIGHT IDEAS BY



**ADJUSTA-POST MFG. CO.**  
The better value in H.I.D.  
area lighting

# BR



**M.W.C. LIGHTING**  
Cut-off for parking lot,  
street & tennis court lighting

## Poles In Concrete, Steel & Wood

**Bradford & Associates** 7317 Cahill Road Edina, Mn. 55435  
(612) 941-6377

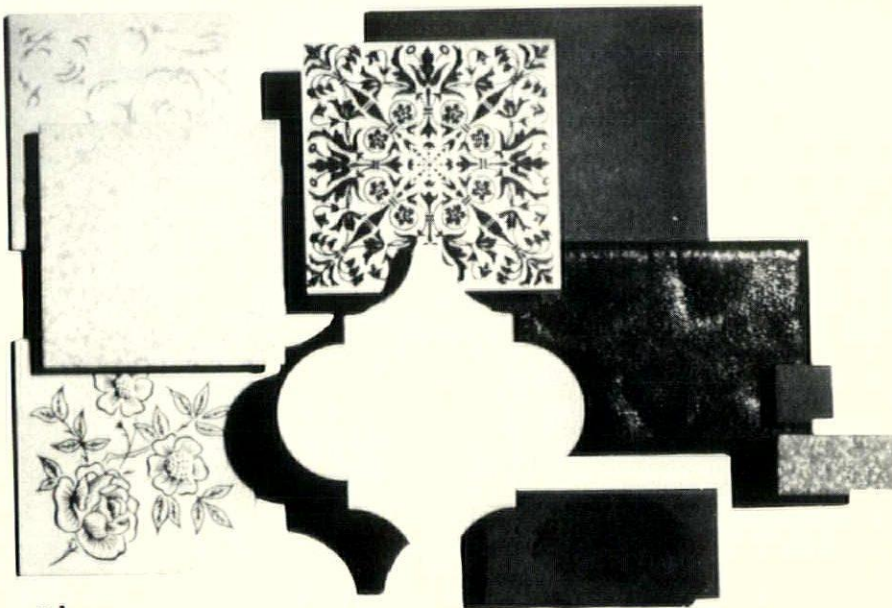
## Getting you everything you'll ever want in ceramic tile is Child's play

At Rollin B. Child Inc. we can get you just about anything you'll ever want in the way of ceramic tile, because we stock and sell Romany-Spartan American-made ceramic tile, one of the broadest lines available in this or any other country.

We offer a rustic line, a water-marked crystal line and a veined line, a dappled line and a decorative line, plus a fantastic selection of unglazed ceramic mosaics and the traditional bright and matte glazes, too.

Next time you need ceramic tile, turn to the company that can do it all from once source . . . by the truckload or by the carton. (We also stock large quantities of Summitville Quarry Tile and feature imported tiles from France, Italy and Japan.)

For more information, call Rollin B. Child Inc. at 938-2785 in the Metropolitan Twin City area, or on our Watts lines—Minnesota 800/552-7685, Other States 800/328-8296. In Wisconsin call: Child Crest Distributing, Inc. 414/462-9770.

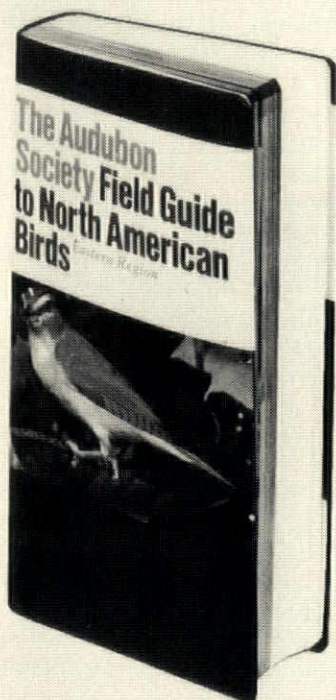


**ROLLIN B. CHILD INC.**  
420 Excelsior Avenue West, P.O. Box 397, Hopkins, Minnesota 55343, 612-938-2785



Jefferson's home in Virginia. Fabrics reproduced from 18th-century quilts, examples of popular Indian and Chinese imports, and printed chintzes and embroideries from the 19th century are represented.

*Fabrics for Historic Buildings* includes a selected bibliography and a glossary of fabric terms.



Included here is information of current trends in architecture, art, design, murals, environment as art, and ecology.

*Audubon Society Field Guide to North American Birds* (Eastern Region), Alfred Knopf, 7.95 soft leather binding

584 color photographs. The first all-color guide organized by color and shape with a text arranged by habitat and keyed to the photographs. Includes the eastern 2/3 of North America.

Now in stock: The 1977 NCARB Architectural Registration Handbook: A Test Guide, 20.00. Please call as soon as possible to reserve a copy—there is only one printing available from the publisher.

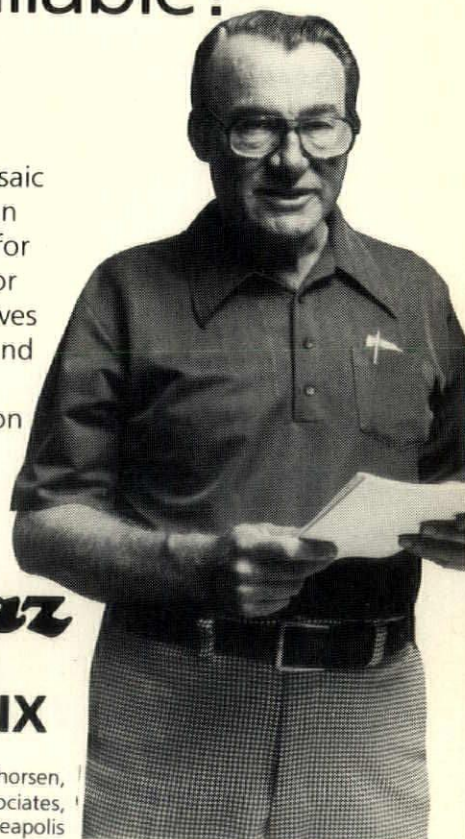
Book of Successful Fireplaces  
Finding and Fixing the Older Home

**"when we were up against the wall, we specified the best epoxy matrix available!"**

"We at Thorsen and Thorshov Associates, after thoroughly investigating the system, recommended Ceram-Traz mosaic epoxy matrix to Dayton-Hudson Properties as a superior finish for their new Target Stores' exterior walls. We believe the matrix gives the best uniform panel color, and its ease of application actually speeded up job site construction considerably."

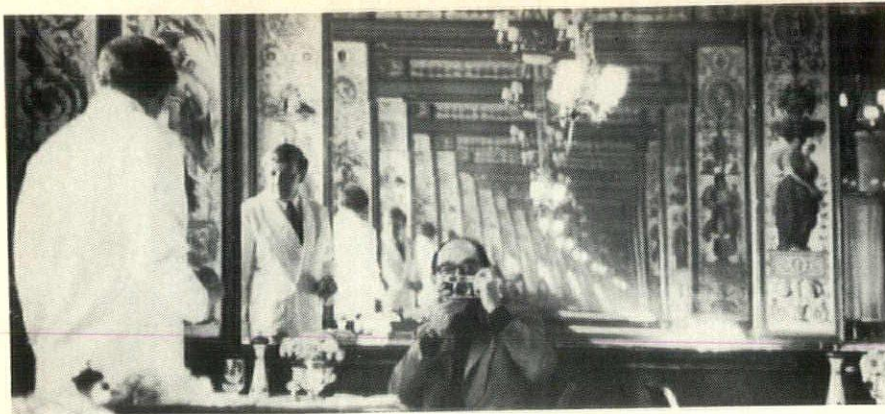
The ceiling of floor and wall systems  
**Ceram'traz**  
**MOSAIC**  
**EPOXY MATRIX**

Will Thorsen,  
Thorsen and Thorshov Associates,  
Minneapolis



**CERAM-TRAZ CORPORATION, INC.**  
6500 Oxford Street Minneapolis, Minnesota 55426 612-929-1625





## Twin City Tile & Marble Co.

Twin City Tile and Marble Co.  
Committed to Quality  
Materials and Workmanship  
Backed by

- 67 years of experience and excellent performance
- Management skill & technical knowledge
- Financial strength

Call Twin City Tile & Marble Co. for estimates and assistance in the preliminary planning of your building. "Quality" is a key word of our competitive company. We offer a guarantee of service which will effect real economy and prevent built-in maintenance problems.

### MATERIALS:

- Marble-plant fabrication and installation
- Ceramic tile
- Terrazzo
- Seamless flooring
- Slate
- Johns Mansville Colorlith - colorceram and stonehenge
- Duriron - Epoxy and Resintops
- Corion by Dupont

## Twin City Tile & Marble Co.



219 East Island Ave.  
Minneapolis, Minnesota 55401  
1-612-332-8785

*How To See: Visual Adventures in a World God Never Made*, George Nelson; Little, Brown and Co.  
9.95 hardcover

A new book from the author of *Problems of Design*. From the author's introduction: "For an explanation of God's world, the untouched natural environment, there are as many creation stories as there have been human societies. In the legend with which the Western societies grew up, the whole thing was put together in one good working week, with Man as the ultimate achievement of the Great Designer. Later, we recall, He installed His children in the Garden of Eden, a kind of place environmentalists dream about: a perfect self-recycling environment in which the production of food and consumer goods took place without visible labor, under conditions of zero population.

The Garden was His last recorded design, and unfortunately it didn't work. (Is it possible that Omniscience didn't know that Man can stand anything except perfection? Or was the failure planned?) In any event, the serpent appeared, the apple was eaten, all alarms went on, prompt eviction followed, and God disappears from history, at least in His role of designer-creator. There is no record of His involvement in the temple of Solomon, the roads of the Incas, the international combustion engine, or even the Houston Astrodome. For better or worse, we live in a man-made world, now facing the question of whether it will work any better than the Garden...

Books on understanding art exist in fair supply. Parenthetically, for whatever it may be worth, my view of the work of many contemporary artists is that at first glance much of it appears to be crazy, but that further examination and thought strongly suggest that it is the society which has abandoned sanity. The artist, in continuing to pursue his traditional role of sensitive observer and reporter, is merely pointing this out."

*Earth's Answer: Explorations of Planetary Culture of the Lindisfarne Conferences*, Harper and Row Publishers, 6.95 paperback

This book, just recently published, is timely in light of our convention theme for 1977, "What Comes After



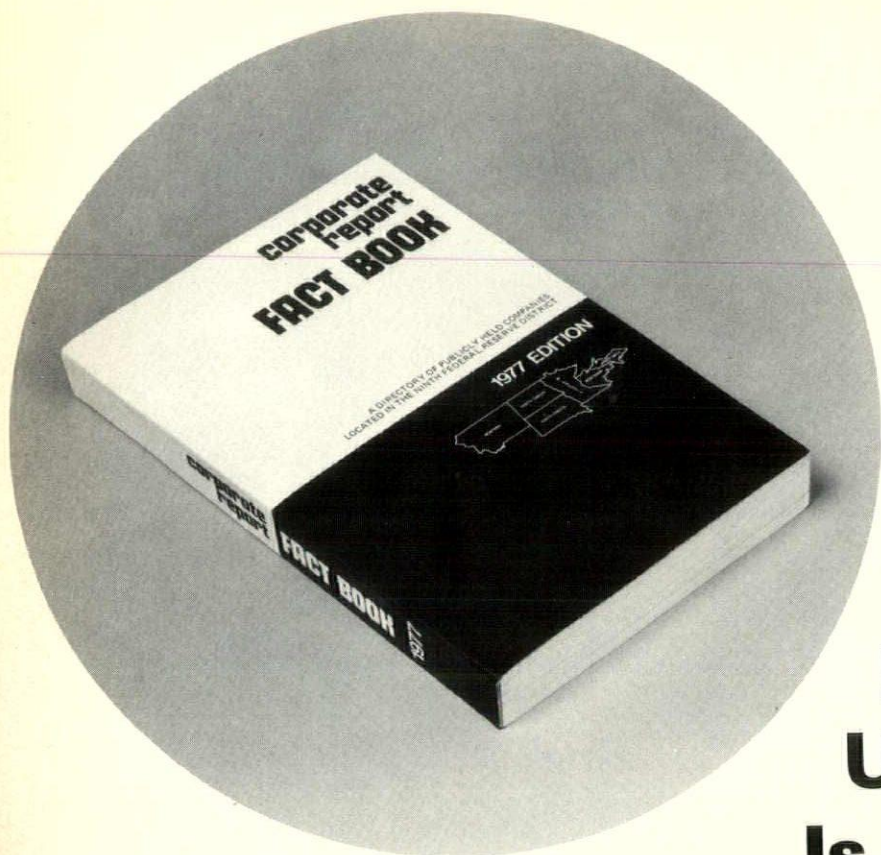
# Pella Clad windows are for people's comfort

St. John's Hospital in Red Wing, Minnesota chose Pella Clad as replacement windows to fit existing masonry openings. **Pella Clad** — wood on the inside ... where it matters to people's comfort and the heat bill — metal on the outside ... where it matters to the building owner (low maintenance).

They also chose **Slimshade**, the venetian blind that operates between two panes of glass, protected from dust and dirt.







## When Business in the Upper Midwest Is Your Business

### Corporate Report's FACT BOOK keeps you informed

The 1977 Corporate Report FACT BOOK, compiled and updated annually by the editors of Corporate Report — the magazine of business and finance in the Upper Midwest — is the authoritative reference on more than 300 publicly held companies in the Ninth Federal Reserve District.

A full page is devoted to each corporation in the District with stock actively traded and publicly held by 200 or more shareholders. Each listing includes detailed information on product lines, plant facilities, sales and earnings, balance sheet position, officers and directors, and public offerings and acquisitions.

A mid-year Supplement keeps the FACT BOOK current, featuring a page on every company that has gone public since the preceding FACT BOOK and updated information on area public companies.

Detach and mail  
this coupon to:

Corporate Report, Dept. C

7101 York Ave. S.,  
Minneapolis, Minn. 55435.

Please send me \_\_\_\_\_ copies of the  
1977 Corporate Report FACT BOOK  
and Supplement for only \$42.00 per set.

Please send me \_\_\_\_\_ copies of the 1977  
Corporate Report FACT BOOK only for  
\$37.00 each.

☐ Bill me    ☐ Check enclosed

Name \_\_\_\_\_

Firm \_\_\_\_\_

Street address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_



Tomorrow." The book is a collection of talks given at the 1974 and 1975 Lindisfarne Conferences. It focuses on the following aspects of planetary culture: Transformation of the Individual; Creation of New Communities; Decentralization and World Order; Evolution and the Strategies of Consciousness; Planetary Culture and the New Image of Humanity. Among the authors appearing here: Paolo Soleri ("City of the Future"), Sean Wellesley-Miller ("Towards a Symbiotic Architecture"), E.F. Schumacher ("A Metaphysical Basis for Decentralization"), Jonas Salk ("Consciousness of Evolution"), John Todd ("New Alchemy: Towards a Sacred Ecology"), and Stewart Brand ("The First Whole Earth Photograph").

*The House Book*, Conran, Crown Publishers, 30.00

The indispensable guide to home decorating. Sections include: internal layout, walls, lighting, windows, color, heating, storage, "details that count," attics, adding a room, outdoors, finishes, plus a specific section for each room of your house.

*The Instant Decorator*, Gold, Crown, 27.50

Guide book to act as a visual aid for the home decorator. To enable you to assemble and plan colors, fabrics, textures and furnishings before making any commitments by using acetate layovers of sample rooms.

*How Things Don't Work* Papenak and Hennessey, Pantheon, 4.95

The latest from the authors of *Nomadic Furniture* and *Design for the Real World*. "Poking fun at the nonsense products that engulf us (this book) poses the fundamental question whether some products are needed at all and suggest alternative ways of making and owning things. Chapter headings include: "How your bathtub doesn't work," "Would you like a fuzzy photo in eight minutes," "No Roast Tonight—the lights on my carving knife need realignment."

*Handmade Houses*, Boericke and Shapiro, A and W Visual Library, 5.95

A visual guide to several beautiful "alternative" houses.

A new good pictorial series from Structures Publishing Company: at 4.95 each:

Book of Successful Kitchens  
Wall Coverings and Decorations

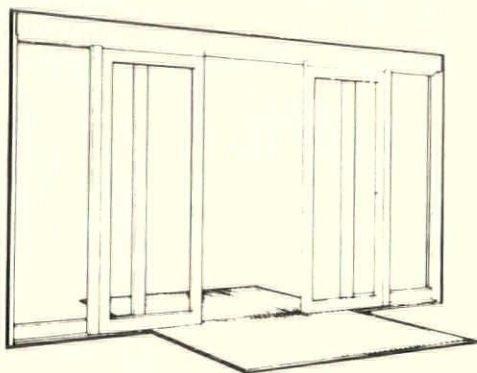
## Stan's Door Services

SALES • INSTALLATION • 24 HOUR SERVICE



All Electric  
Swinging & Sliding  
Doors

Automatic  
Self-contained  
Operators



Phone 784-7024  
4111 85th Avenue N.E.  
St. Paul, MN 55112

# SUPER!!!

## ANTRON III BERBER EFFECT!!!

See It At The MSAIA Convention  
Booth 118  
or call

### THE CARPET PROFESSIONALS

TWIN CITIES 887-3800  
MINN. WATTS 800/352-2828  
OUTSTATE WATTS 800/328-2900

CARSON



SCOTT & CO.

P.O. Box 1150

Minneapolis, Minnesota 55440



Kitchen Planning Guide  
Successful Family and Recreation  
Rooms

Successful Studios and Work Centers  
Successful Bathrooms  
*The Spacemaker Book*, Liman,  
Viking 9.95

An analysis of problem spaces and  
how to cope with them.

*The Bathroom*, Kira, Viking 7.95

An interesting study pointing out  
the inefficiencies and difficulties of  
standard bathroom design.

*Planning and Building Your Fire-  
place*, Eastman, Garden & Way, 4.95

Planning and estimating construc-  
tion costs. The most heat for the least  
cost, where to get fuel and several  
practical designs.

*The Complete Home Catalog*, A  
Bantam/Hudson Idea Book, 7.95

An illustrated product guide for  
homeowners and professionals.

*Greene and Greene: Architecture as  
a Fine Art*, Makinson, Peregrine  
Smith, 24.95

An impressive collection of photo-  
graphs including what the author calls,  
"the ultimate bungalows."

Later this summer and into the fall  
we can expect:

*The Kitchen Book*, Conran, Crown,

27.50 until 1/1/78, 30.00 thereafter.

An impressive collection from the  
author of *The House Book*. Pictured  
kitchens include those of Milton Glaser,  
Julia Child, Pierre Franey and, of  
course, the author among others.

*Houseboat*, Dennis and Case, Smug-  
gler's Cove Press, 9.95

Reflections of North American  
floating homes . . . history, architecture  
and lifestyles.

*A Gift to the Street*, Olwell and  
Waldhorn, Antelope Island Press, 12.95

A sensitive and loving collection

of photographs of San Francisco's  
Victorian architecture.

*30 Energy Efficient Houses . . . You  
Can Build*, Wade and Eisenstein,  
Rodale, 6.95

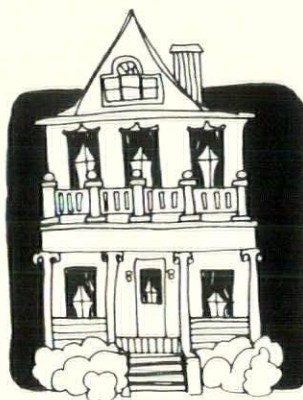
30 plans reflecting conservation and  
simplicity with floor plans, measured  
drawings and specifications for each.

*Residential Interiors Today*, Crane,  
Watson-Guptill, 7.95

*Solar Home Book*, Anderson, Che-  
shire Books, 7.50

*Susan Davis is manager of the Architec-  
tural Center of the Minnesota Society Ameri-  
can Institute of Architects.*

#### Many Architects Want to Design Your House



And the *Minnesota Society American  
Institute of Architects* can provide you  
with a current list of architects inter-  
ested in residential work. Contact the  
Society at 314 Clifton Avenue, Min-  
neapolis 55403, or telephone 612-874-  
8771. From that list, make appointments  
to visit some of the architects. View  
their offices, look at photographs and  
at actual examples of their work. Tell  
them about your interests—whether a  
new house, an addition, a renovation,  
a second home . . . Express your con-  
cerns and your expectations and talk  
about professional fees, budgets, con-  
struction costs, etc.

*Allied Plastics*

Can handle all your plastic fabricating jobs quicker & better by providing the following . . .



George Grove, Sales Manager

- Design Assistance
- Structural Specification
- Factory Testing
- Prototypes
- Glazing Specifications

Virtually every Plexiglas®  
fabrication process  
is available to you.

**DISTRIBUTION — CUTTING — FORMING — SCREENING  
FIELD TAKE-OFFS IN METRO AREA**

Distributing Plexiglas, Quality  
and Service Since 1948.  
533-2771

**ALLIED PLASTIC INC.**  
7200 Boone Ave. No.  
Mpls., MN 55428



# Taking Thought with Prestressed Concrete



School athletic facility designers are faced with ever changing construction problems to satisfy today's educational needs. The new swimming pool building at the Elk River North Junior High School was a typical example.

The roof was a critical factor since it required a very wide, column-free expanse over the pool and surrounding spectator areas. Budget, energy savings, speed of construction, durability and maintenance-free finish were additional considerations.

Prestressed Concrete, Inc. met these requirements and more with its giant "Single T" Roof Beams. A total of 15 of these members measuring 8 feet wide by 94 feet 9½ inches long by 42 inches deep formed the entire roof.

Assembly at the job site took just two days. The "Giant T's" are structurally very durable and possess the high degree of corrosion-resistance required over swimming pools. They are attractive, clean appearing and maintenance-free.

Most important to today's financially-pressed school districts were Prestressed Concrete's efficient production techniques. Units were

economically precast in Prestressed Concrete, Inc.'s plant, independent of high-priced, on-site construction cost factors. Once units were produced, shipment to the job site and erection were fast and economical.



*The Thoughtful Designer will specify:*



**PROJECT:** North Junior High School Swimming Pool, Elk River, Minnesota  
**ARCHITECT:** Hendrix Associates, Inc., Mpls., Minnesota  
**STRUCTURAL ENGINEER:** Johnston-Sahlman Co., Inc., Mpls., Minnesota  
**CONTRACTOR:** Lovering Associates, Inc., St. Paul, Minnesota

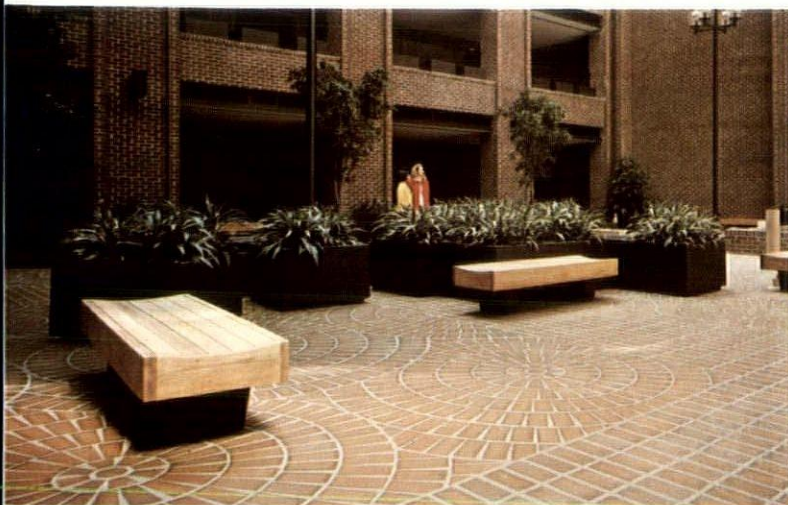


# put a tiger in your "bank"

These Twin City financial institutions know Ceramic Tile's tough as a tiger (stands up under the heaviest traffic...won't stain, fade, warp or buckle), comes clean as a cat's whisker with the swish of a wet mop. And when it comes to longevity, Ceramic Tile's got nine lives (tile from ancient Egypt and Greece is still beautiful, still serviceable). So next time you design a financial institution — or any other structure for that matter — think of Ceramic Tile. It's a tiger!



Delano High School—Delano  
Architect: Birkeland Architects, Inc.



Twin City Federal—Mpls  
Architect: Baker Associates, Inc.



Home Federal Savings & Loan. St. Paul  
Architect: Baker Associates, Inc.



American National Bank Bldg. St. Paul  
Architect: Kelly-Marshall



Marquette Lake State Bank—Mpls  
Architect: Henningson, Durham & Richardson



old as history... modern as tomorrow

**MINNESOTA CERAMIC TILE INDUSTRY**