

# ARCHITECTURE MNT

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## HALLOWED GROUND

St. John's Abbey and University is sacred both as a religious setting and as a sanctuary of landmark modern architecture.

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## POWER TOOLS

Energy modeling and two new projects showcasing innovative energy design point the way to an energy-efficient future.

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## SNEAK PREVIEW

Thomas Fisher shares an excerpt from his forthcoming book on the intersection of architectural design and ethics.

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## Transcendent Design

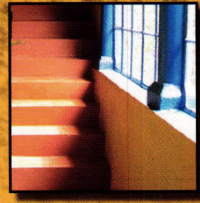
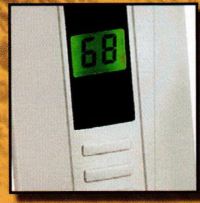
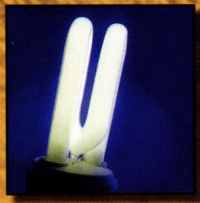
### The Marcel Breuer legacy at St. John's

COVER: ST. JOHN'S ABBEY CHURCH,  
PAGE 26

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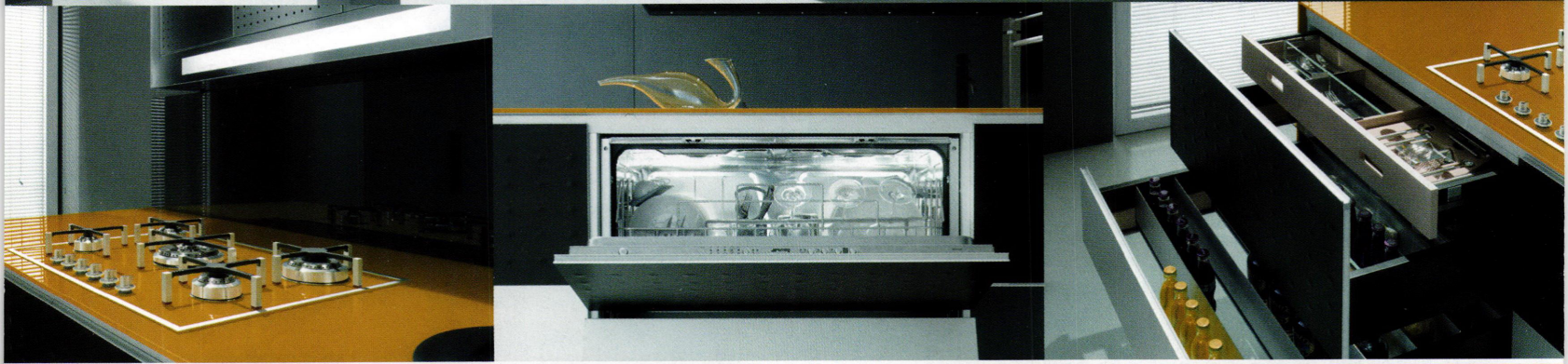
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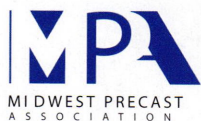


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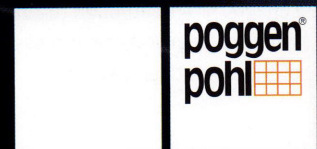


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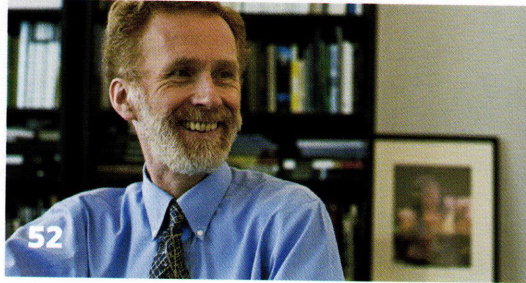
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Architecture Minnesota, the primary public outreach tool of the American Institute of Architects Minnesota, is published to inform the public about architecture designed by AIA Minnesota members and to communicate the spirit and value of quality architecture to both the public and the membership.



## Features

### 25 *Hallowed Ground*

St. John's Abbey and University in Collegeville, Minnesota, is internationally revered for its stirring collection of modern buildings. The story of how St. John's arrived at its progressive course of architecture is an interesting one, and writer Nancy A. Miller bridges past and present to tell it.

#### The Breuer Zone

page 26

By Nancy A. Miller

With concrete, granite, brick, and a singular vision, Marcel Breuer transformed the St. John's campus into a sanctuary of modern architecture.

#### A New Chapter

page 32

By Nancy A. Miller

The renovation and expansion of the St. John's Chapter House beautifully integrates the building with the iconic Abbey Church and cloister walk.

#### A Warm Reception

page 36

By Nancy A. Miller

The 21st-century St. John's Abbey Guesthouse gracefully fulfills the requirements of the sixth-century Rule of St. Benedict for the accommodation of guests.

### 39 *Power Tools*

In their quest to create ultra-energy-efficient buildings with limited carbon footprints, architects rely on energy modeling and innovative energy design. In the articles below, we explain the former and profile two LEED projects that showcase the latter.

#### Energy Modeling 101

page 40

By David Eijadi, FAIA

For a tutorial on the basics of energy modeling, we turned to an architect with more than 25 years' experience in the field.

#### Energy Star

page 44

By Camille LeFevre

A Minnesota power company builds its new headquarters to achieve massive energy savings. It's called leading by example.

#### Going Stag Is Going Green

page 48

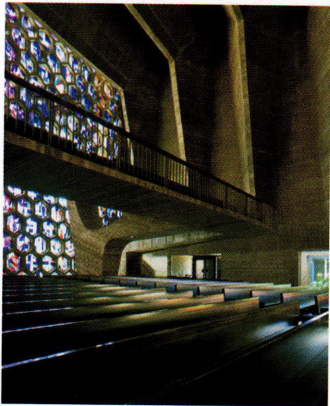
By Heather Beal

Restaurants are energy gluttons. The new Red Stag Supper Club in Minneapolis is proof that it doesn't have to be that way.

### 52 *Bound to Make a Difference*

By Thomas Fisher, Assoc. AIA

The dean of the University of Minnesota's College of Design shares an excerpt from his forthcoming book *Architectural Design and Ethics*.



#### ON THE COVER

St. John's Abbey Church

Photographer comment: "Lightness is not often associated with concrete, but the massive concrete forms of Marcel Breuer's St. John's Abbey Church seem to float weightlessly," says **Paul Crosby**. "The organic, monolithic shapes take on a soft texture in sunlight filtered through the stained glass. I find the unexpected lightness and texture of the space deeply stirring."



POWER TOOLS

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## Departments & Directories

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COMPILED BY EMILY DOWD

Hey, it's not *that* cold out. So put on your coat and warm up the car. We've got the whole night planned for you.

### 13 FICTION

BY PHILLIP GLENN KOSKI, AIA

In the conclusion of "First Avenue North," Carol and new friend Dr. Francisco Martini aim to enrich the urban fabric of Mill City.

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BY MASON RIDDLE

A furniture design exhibition at Carleton College assembles the work of some of the top independent furniture makers in the Upper Midwest.

### 17 WAYFARER

BY TOM MEYER, FAIA

A local architect returns from Hamburg, Germany, and captures its diverse urban environment in words and pictures.

### 21 MATERIAL MATTERS

BY NANCY A. MILLER

Concrete, it turns out, has far more potential for creating rich textures and visually arresting surfaces than most people realize.

### 23 INSIGHT

BY TOM DEANGELO, FAIA

The design odyssey of the new Guthrie mixed high drama and comic relief. An insider shares a few of the more theatrical moments.

### 80 PLACE

Photographer and graphic designer Katrin Loss finds architectural expression at the edge of a Minnesota river.

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## A SPECIAL PLACE

*On a blustery cold day in early November, I drove up to Collegetown to tour St. John's Abbey and University with longtime campus architect and planner Lee Tollefson, FAIA, of RRTL Architects. I'd visited St. John's before, on a weekend motorcycle ride, but of course walking the campus with someone so intimately acquainted with its design heritage was an altogether different, and much richer, experience. Lee's projects at St. John's include the student center, several residence halls, and numerous renovations. I had lots of questions for him.*

First up: What about this place has made the deepest impression on you as an architect? Lee doesn't have to think long. "The Benedictines have a way of looking at their environment and what they're building over a period of 400 years rather than 40 years," he says. "So they place a high priority on quality and also on good stewardship of buildings and the land. What I love about the abbey church, in particular, is how the high quality of its sparing yet monumental design creates a sense of permanence."

But if words like *quality*, *stewardship*, and *permanence* have you imagining the St. John's monks as a sober, reserved bunch, think again. Lee lauds their desire to have "significant involvement in the design process. They're so interested in art, architecture, and their environment that you end up having a lot more meetings with them than you would with another university client." A lot more meetings? Hmm, I think I detected a hint of a wry smile there. Then again, Lee almost always has a mischievous gleam in his eye.

We got around most of the campus that gray afternoon; Lee and Father Hilary Thimmesch, a past university president, even took me down to see the 34 private, individually designed altars in the crypt of the abbey church (the large number of altars allows each monk in the St. John's community to celebrate Mass daily). Lee had great insight into the Marcel Breuer buildings (page 26), where my eyes and fingertips kept alighting on the board-formed concrete. Its visual texture is somehow provocative and quieting at the same time.

Lee, it turns out, has had lengthy encounters with three of the four great craftsmen of concrete (page 21). He was taught by Louis

St. John's Abbey and University, through the eyes of an architect intimately acquainted with the campus

EDITOR'S  
NOTE

Kahn at the University of Pennsylvania, has curated Breuer's St. John's architecture for nearly a quarter-century now, and worked closely with Tadao Ando on a St. John's project. In his travels, he's also toured Notre Dame du Haut and other landmark concrete buildings by the fourth master, Le Corbusier. "In studying the work of these four architects, I learned that the form of concrete and its expression come from the way the artist conceives of pouring it and manipulating it—it's a very plastic material," Lee explains. His close study of Breuer's specifications and of how he did the formwork made it possible for RRTL to do a nearly seamless addition to the Peter Engel Science Center with CSNA Architects.

Funny stories? Lee's favorite involves the late landscape designer Dan Kiley (page 29). "There was talk of evaluating the buildings on campus," Lee says, "and I remember Kiley telling the building committee and the university president, 'Don't worry too much about that because I have these pills called uppers and downers. If a building isn't quite what we had in mind, we'll just plant vines along the ground and I'll give them uppers and the vines will completely cover the building. For the good buildings, we'll use the downers.' He had a way of being very entertaining."

It's easy to envy Lee his long, productive relationship with St. John's. "Many people who know sacred architecture will tell you that the abbey church is the most significant modern church in the world," he says. "When I travel and other architects find out that I work at St. John's, they make that comment."

*Chris Hudson*

Christopher Hudson  
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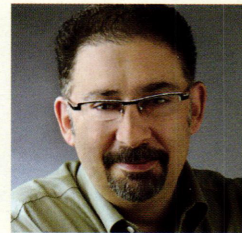
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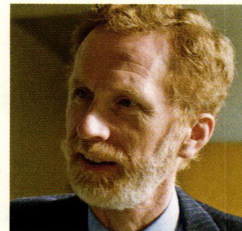
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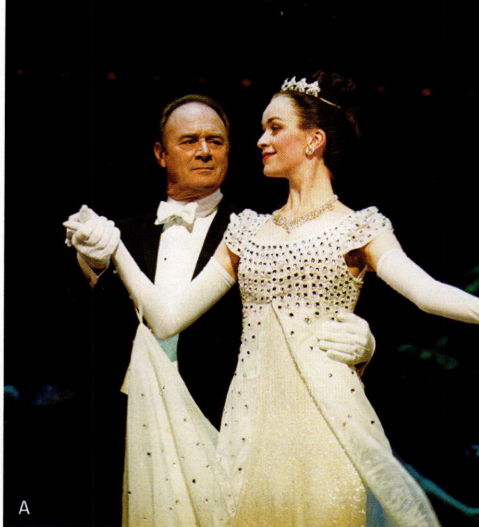
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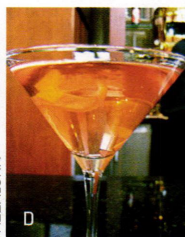




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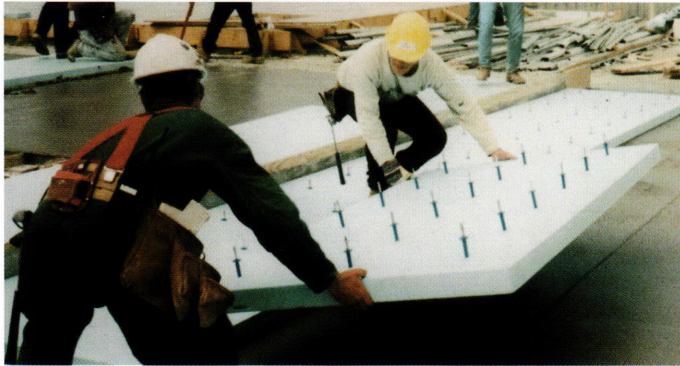
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# First Avenue North PART TWO

A PARABLE OF A WOMAN WITH BIG-CITY IDEAS AND A SMALLISH CITY  
WITH LITTLE INTEREST IN CHANGE *Story by Phillip Glenn Koski, AIA*



*In Part One, Carol, a self-proclaimed “global citizen” and aesthete of high culture, meets Dr. Kandiyohi, a handsome, folksy Minnesotan, and, propelled by youthful zeal and an impatience to get on with her life, marries him. Flying from London to her new home in Mill City, Minnesota, Carol has high hopes for a cosmopolitan life in the humble Midwestern metropolis. But after a solitary midday jaunt through unpopulated streets to buy groceries and familiarize herself with the city’s urban character, she arrives home in a stream of tears, the petals of the white tulips in her trembling hands cascading to her kitchen floor...*

IN RENAISSANCE PAINTING, salvation is often signaled with a stream of light reaching down through a tuft of cumulonimbus clouds (as Carol would know from her museum studies training at the University of Newcastle). For Carol, in this tearful moment, it came in the form of a knocking at the front door. Patting her eyes with a dish towel and carefully stowing the battered tulips in the sink, she went to the foyer and opened the door.

It was Zenith Quasar, who lived around the corner with her architect husband, Archer, and their three children. On summer recess from her job as a prep school administrator, Zenith was descended from a rare breed of considerate neighbors who made a point of welcoming new immigrants to the city of flour and ready-to-bake cookies. She instinctively recognized the smudge of desperation on Carol’s face.

“You poor thing ... welcome to Mill City!” Zenith blurted both consolingly and enthusiastically. When she handed over a plate of freshly baked oatmeal raisin cookies, Carol’s face turned pink with relief and embarrassment. They were friends instantly.

Carol and Dr. Kandiyohi formed a quick and reliable rapport with the Quasars, whose expertise in divining the best new chef-driven restaurants and off-the-beaten-track art galleries gave hope to Carol that, while Mill City fell short of the cultural vitality of Paris or San Francisco, it had its own inner-continental brand of epicurean and artistic sophistication.

Over the ensuing months, the Quasar home was for Carol an oasis of high design and free thinking, built as it was almost exclusively of hay bales and salvaged knurled-steel reinforcing bars. As radical as the architecture was, the home

was appropriately filled with a menagerie of guests with equally adventurous backgrounds and outlooks. Carol and her husband would regularly stop over to the “barn” (so named for its straw aroma) for dinner or “salons.” The salons brought together Mill City’s edgiest thinkers and artists to discuss the goings-on in New York, Tokyo, and Toronto, and sometimes to sip small glasses of absinthe, which Archer had had shipped from Algeria under the FDA radar.

Archer Quasar, who, in addition to heading a budding architectural practice, held a position on the Mill City Planning Commission, introduced Carol to elected officials and others who held sway over the shape of the city’s built environment. Carol longed for a solution to Mill City’s inexplicable dearth of street life and architectural vitality, and she soon learned she was not alone in her sentiments. It was also through Archer that Carol met the like-minded Dr. Francisco Martini, the founder and president of Gopher County’s City Beautiful Society and a seemingly permanent fixture of the Café du Pillsbury.

ECCENTRIC AND WORLDLY, with a Ph.D. in the self-directed topic area of “streetscape studies,” Francisco could always be found sipping Vietnamese coffee at a sidewalk table outside the aforementioned café, beneath a stunted little-leaf linden. He could be found there on even the most blustery cold days—windblown, hatless, with a *New Yorker* magazine welded to his left hand and a 19th-century leather book bag placed across his loafered feet to keep them warm. Carol joined the City Beautiful Society and found in Francisco a kindred spirit and confidant. At the Café du Pillsbury, the two happily traded rants about the backwardness of Mill City

Sometimes writing about built-environment issues requires a little extra imagination. Thus our Fiction department.

FICTION

and its frustratingly slow progress in the areas of mass transit, architectural innovation, and smart zoning practices.

Why, they wondered together, are Mill City residents forced to abandon the city in cars to attain some of the most basic requirements of life, like asparagus and toilet paper? Why can’t sidewalk trees be planted to shade pedestrians? Why are most new building projects constructed out of beige-tinted precast concrete that absorbs the golden autumn daylight and reflects it as a deadly shade of pale, liverwort brown? Mill City is rich with profits, they argued, and more immigrant professionals arrive each day. Why can’t we be London? Why not Vancouver, at least?

In time they convinced themselves that no rational mind would intentionally create a city in this manner. Mill City had only gotten this way because its leaders were so busy building business, industry, and the necessary institutions of government that they had overlooked the built environment. The root of the squalor, they asserted, could be pinned on a general lack of care and foresight and artistry. Their hope was that, simply by introducing high-minded artistic people to the problem, they could transform Mill City into a global city—an urban paradise of art and beauty and innovation.

They shared their revelation with those in their immediate circle. At soirees, teas, and meetings of the City Beautiful Society, they spoke with evangelistic zeal. They were sure that, if every influential Mill Citian embraced just one cause and saw it through, in a decade the city would be the jewel of North America.

Dr. Kandiyohi listened to Carol’s pronouncements at the Quasars’ absinthian bacchanalia and also in the bedroom. “Powder Puff,” he admonished, “Mill City is a fine place. And while I agree with you that there is room for improvement, people just don’t want it thrust on them all at once the

>> *continued on page 56*

# GOOD DESIGN MAKES A DIFFERENCE

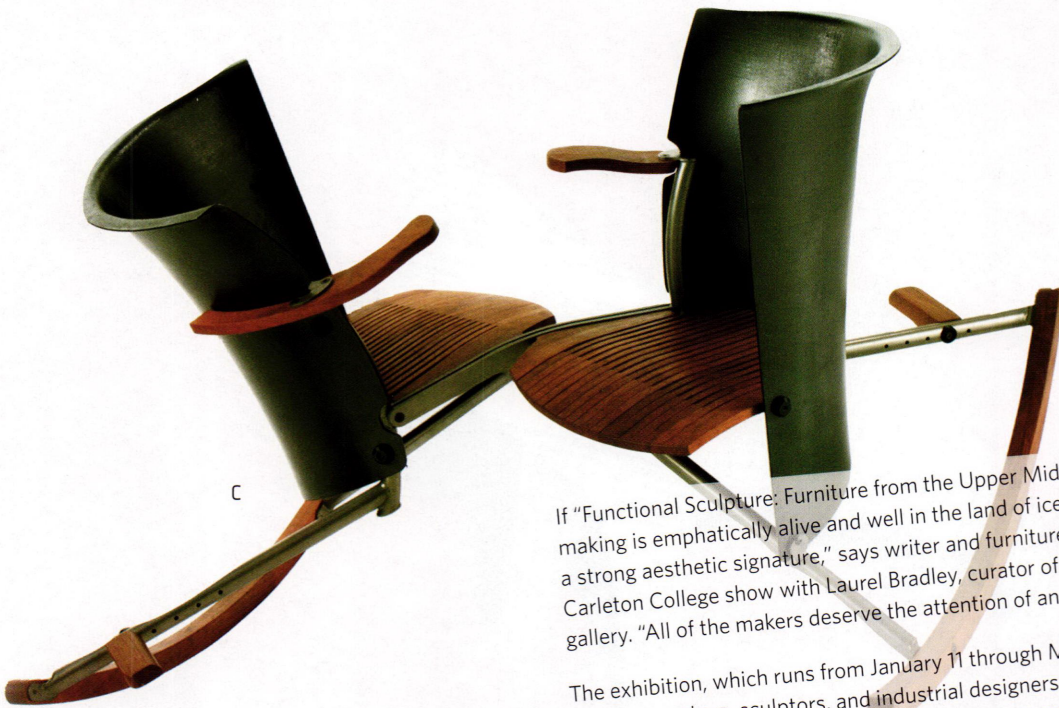
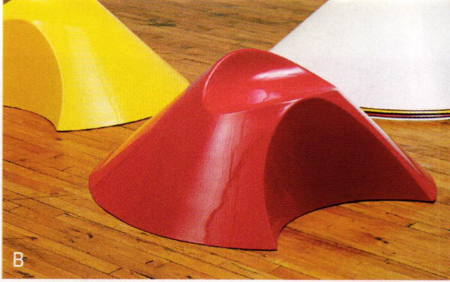


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In Platform, we highlight thought-provoking artistic endeavors in architectural environments.

*Chaise longue by Linda Sue Eastman (A); colorful fiberglass stools by Cameron Van Dyke (B); double rocker by Tom Oliphant (C); curvilinear slat chair by George Mahoney (D).*

A new design exhibition at Carleton College elevates the art of furniture making in the Upper Midwest

If "Functional Sculpture: Furniture from the Upper Midwest" is any indication, the fine art of furniture making is emphatically alive and well in the land of ice and snow. "I wanted to show work that bears a strong aesthetic signature," says writer and furniture maker Glenn Gordon, who is co-curating the Carleton College show with Laurel Bradley, curator of the school's art collection and director of its art gallery. "All of the makers deserve the attention of an exhibition. These are the best of the best."

The exhibition, which runs from January 11 through March 10, features the work of 16 independent furniture makers, sculptors, and industrial designers from Minnesota, Wisconsin, and Michigan. Collectively, the entries exhibit technical mastery, sensitivity to materials, and an often idiosyncratic aesthetic. Chairs, tables, cabinets, lamps, and other accessories are variously made from wood (the predominant material), glass, leather, fabrics, plastics, carbon fiber, and steel, and they demonstrate a stylistic trajectory from the traditional to the experimental.

A few pieces were made expressly for the show, including Linda Sue Eastman's chaise longue in beautifully tooled leather and wood. Other standouts include Ross Peterson's music stands, each one reading like a different species of butterfly; George Mahoney's dynamically resilient, curvilinear slat chairs, "whose logic," says Gordon, "is very readable"; and Clifton Monteith's bent-willow chairs, which, along with his lacquer-and-twigg lanterns, elevate a traditional rural craft to unimagined levels of baroque refinement.

Cameron Van Dyke's stools, one of leather and wood, the other of carbon fiber, suggest mini-volcanoes, while Dan Cramer's Molti chairs offer sophisticated variations on a theme for high-end contract furniture. The design and manufacturing firm Blu Dot is represented by a pair of its Buttercup chairs, one a swivel and the other a rocker. Computer-aided design makes an appearance in the form of a table and desk from Bert Taylor's cleverly named manufactured furniture line Furnucci.

Functional Sculpture promises to be a lively, stimulating show—and certainly worth the drive to Northfield. Gordon best sums up its appeal: "Exquisitely singular or democratically multiple, each work in its own way intelligently engages questions of form, purpose, and material in contemporary design."

—Mason Riddle

# Chair Lift





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Top row, left to right: typical harbor cranes; the ruins of St. Nikolai Church, which was bombed by Allied forces in World War II; 19th-century canals lined with warehouses. Bottom row: Art Deco "Chilehaus" (1924), designed by Fritz Hoyer; church bells left where they had fallen from a burning church tower in Lubeck in 1944; contemporary canal-front office building; 19th-century canal-front warehouse.

In Wayfarer, architects and other design enthusiasts share their experiences of architectural environments around the world.

WAYFARER



PHOTOS: TOM MEYER, FAIA, AND ANDREW MEYER

# Collage City

Hamburg is a multiplicity of urban juxtapositions.

The sprawling industrial waterfront bustles with derricks and working ships of all sizes while a short distance away, in the city center, the atmosphere is of refined sophistication with manicured parks, lovely shops, and swans plying quiet lakes. The waterfront of another area survives as a system of 19th-century canals crossed by steel bridges and lined with brick warehouses now in transition to lofts, restaurants, and offices. Massive World War II bombings leveled large areas of a charming medieval city that just 60 years later is fully rebuilt with both humane and at times adventurous modern architecture. Among the many distinctive churches surviving the war or rebuilt since, the most moving and spiritual is St. Nikolai, deliberately left in ruins. Sex workers, punk rockers, and clubs notoriously fill the Reeperbahn district while other areas house lovely family communities or wealthy enclaves. A large and lively immigrant population coexists with the stereotype Germans who will chastise you for crossing the street on a red light, even if it is raining and there are no cars in sight.

—Tom Meyer, FAIA

The port city of Hamburg is Northern Germany's commercial and cultural center. Three rivers (the Elbe, the Alster, and the Bille), two artificial lakes (the Binnenalster and the Außenalster), and a 1,200-year history give the city its unique character. AIA Minnesota president Tom Meyer took these photographs while visiting his son, who is in Hamburg on a Fulbright Teaching Fellowship.

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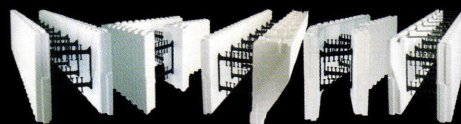
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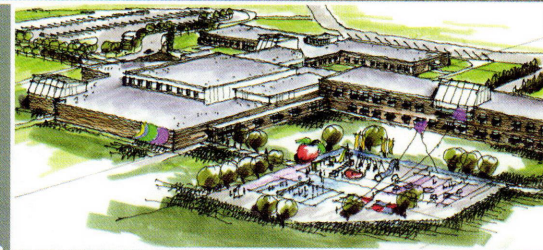
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*Herzog & de Meuron used a photoengraving technique to animate the bands of concrete panels that wrap the Eberswalde Technical School Library in Germany (above). The LiTraCon company markets translucent concrete blocks cast with optical glass fibers (right). These and other innovations are changing perceptions about concrete.*

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COURTESY OF LITRACON, © GMBH

## CONCRETE Poetry

Le Corbusier and other leading 20th-century architects revealed concrete to be a highly expressive material. Today, architects continue to find new ways to draw out the material's unique aesthetic qualities.

**CONCRETE.** The word typically brings to mind forms and surfaces that are hard, gray, and cold. Although these adjectives may describe concrete in its most common form, the material has always contained the potential to be fluid, light, and warm. That a material of such modest composition can be modeled into forms of such soaring inspiration and structural expression as Marcel Breuer's abbey church and bell tower at St. John's (page 26) is what makes concrete so compelling.

The second half of the 20th century, especially, saw architects and engineers manipulate concrete for its large-scale structural possibilities. More recently, several architects have experimented with the material's surface and texture. Of course, architects such as Le Corbusier, Louis Kahn, and Tadao Ando have used the formwork of cast-in-place concrete to achieve surfaces that range from gritty rough

to glassy smooth. But some of the more recent experiments in the expressive potential of concrete have been in the realm of precast.

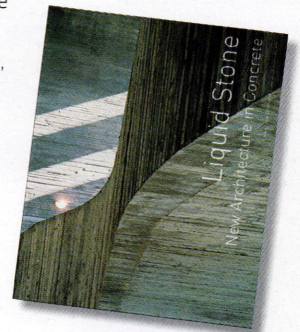
In their design of the Eberswalde Technical School Library in Germany, Herzog & de Meuron (architects of the Walker Art Center expansion) clad the building in bands of concrete and glass panels engraved with photographic images. The technique gave the concrete visual depth and texture while obfuscating the transparency of the glass. Takamatsu Architect & Associates used precast, post-tensioned concrete in their design of the Okinawa National Theater in Japan, creating a structural façade with a delicate, lace-like pattern.

While these—and most—innovative uses of concrete are project-specific, Hungarian architect Áron Losonczy developed and patented a light-transmitting concrete block that is marketed

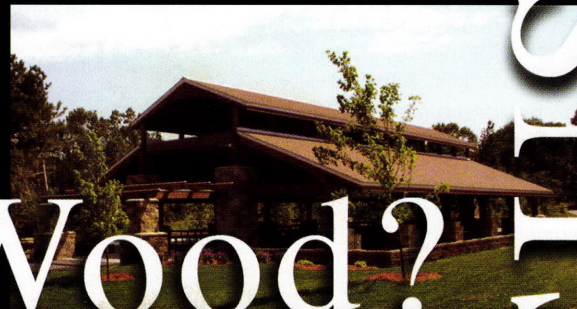
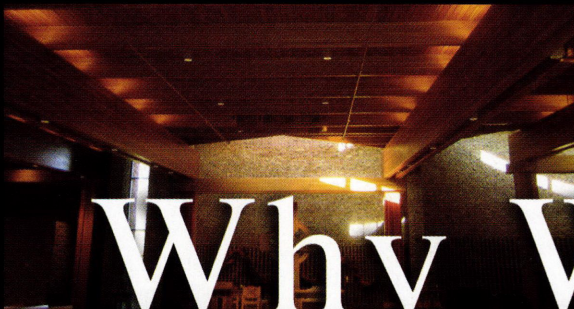
by the company LiTraCon. Optical glass fibers are woven into the concrete blocks as they are cast to achieve the seemingly incongruent effect of translucent concrete.

We often use the word *concrete* as an adjective to suggest a rigid, fixed state, but these and other recent architectural applications of the material suggest we might need to reconsider concrete as dynamic and mutable. The National Building Museum's online exhibition "Liquid Stone: New Architecture in Concrete" ([www.nbm.org/exhibits/liquid\\_stone.html](http://www.nbm.org/exhibits/liquid_stone.html)) and an accompanying book with the same title (Princeton Architectural Press, 2007) document these and other recent innovations in concrete.

—Nancy A. Miller



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A NEW VOICE >>  
Architectural Alliance principal Tom DeAngelo, FAIA, takes the reins as AIA Minnesota president in 2008. Fortunately for Architecture Minnesota, Tom is also a gifted writer. He penned a guest editorial on the design process for the new I-35W bridge in our September/October issue and will contribute several Insight columns in the coming year. Tune in! You'll enjoy his unique perspective.



Think you've heard the whole story on major architectural projects in Minnesota? In Insight, architect and AIA Minnesota president Tom DeAngelo, FAIA, relays the colorful details you won't read about anywhere else.

INSIGHT

## The Stuff of Legends

Architecture Minnesota's newest columnist recalls some of his experiences working with French architect Jean Nouvel on the new Guthrie Theater. Strung together, the scenes might make for a great comedy on the famed thrust stage.

During the construction of the new Guthrie Theater, I took a call from a reporter who wanted to do a radio interview from the end of the "endless bridge." Agreeing, I invited our structural engineer and met the reporter on a beautiful morning. As the interview came to a close, a long-winged eagle floated past the end of the bridge, gliding up the river valley. I leapt forward to connect this poetic moment to the grand narrative of the design: the legend of the meeting of the great North American theater, the Guthrie, and the great North American river, the Mississippi, today witnessed by the great North American bird, the eagle. As the reporter nodded approvingly, my structural engineer leaned into the microphone and said, "Tom, that wasn't an eagle. I think it was a turkey buzzard."

I was fortunate to participate in this epic voyage. Like the turkey buzzard, I witnessed something legendary: the creative battles between Joe Dowling, the Guthrie's artistic director, and Jean Nouvel, the famous French designer, that led to this monumental new building. Here is a lighthearted account of a few episodes that illustrate some of the classic themes of this creative journey.

**Appreciating Cultural Differences** Before our first project meeting, scheduled after lunch, I tapped my leg nervously as Nouvel savored the finish of our last bottle of wine. Finally, driving back, I was informed we needed time to have a Cohiba (cigar) before getting started. Smiling, we entered the meeting with our client to icy stares, about 90 minutes after the scheduled meeting time.

A few months later, Joe Dowling and I sat in the green room at the old Guthrie, waiting for Nouvel to arrive for a major presentation to a packed audience. Joe improvised for 20 minutes before our distinguished guest arrived. The reason for his lateness? Jean was shaving his head.

**Ideas Not Appreciated by Rustic Natives** Our early research took us beyond the Mississippi Valley to local salons like the Terminal Bar (cigar-friendly, inspirationally black, and legendary hangout of Bob Dylan) in Northeast Minneapolis, where we had an unfortunate encounter with a rustic patron. Perhaps it was the French view of the Iraq invasion, or the dismissive French wave of the wrist, or my own colloquial remarks, but the native became agitated and a fight was moments away. Thankfully, our own siren, architect Ann Maki, cast a spell on the fellow and ably defused the situation. This episode foreshadowed one of the project's themes: great ideas not appreciated by Minnesotans.

An early design idea was to create a long lobby, separated from the river by a wind spoiler and a curtain of air (think two-block-long department store entrance), that would bless us with the immediacy of snow and rain and the sounds of St. Anthony Falls. Nouvel announced to a packed theater of confused Guthrie supporters that he intended to "break the wind." In spite of later written assurances from the French Polytechnique, our client didn't get it. The genetic vestige of this idea is the operable hydraulic window near the end of the bridge.

Another idea to permanently pond water on the roofs (reflective, energy-efficient, connection to river) also met with disdain by our provincial team. Our contractor said it was the first thing they learned not to do. Over time this idea morphed into ice (glass pebbles) and later, as battles were waged on other fronts, was reduced to a shameful gravel.

>> continued on page 60



*The clash of creative wills between Guthrie director Joe Dowling and architect Jean Nouvel during the design of the new Guthrie Theater echoed the legendary battles between Sir Tyrone Guthrie and architect Ralph Rapson over the original venue. That Nouvel bears a striking resemblance to Dr. Evil suggests another apt comparison. Tom DeAngelo keeps these dolls in his office as a fond reminder of the Guthrie project.*

# GOT LEED?

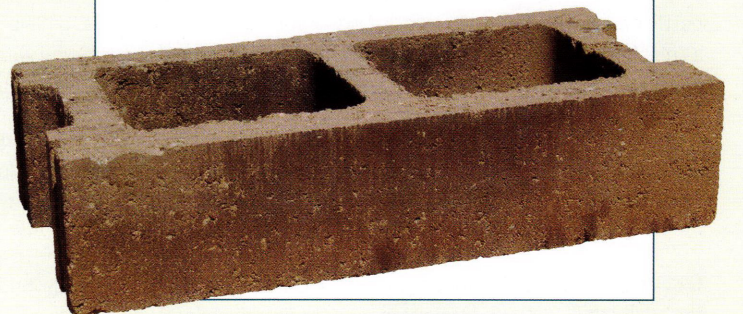
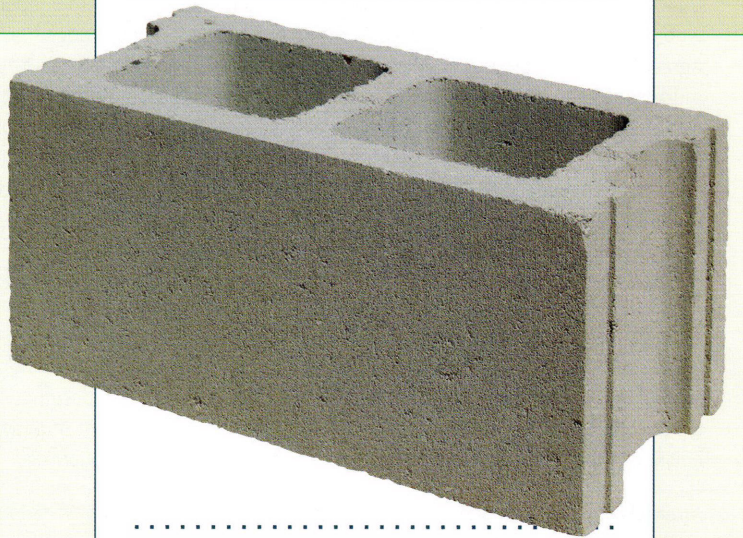
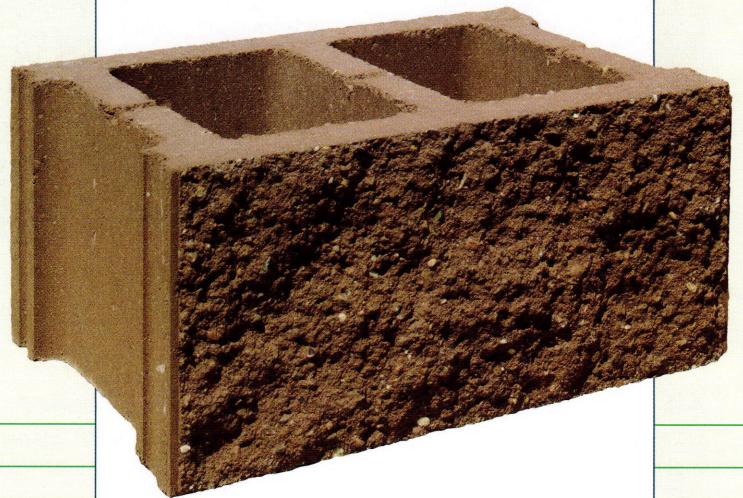
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# hallowed ground

Minnesota is home to numerous internationally recognized architectural landmarks. The modern buildings alone constitute an impressive roster: architect Philip Johnson's shimmering IDS Center; Jean Nouvel's illusion-creating Guthrie Theater; the Edward Larrabee Barnes-designed Walker Art Center and its Herzog & de Meuron expansion; Frank Gehry's Weisman Art Museum at the University of Minnesota; Eero Saarinen's impossibly blue IBM manufacturing complex in Rochester. The list goes on.

But among all of these destinations St. John's Abbey and University in Collegeville, near St. Cloud, stands out as Minnesota's true architectural mecca. That's because modernist luminary Marcel Breuer (page 26) all but set up shop there as campus master planner and architect in the mid-1950s, designing everything from a utilitarian science center to the hallowed abbey church, one of the most beautiful and stirring concrete buildings in the world. The church's "banner" bell tower, visible above trees from miles away, is surely the most famous Breuer structure on campus. But the interior of the church, with its immense wall of honeycombed stained glass and its freestanding, cantilevered concrete balcony, richly textured by wood formwork, is just as awe-inspiring.

Happily, St. John's has taken great care with its design heritage in the years since Breuer, engaging several talented Minnesota architecture firms as well as the late landscape architect and planner Dan Kiley (page 29). The newest buildings on campus are a guesthouse (page 36) and a chapter house addition (page 32), both designed by Minneapolis architects VJAA with a reverence for the Breuer setting. In the following pages, architectural historian and frequent *Architecture Minnesota* contributor Nancy Miller takes a closer look at the old and the new at St. John's. We hope the words and pictures inspire those of you who haven't experienced the campus to make the pilgrimage. You won't be disappointed.

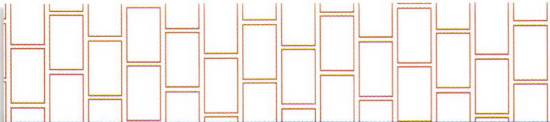
—Christopher Hudson



# The Breuer Zone

At St. John's University in Collegeville, campus planners refer to the clusters of buildings designed by modern master Marcel Breuer as "Breuer zones." Architects, critics, and scholars around the world call them hallowed architectural ground.

*By Nancy A. Miller*

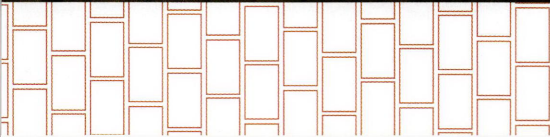


An article published in *Architectural Forum* in 1968 lavished the following praise on Marcel Breuer's abbey church at St. John's in Collegeville: "It is one of Breuer's most famous buildings, and one of the finest religious structures of modern times." Other contemporary architecture journals—and the international architecture community—were equally complimentary. Today, the reputation of the abbey church remains undiminished, 40-plus years after its completion. So how did "one of [the] most famous buildings" designed by a founding member of the Bauhaus, and "one of the finest religious structures of modern times," end up in the middle of Minnesota? The answer to that question is a good story.

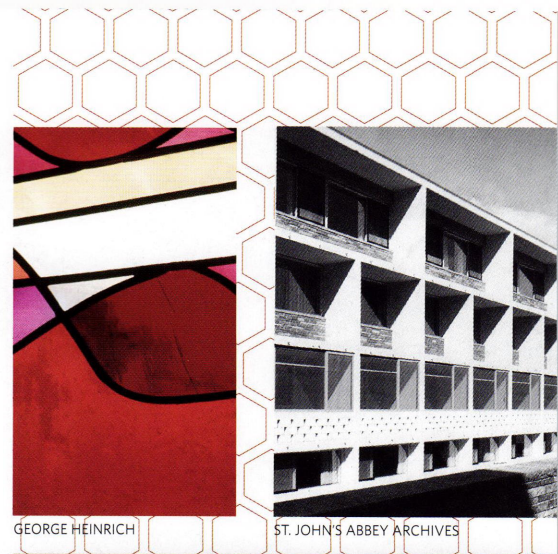
It started in 1951, when Abbot Baldwin W. Dworschak and a few of his Benedictine colleagues met to discuss their concerns that they were not sufficiently caring for their aged and retired brethren—an obligation clearly laid out in the sixth-century Rule of Benedict that guides the monastic community. Consequently, a building committee was formed to study the construction of a wing onto the existing monastery, which was part of a quadrangle of brick buildings built between the mid-1860s and 1880s.

By the time the building committee made its full report, in 1953, the scope of the building project envisioned had expanded to encompass the needs of both the Abbey and University of St. John's. The report included many recommendations and five priorities: a monastery wing for the aged; a new library; a new church; new offices and classrooms; and facilities for guests. Owing to the variety, scale, and significance of the building endeavor, the committee wisely elected to engage an architect to develop a comprehensive plan for the campus.

Abbot Dworschak sent a letter to a list of 12 selected architects to inquire about their interest in the project. On this list were some of the most renowned modern architects of the time, including Walter Gropius, Pietro Belluschi, Eero Saarinen, Richard Neutra, and, of course, Marcel Breuer. The letter indicated the monastery's decided interest in developing a progressive course of



*Top row, left to right: detail of stained glass on the north façade of the abbey church; the Breuer wing of the monastery; a seating area in the shadow of the bell tower. Center: abbey church and bell tower, with the chapter house in the foreground and the Breuer wing of the monastery at left. Bottom: Josef Albers-designed window in the abbot's private chapel. The monastery wing was Breuer's first building at St. John's. Subsequent buildings evolved in form and detail, but the monastery wing set the tone for the aesthetic and material character of the modern campus.*



GEORGE HEINRICH

ST. JOHN'S ABBEY ARCHIVES

architecture, which the monks felt was well suited to their communal disposition. "The Benedictine tradition at its best," wrote Abbot Dworschak, "challenges us to think boldly and to cast our own ideals in forms which will be valid for centuries to come, shaping them with all the genius of present day materials and techniques. We feel that the modern architect, with his orientation toward functionalism and honest use of materials, is uniquely qualified to produce a Catholic work." For the new church in particular, the monks were interested in reflecting in architectural form the updated liturgical practices that had been in place since the 1920s—a goal that included engaging the congregation in a more direct manner.

Five of the architects who responded to Abbot Dworschak's letter were brought to campus and interviewed in a process that concluded with the selection of Marcel Breuer. By January 1954, Breuer had prepared a plan for the abbey and college showing a rectilinear layout of buildings that translated the forms of the traditional monastery into a modern idiom. He reoriented the campus in anticipation of the coming interstate (I-94), which was to be built to the east of the campus and would provide access from the north. The plan was divided roughly diagonally, into zones for the monastic and scholastic functions, which would meet at the new abbey church. Breuer proposed his scheme as a 100-year plan for the campus, in which 19 new buildings would be added through a process of what he called "shadow building": New buildings would be completed and occupied before the buildings they were replacing would be torn down, to achieve the institutional goals with minimum disruption.

The first of the Breuer-designed buildings was the one that had spurred the formation of the building committee: a monastery wing. The four-story structure, built to the south of the quadrangle, toward Lake Sagatagan, was constructed of "enduring, non-pretentious materials," as described in an article appearing in *Architectural Record* in 1961. Breuer felt that the materials—untreated concrete, brick, and granite—appropriately reflected both the

character of the monastery and the tenets of modern architecture. He used similar materials throughout his 20-year association with St. John's, during which time he constructed 10 buildings.

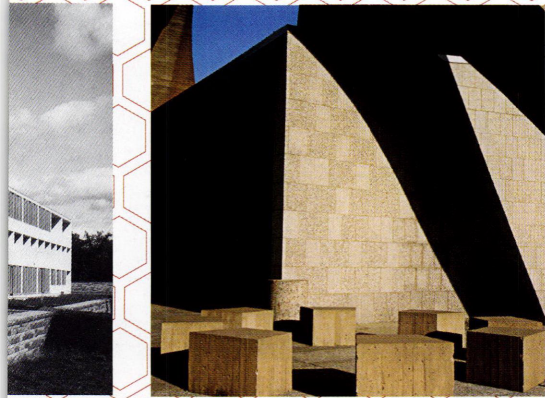
St. Thomas Hall, a dormitory completed in 1959, has a structure and aesthetic most similar to the monastery wing. In both buildings a concrete frame creates a grid of brise-soleils, or window shades, that extend out from the exterior walls. Dark-gray granite, quarried locally at Cold Spring, faces the buildings. For his Bernard, Boniface, and Patrick Halls, a series of dormitories completed in 1967, Breuer moved away from the strict rectilinearity of the earlier structures and adapted the brise-soleils into dynamic, faceted concrete forms. Breuer's motif of creating textured and layered façades was achieved in the Alcuin Library and Peter Engel Science Center—completed in 1964 and 1965, respectively—through the application of hollow-tile chimney flues over the windows of the buildings.

Of course, Marcel Breuer's architectural expression was not limited to the façades of his buildings. Inside the Alcuin Library, for example, two concrete "trees" support the structure and organize the internal layout of the building. Breuer's genius, captured in these buildings at St. John's Abbey and University, lay in fusing structure, material, and form as interdependent elements. Nowhere is that more evident than in the abbey church and bell tower, which stand at the formal and ideological center of Breuer's plan for St. John's.

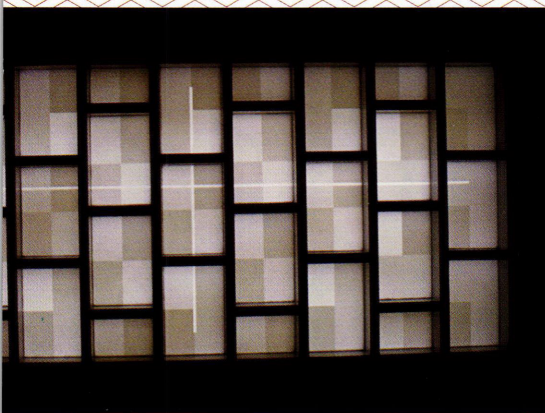


ST. JOHN'S ABBEY ARCHIVES

*Abbot Dworschak sent a letter to some of the most renowned modern architects of the time, including Walter Gropius, Pietro Belluschi, Eero Saarinen, Richard Neutra, and, of course, Marcel Breuer. The letter indicated the monastery's decided interest in developing a progressive course of architecture, which the monks felt was well suited to their communal disposition.*



ST. JOHN'S ABBEY ARCHIVES



RRTL ARCHITECTS

## Modern Landscapes at St. John's

"For those who think of the cloistered life as a dark anachronism from the Middle Ages," wrote *TIME Magazine* in April 1954, "the new St. John's Abbey and University will be a vivid testimony to the way the life of the spirit leaps from century to century and is contemporary in each." St. John's was national news because Marcel Breuer's master plan for 19 new buildings marked a revolutionary approach to integrating architecture and landscape by redefining the idea of the cloister itself. "Instead of running along the side of a building, as cloisters have done since St. Benedict," *TIME* reported, "they will be independent covered walks, mostly of local fieldstone on the outer side, roofed with reinforced concrete and glass-walled or open on the inner side to provide views of the gardens and landscaping." In other words, the formal structure of courtyards would remain, yet walkways would be freed from buildings to move through outdoor space. What could be more modern?

Such a free-flowing system of connections set the framework for later campus planning at St. John's by Vermont-based landscape architect Daniel Kiley. Today, visitors to the university and abbey find a rare fabric of 19th-century masonry buildings, stone walls, northern forest, and lakes. In dramatic contrast to this traditional monastic landscape, Breuer's iconic church and library stand out. Less appreciated are the spatial connections and new courtyards created by the modern-era dormitories and academic buildings shaped by Breuer and later enriched by Kiley's dense plantings and site circulation.

Writing on the Cultural Landscape Foundation website to honor Kiley after his passing in 2005, landscape architect Gregg Bleam recalled riding in the backseat of a car with Kiley on the way to a meeting at St. John's. Kiley saw him

flipping through his sketchbook, presumably filled with site-specific vignettes. "He pulled the book away from me, scanned his eyes over my primitive drawings, closed the book, and said, 'Get the diagram right first,' a phrase that I have never forgotten." Chicago landscape architect Peter Lindsay Schaudt, who also worked with Kiley in the early to mid-1980s, confirms the Kiley lesson: "Dan never rushed into any project. He liked to spend a lot of time absorbing the site before he even drew a diagram."

Indeed, before sketching details or even thinking about materials, Kiley looked to the spatial and topographic character of each location. He studied long outward views and the outdoor rooms created by buildings and existing trees. With his Harvard classmates James Rose and Garrett Eckbo, Kiley rebelled against the Beaux Arts tradition in design still fashionable in late 1930s landscape architectural training. They cared little about creating a beautiful presentation drawing that looked "historic." Rather, following the modern movement in architecture, they sought to shape space before ornamenting it. They tried to adapt landscape architecture to contemporary technologies, modern activities, and new ways of socializing.

Yet the precedents in design history of spatial balance and proportional harmony influenced Kiley, as they did Walter Gropius and Marcel Breuer. Kiley, for example, is known for "bosques" of trees planted in a tight grid (see photo below) and linear tree arcades that line paths. In nature, trees don't grow this way, but they do grow more densely than most of us realize. In the pinewoods and trails on the outskirts of St. John's, one discovers a series of interwoven outdoor rooms beneath the canopy. At the core of campus, Kiley helps us to appreciate this nearby beauty through the urbane lens of conscious symmetry, asymmetry, and spatial repetition.

—Frank Edgerton Martin

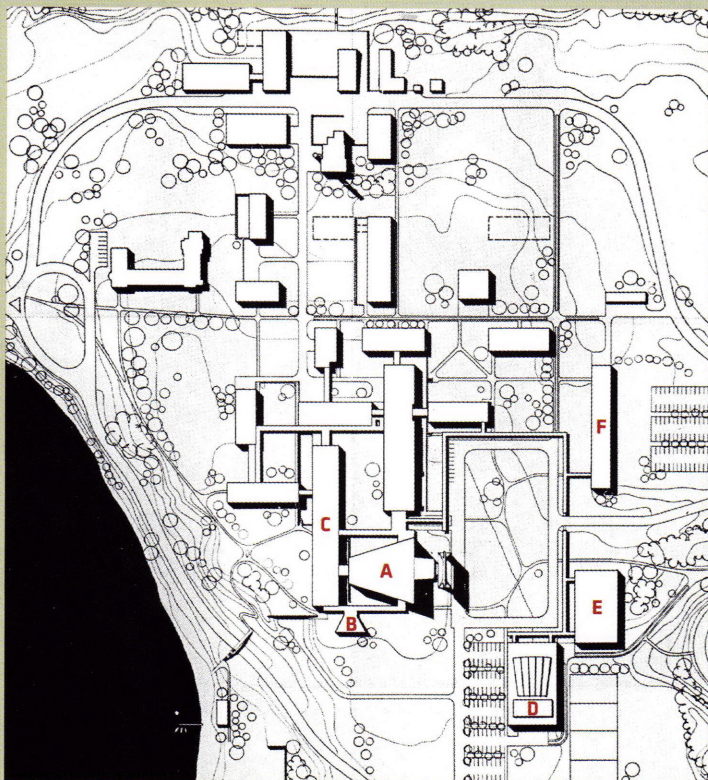


LEE HANLEY

**Dan Kiley designed this bosque of trees outside the Stephen B. Humphrey Theater.**

*Breuer's 100-year plan for St. John's called for 19 new buildings, shown here. Through "shadow building"—Breuer's term for constructing new buildings while the buildings to be replaced were still being used—the architect planned to keep campus disruption to a minimum.*

- A. Abbey Church
- B. Chapter House
- C. Monastery—Breuer Wing
- D. Peter Engel Science Center
- E. Alcuin Library
- F. St. Mary Hall



ST. JOHN'S ABBEY ARCHIVES



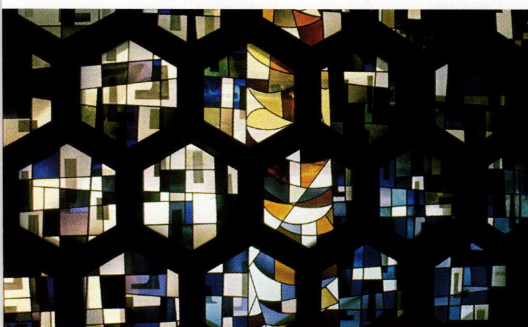
RRTL-ARCHITECTS



ST. JOHN'S ABBEY ARCHIVES



RRTL ARCHITECTS



GEORGE HEINRICH



ST. JOHN'S ABBEY ARCHIVES



*Opposite page, clockwise from top right: Peter Engel Science Center; faceted façade detail; Alcuin Library; north façade, abbey church; St. Patrick Hall (dormitory). Left: suspended altar canopy, abbey church. Below: bell tower. The vertically cantilevered, exposed-concrete bell tower initially shocked the building committee with its aggressively modern expression.*

Father Hilary Thimmesh, who served as secretary of the planning committee for the church and later as university president (1982–1991), notes that Hamilton Smith—Breuer’s design partner during the years he worked with St. John’s—recently called the abbey church “a building fully realized.” In those few words Smith suggests high praise for the process of taking the church from concept to building—a process often compromised by budget, construction, and competing interests. Father Thimmesh recalls “exceptional harmony between contractor, architect, and workers” during the construction of the abbey church. But that is not to say that the project rallied everyone from the start.

Breuer’s office produced an early, longitudinal scheme for the church and sent it to the architect in Paris, where he was overseeing the construction of the UNESCO headquarters; Breuer returned the plans with notes, questioning the logic of the longitudinal plan, especially in light of the goal of creating a space that would more fully engage the congregation in the liturgy. Soon thereafter he developed a new, radically different proposal: a trapezoidal plan that was wider at the entrance and narrowed at the altar. Thimmesh recalls that in those early plans Breuer “showed a thing standing in front of this trapezoidal structure that he called a banner.” That thing, of course, evolved into the iconic bell tower that stands in front of the church and announces its presence in the landscape for miles around. As the scheme developed, Breuer revealed his plan to employ

concrete folded plates in the construction and formal expression of the church—a structural system he had developed in consultation with the respected Italian engineer Pier Luigi Nervi.

How did the monastic community react upon seeing Breuer’s proposal for the church? “Roughly, our first reaction was shock,” says Thimmesh, with an undercurrent of dry humor. Although Abbot Dworschak’s letter of inquiry had explicitly requested a modern response to St. John’s proposed projects, the monks clearly were not prepared for Breuer’s bold, structural reinterpretation of the traditional church. “Quite simply, the shapes of things weren’t church-like,” says Thimmesh. “We all wanted a campanile, or something. The notion of the raw concrete seemed very strange to us.” Clearly apparent in Father Thimmesh’s lighthearted recollections is his knowledge of the ultimate success of the design, as well as some affection for the designer.

In response to this shock, Thimmesh remembers, “Breuer very quietly, very gravely—as he always did—made us see the beauty of plain, unornamented forms.” Not surprisingly, the Collegetown and St. Cloud communities grew increasingly enthusiastic about the design as they watched it being built. Thimmesh recalls how the beauty and drama of the wood formwork (for the poured-in-place concrete) erected during construction stirred intense interest: “People appreciated the skill that went into the thing and the complexity.”

And the result, for most who see it, is nothing short of inspirational. The banner, a 126-foot-high vertically cantilevered concrete slab, is the church’s modern bell tower. Behind it is a wall of stained glass layered with a honeycomb-patterned concrete screen. Inside, beyond the baptistery, is the church hall, a wide, open space with a balcony raised on four concrete piers, providing a two-story accommodation for a congregation of nearly 1,600—and achieving the goal of bringing congregants physically closer to the liturgy. The central altar is surrounded on three

>> continued on page 66

*Breuer’s genius lay in fusing structure, material, and form as interdependent elements. Nowhere is that more evident than in the abbey church and bell tower, which stand at the formal and ideological center of Breuer’s plan for St. John’s.*

**2007 AIA MINNESOTA HONOR AWARD WINNER**

*VJAA's St. John's Abbey Chapter House renovation and addition received a 2007 Minnesota Preservation Award from the Preservation Alliance of Minnesota and a 2007 AIA Minnesota Honor Award. See the Honor Awards coverage in our next issue for more on this project.*

"We were really cautious about the idea of adding on to this sacred building," says VJAA principal Jennifer Yoos, AIA, of the addition her firm recently completed for the Marcel Breuer-designed chapter house at St. John's University in Collegeville. In that statement, Yoos suggests the building is sacred as much for its place in the history of modern architecture as for its religious function, and she reflects VJAA's sensitivity to the context of the building.

What began as a fairly mundane call for renovation of the St. John's chapter house and code updates for the abbey church evolved into a sophisticated, delicate exercise in the resolution of old and new, resulting in a building that is far greater than the sum of its parts. "We were asked to study strategies for bringing the church up to code and solving some of the really difficult problems they had with circulation and handicap accessibility," says VJAA principal Vincent James, FAIA. "But the reason we won the commission is that we proposed the idea of extending the chapter house to the north and creating a lobby, which was not in the original concept. All of a sudden the client realized they could get the elevator and bathrooms and everything integrated discreetly, and also make the chapter house a much more vital space for diverse uses." In other words, the firm solved two problems with one elegant structure, whose circulatory system deftly

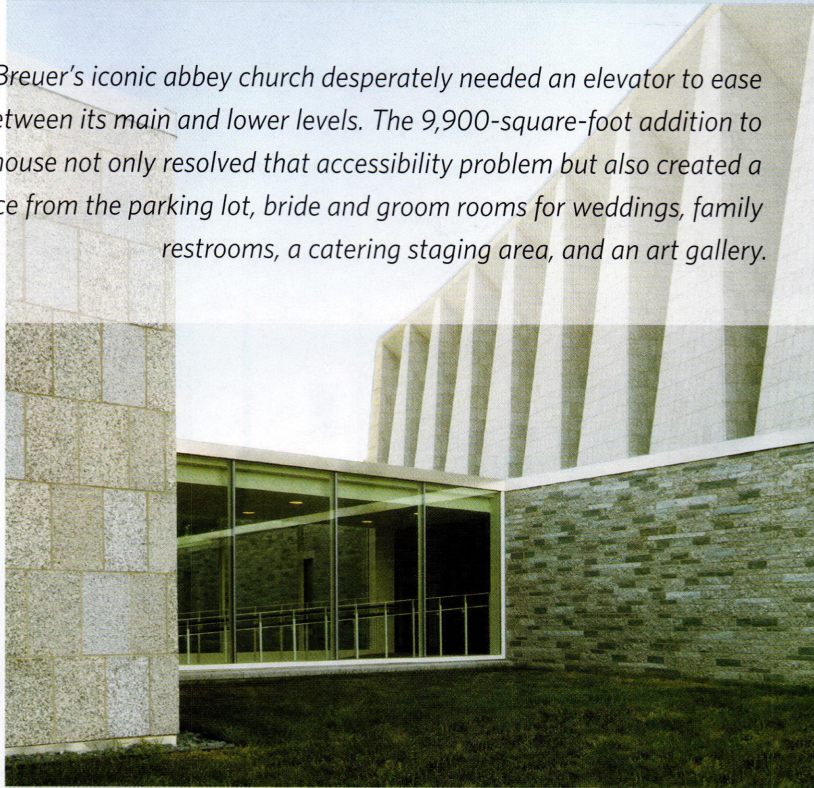


# a new chapter

St. John's Abbey renovates and builds an addition to its Marcel Breuer-designed chapter house with the help of an architecture firm known for its respectful, sophisticated minimalism

*By Nancy A. Miller*

Marcel Breuer's iconic abbey church desperately needed an elevator to ease access between its main and lower levels. The 9,900-square-foot addition to the chapter house not only resolved that accessibility problem but also created a new entrance from the parking lot, bride and groom rooms for weddings, family restrooms, a catering staging area, and an art gallery.



## THE PETERS PAVILION

**Location:**  
Collegetown, Minnesota

**Client:**  
St. John's Abbey

**Architect:**  
VJAA  
[www.vjaa.com](http://www.vjaa.com)

**Design principals:**  
Vincent James, FAIA;  
Jennifer Yoos, AIA;  
Nathan Knutson, AIA

**Landscape architect:**  
oslund.and.assoc.  
[www.oaala.com](http://www.oaala.com)

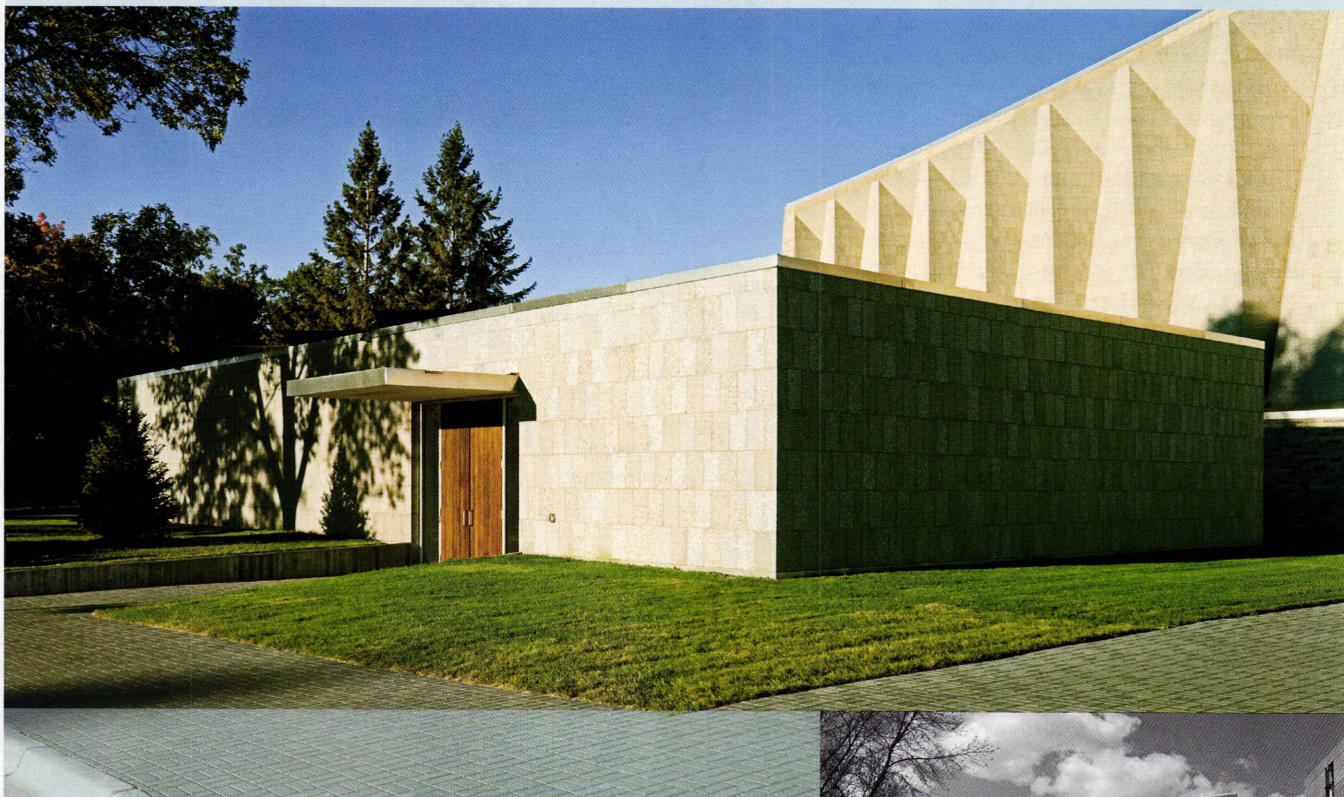
**Construction manager:**  
Knutson Construction Services

**Size:**  
9,900 square feet

**Cost:**  
\$1.9 million

**Completion date:**  
June 2007

**Photographer:**  
Paul Crosby



As part of a renovation of the Breuer-designed chapter house, located next to the abbey church, VJAA extended the building to the north (the location of the new pavilion is marked in yellow in the historical photo at right). Recycled and new granite panels, selected to match the original building, and a reoriented entrance placed at the juncture of old and new helped make the addition seamless.



*A glazed corridor links the extended chapter house with the abbey church and encloses a new garden between the chapter house and cloister walk.*



weaves together the church, the chapter house, and the cloister walk, as well as an underground link to the new guesthouse (page 36).

The chapter house, located on the east flank of the abbey church, was originally accessed primarily via the cloister walk that links the church and monastery, to the south. The 50-year-old structure was in need of mechanical updates and a permanent solution to the acoustical problems resulting from the building's concrete and brick surfaces. Next door, Marcel Breuer's iconic abbey church desperately needed an elevator to ease access between its main and lower levels. The 9,900-square-foot addition to the chapter house, named the Petters Pavilion, not only resolved that accessibility problem but also created a new entrance from the parking lot, bride and groom rooms for weddings, family restrooms, a catering staging area, and an art gallery. "By pulling the elevator out into the pavilion," says Abbot John Klassen, "VJAA in a single stroke gave us the wheelchair access we needed without the elevator noise that goes along with it and without disturbing any of the church architecture."

VJAA's proposal to add on to the chapter house and create a new link to the church was the result not of cavalier spirit but of measured detective work. "We went back into the original chapter house drawings and pieced together a lot of elements to see how Breuer evolved his design," Yoos explains. James points to drawings that illustrate several options Breuer considered for the form and design of the chapter house and says, "Knowing this made me feel better about extending the form." Once that decision was made, James, Yoos, and Nathan Knutson, AIA, directed the delicate design process that would pair old and new. Breuer's original buildings were the inspiration.

Yoos says the materials and their application in the addition "are adopted from Breuer. All of the critical details come from the church: the way the building meets the ground; the way the wall is capped; the wall itself; the pattern of the granite and how it's organized." The addition is clad in recycled and new granite selected to match the

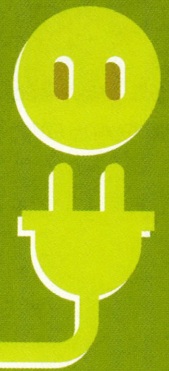
*VJAA solved two problems with one elegant structure, whose circulatory system deftly weaves together the church, the chapter house, and the cloister walk, as well as an underground link to the new guesthouse.*

*To remedy acoustical problems caused by the materials used in the original chapter house, VJAA applied perforated wall panels laser-cut with a pattern that fits the Breuer aesthetic.*



# power

# TOOLS



In recent years, two related themes—sustainable design and livable communities—have dominated the pages of *Architecture Minnesota*.

We've profiled LEED-certified buildings and other green projects by Minnesota architects, highlighted the Architecture 2030 ([www.architecture2030.org](http://www.architecture2030.org)) campaign and AIA Minnesota's Climate Change Position Statement, and even taken an early look at zero-energy housing. What we *haven't* done is offer a primer on one of the key components of any sustainably designed, energy-smart building: energy modeling. This was an unfortunate oversight, because one of the leading experts in the field, The Weidt Group's David Eijadi, FAIA, calls Minnesota home and is also an engaging writer.

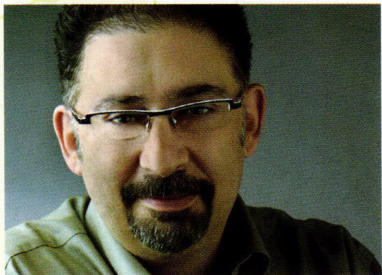
We remedy that omission here with David's help, in a feature article that also asks four leading voices on energy-related issues in the built environment to chart the next steps we in Minnesota can take toward an energy-efficient future. And, for good measure, we look at two important new projects in the Twin Cities that used energy modeling to set their lofty energy goals. One happens to be the headquarters of a Minnesota power company, and it will serve as a laboratory for customers wishing to learn more about electrical efficiency in buildings. The other, an exceptionally energy-smart restaurant, will surely be a conversation starter for its diners. These are low-energy projects, yes, but the examples they set are the very definition of powerful.

—Christopher Hudson

# ENERGY MODELING

# 101

WHAT IS ENERGY MODELING AND WHY HAS IT BECOME SUCH A CRITICAL COMPONENT OF ARCHITECTURAL DESIGN? A PIONEER IN THE FIELD BREAKS DOWN A TECHNICAL SUBJECT.



BY DAVID EIJJADI, FAIA

*As the sayings go, "It's easier to meet a goal if you actually have one," and "It's hard to meet your goal if you don't measure your progress." Energy modeling, in simple terms, helps us design buildings and building systems to performance goals. Perhaps more important, in today's world of fossil-fuel depletion and global warming, energy models become an important benchmark through which we can manage our progress toward fiscally responsible energy conservation and maintained reductions in greenhouse gas emissions.*

Over the past 25 years, hourly energy simulation models that use simple and sophisticated computerized algorithms to predict the performance of buildings have moved from the realm of experimentation and design innovation into general acceptance as a mainstay of design practice. Still, *energy modeling*, as it is commonly referred to, has its detractors—those who point out differences between energy design models and actual building performance—in addition to its champions—those who point to its increasing precision and accuracy. There is merit to both viewpoints.

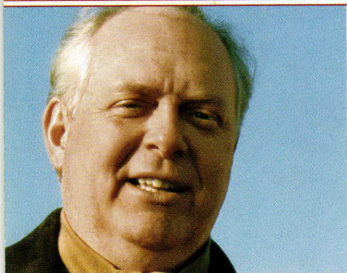
Models allow us to imagine something we may someday have in the real world. Variations of the word *model* percolate through our lives in combinations like modeling clay, model trains, weather models, financial models, and fashion models. Any random sampling of opinions about models will reveal sentiments ranging from fascination and appreciation to mistrust and disregard, depending on individual expectations and success with models. Energy modeling elicits the same range of responses, but some naysayers arrive at their opinions without understanding the design intent of the energy model presented. It's important to remember that all models are intentional abstractions and are not created equal.

One of my favorite energy-related modeling terms is *fluid dynamic model*. It refers to *mathematical models* of the energy-driven flow of air or water, but some might prefer to think of supermodel Gisele Bündchen. Others might not. They may think she is more of a *static model* (in architectural-modeling terms, a simple rendering of a space). Perhaps they consider Tyson Beckford a more dynamic model. I make this lighthearted digression because energy modeling is not a particularly stimulating subject to write about. Yet understanding it becomes more important as we move into an age in which energy conservation is a must. This is a good place to begin a discussion of the design and use of *mathematical models* for representing dynamic and static behaviors.

In architecture the most common *representation* of a mathematically modeled *behavior* is a rendering or a 3-D model view. These renderings show the behavior of simulated light on static components like walls and floors. Most early electronic renderings were like snapshots of a chipboard model viewed from only one angle. Let the simulated light inside the simulated volume and this kind of model helps us understand the

We posed the same question to four leading energy voices in Minnesota. Here's what they had to say.

**QUESTION: WHERE CAN MINNESOTA MAKE THE BIGGEST GAINS TOWARD AN ENERGY-EFFICIENT FUTURE?** QUESTION: WHERE CAN MINNE

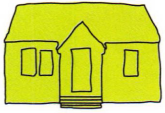


"An energy-efficient future requires ecologically based design solutions in which building elements aren't just visually and dimensionally coordinated; they're designed to synergize with each other to create 'whole system' efficiencies. For example, a window is no longer only for aesthetics. It becomes part of a daylight and solar radiation harvesting system that influences everything from site planning to interior finish selections. Our designs will need to mimic the interactive efficiency of ecosystems."

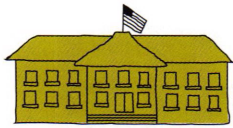
Doug Pierce, AIA, sustainable-design planner, Perkins+Will

## LESSON 1 Understanding Energy Use

Energy modeling helps us understand how buildings use energy. Here we compare the energy use of a single-family home to that of a high school to show that making a better envelope is the first step in saving energy at home and using less energy to operate lights and equipment is the first step for a school.



SINGLE-FAMILY HOME



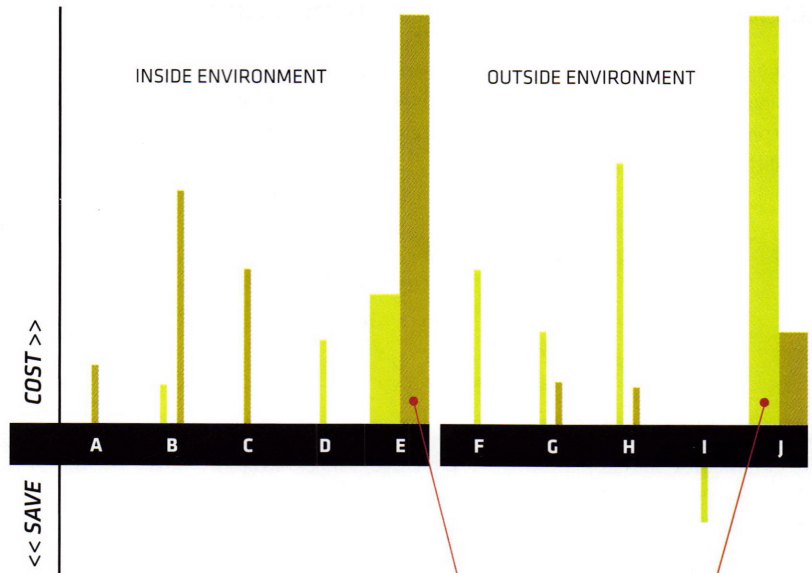
HIGH SCHOOL

### INTERIOR ENERGY LOADS

- A Equipment
- B Lighting
- C Outside air
- D Hot water
- E Total inside environment

### EXTERIOR ENERGY LOADS

- F Glass losses
- G Envelope losses
- H Infiltration
- I Solar gain
- J Total outside environment



More energy costs come from **INSIDE** the envelope in a school.

More energy costs come from **OUTSIDE** the envelope in a home.

space, but it tells us nothing about the behavior of energy in and around the space because the modeled light and modeled walls do not contain the data needed to create information on energy or mass.

Energy modeling, unlike architectural renderings, is not concerned with appearances. It's about energy behaviors we cannot see but that impact us and our environment. This makes energy modeling harder to explain and more difficult to represent in attractive pictures. But energy modeling is an important resource management tool for dealing with consumption waste and carbon emissions.

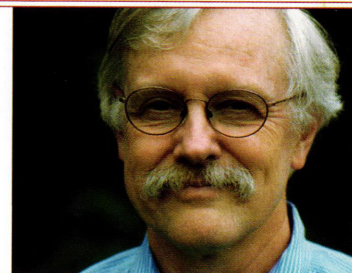
In order to model energy behaviors, data on static assemblies such as the walls, windows, roof, structure, floors, and insulation are needed. These assemblies, though predominantly static, are subject to energy flows; they transmit or resist energy according to their mass, size, location, and other properties. The physics of most materials and energy-transfer mechanisms are very well known and documented in mathematical models. Most of these assemblies and their attributes are determined by the architect. Collectively, these assemblies define the speed and effectiveness with which the architecture responds to or mitigates the natural environment. Whatever the architecture does not do to provide comfort and utility, the mechanical and electrical systems will need to do.

Weather is the most obvious *dynamic* system in a building's environment. The sun is the easiest component to recognize; it comes out, it warms things up. Some of that warmth is transferred through the building envelope and the ventilation systems into the building. When the sun goes down, the warmth tries to follow it back into outer space. Energy modeling, in early design, can be used to analyze and adjust a building's volume, massing, orientation, and window area in order to best respond to the solar gain, temperature, humidity, and daylighting opportunities presented by the environment to reduce the need for mechanical and electrical systems. A weather file called a "Typical Meteorological Year," containing actual data from a real year, is used to model the architectural interaction with the environment.

MAKE THE BIGGEST GAINS TOWARD AN ENERGY-EFFICIENT FUTURE? QUESTION: WHERE CAN MINNESOTA MAKE THE BIGGEST GAINS TOWARD

"One obvious place to start is by reducing energy use in all new and existing buildings to meet the Architecture 2030 [see link on page 43] targets proposed by Ed Mazria. We must also address the energy issue at the neighborhood scale with denser mixed-use development, improved public transit, and district energy systems with on-site renewables wherever feasible."

John Carmody, director, University of Minnesota Center for Sustainable Building Research



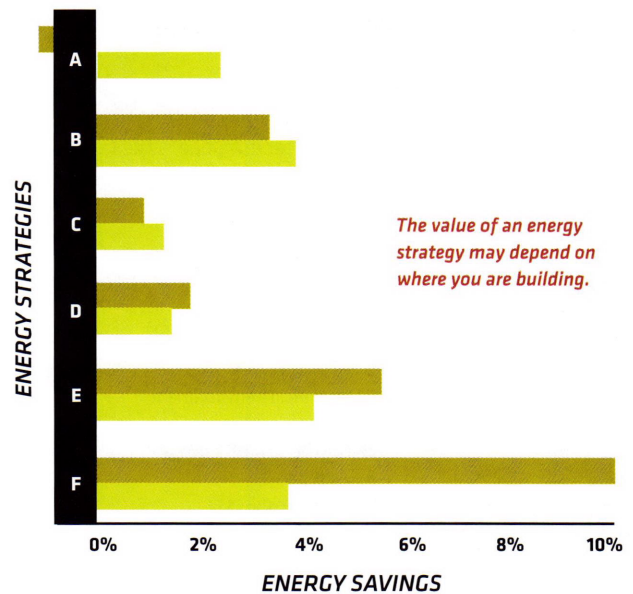
## LESSON 2 Choosing the Right Technology

Energy modeling helps us understand how one investment in an energy-saving technology compares to another and how differences are climate-dependent. This chart compares six different energy strategies for a three-story school in two different climates.



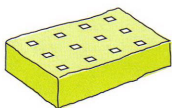
### ENERGY STRATEGIES

- A** 83% reflective white roof
- B** Classroom occupancy sensors to control lights
- C** Office occupancy sensors to control lights
- D** Storage/restroom occupancy sensor to control lights
- E** Occupancy sensor control of outside air
- F** CO<sub>2</sub> control of outside air

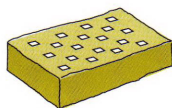


## LESSON 3 Sizing Right

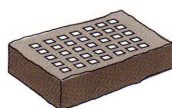
Energy modeling helps us understand how much of a technology is a good thing. For example, in **A**, with fewer skylights in the plan, we can see that the value of adding skylights for daylighting increases rapidly. It is the biggest-bang-for-the-buck region of the graph. **B** is where some additional value for more skylights is achieved, but not as much as in **A**. In example **C**, the heating and/or cooling costs become greater as the natural light level goes up. The difference in savings between the Northeast and the Midwest is due to difference in climate and the cost of power. Skylights are more affordable in the Northeast.



**A** Area of skylight with best cost balance for lighting, heating, and cooling

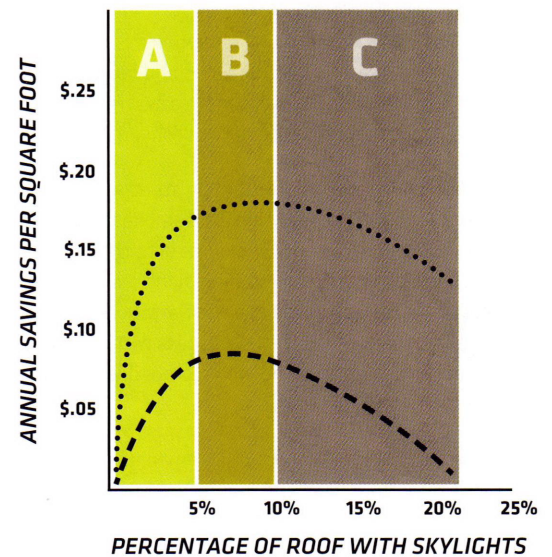


**B** Area of skylight best for lighting needs on an average overcast day



**C** Area of skylight best for lighting on the most overcast day

**NORTHEAST**  
.....  
**MIDWEST**  
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AN ENERGY-EFFICIENT FUTURE? **QUESTION: WHERE CAN MINNESOTA MAKE THE BIGGEST GAINS TOWARD AN ENERGY-EFFICIENT FUTURE?**



“Minnesota can get real about the long-term costs of constructing an infrastructure that is energy hungry. Investing in building-envelope energy efficiency is a balance point between the impacts of operating budgets and first-time capital costs. Leadership and financial incentives from lending institutions and government can motivate reluctant decision makers to meet the 2030 Challenge.”

Sarah Nettleton, AIA, founder, Sarah Nettleton Architects

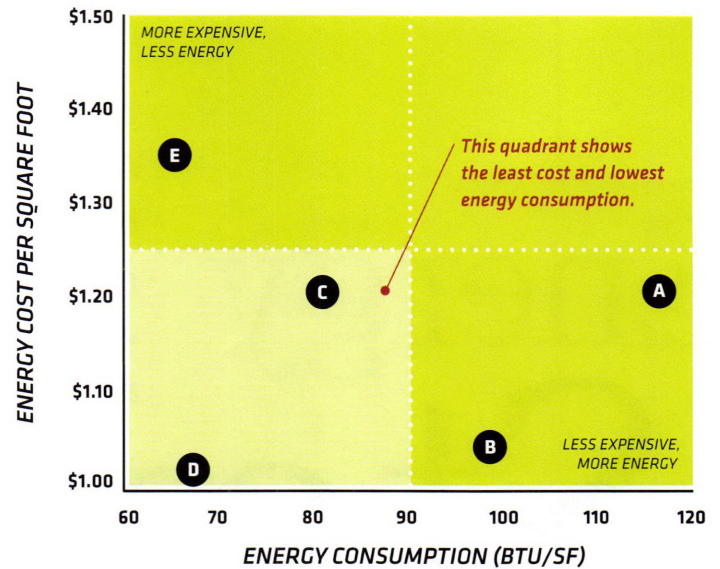


## LESSON 4 Saving Energy, Saving Money

Because gas and electricity are priced differently and equipment efficiencies vary, consuming the least energy and spending the fewest dollars are not always the same. Options **B** and **D** have different cooling systems but both rely on gas heating. They have very similar operating costs but option **D**—the heat-pump system with gas backup—uses much less on-site energy with less environmental impact. Change the heating energy from gas to electric and **D** becomes **E**, a more costly alternative that uses slightly less energy. A few tweaks to fuel prices and the best choice may change.

### MECHANICAL-SYSTEM OPTIONS

- |  |  |
|--|--|
| <b>A</b> Constant volume air direct expansion with gas heat      | <b>D</b> Heat-pump system with gas backup      |
| <b>B</b> Variable volume air direct expansion with gas heat      | <b>E</b> Heat-pump system with electric backup |
| <b>C</b> Variable volume air direct expansion with electric heat |  |



When the sun and air mass are providing the moderate conditions we desire, we consider them *sources* of heating or cooling. As our buildings acquire too much heat from the sun, we consider it a cooling *load* to be mitigated. Sometimes we can cool buildings using the air mass, if it is cool enough. But when the air mass is too cold, it too changes from a *source* to a *load*—in this case a heating load because we need to add heat to maintain comfort. Energy modeling helps determine when conditions will be balanced and when mechanical and electrical supplements will be needed.

To model correctly, we need data on other dynamic energy sources and loads in the building, including hours of occupancy, number of people in the building (each person is actually a mobile heater), process loads, computers in use, lighting design and control, and the intended control of temperature ranges and outside air. Any and all of these may be considered a dynamic source of useful energy or a dynamic load to be mitigated. Mathematical models exist for all sources/loads, but this last set contains the greatest number of uncertainties. Much depends on what the operators of the building will do in spite of what was set as design/modeling parameters. The uncertainty introduced by human behavior is sometimes cited as a reason not to do hourly energy simulation modeling and to use older, coarser methods for the design of buildings and mechanical systems.

In simplified terms, coarser methods of making architectural, mechanical, and electrical decisions generally deal with the same uncertainties by either over-designing systems or adding greater redundancies. This is an appropriate approach when a more integrated design approach using energy modeling is not available. But when it is available, energy modeling can be used to reduce over-design and help make value decisions across disciplines, including architecture, mechanical and electrical engineering, and facility management.

Finally, if you're wondering how Gisele and Tyson Beckford fit into all this, I'll bet that fashion models with the longest careers are pretty savvy about how their systems operate. Top performers—however long or short their careers—rarely get there by relying on luck alone. The same is true of buildings. Top performers are more carefully designed, have better components, and are better operated. They keep more of their value over time. **AMN**

Three of the respondents cite the Architecture 2030 plan to reduce building CO<sub>2</sub> emissions to zero over the next quarter-century. For information on Architecture 2030 and the 2030 Challenge, check out [www.architecture2030.org](http://www.architecture2030.org).

QUESTION: WHERE CAN MINNESOTA MAKE THE BIGGEST GAINS TOWARD AN ENERGY-EFFICIENT FUTURE? QUESTION: WHERE CAN MINNESOTA MAKE THE BIGGEST GAINS TOWARD AN ENERGY-EFFICIENT FUTURE?

“By measuring real outcomes, Our firm is collecting energy data for the buildings we have designed that have been in operation for more than a year. Mostly, the buildings are outperforming the energy models and also outperform the 2030 Challenge. The information from models helps us make corrections when needed and moves us toward net zero-energy buildings.”

Rick Carter, AIA, principal, LHB



# Energy Star

A Minnesota power company leads by example by pursuing LEED Platinum certification for its new Maple Grove headquarters. Its customers will be invited to visit the complex to learn how an ultra-electricity-efficient building works.

BY CAMILLE LEFEVRE

Is a sustainably designed electric-company headquarters an oxymoron? "Absolutely not," says David Saggau, president and CEO of Great River Energy (GRE) in Maple Grove. "We're a cooperative, formed in 1999, and we have one of the most aggressive environmental policies of any utility out there. Our environmental-stewardship record is born of a cultural desire to sustain the environment, and that starts at the top, with me. But the 1.7 million people we supply electricity to have also, collectively, decided what our footprint on the world should be."

At the same time, Saggau continues, "Conservation is good business. From purely a business standpoint, our cheapest kilowatt is the one we don't have to produce." So when GRE was ready to build a new headquarters, Saggau asked Minneapolis architecture firm Perkins+Will to design a LEED Platinum (the highest level in the U.S. Green Building Council's rating system) showcase of "how to build sustainably at reasonable costs to reduce electrical-energy consumption," he says.

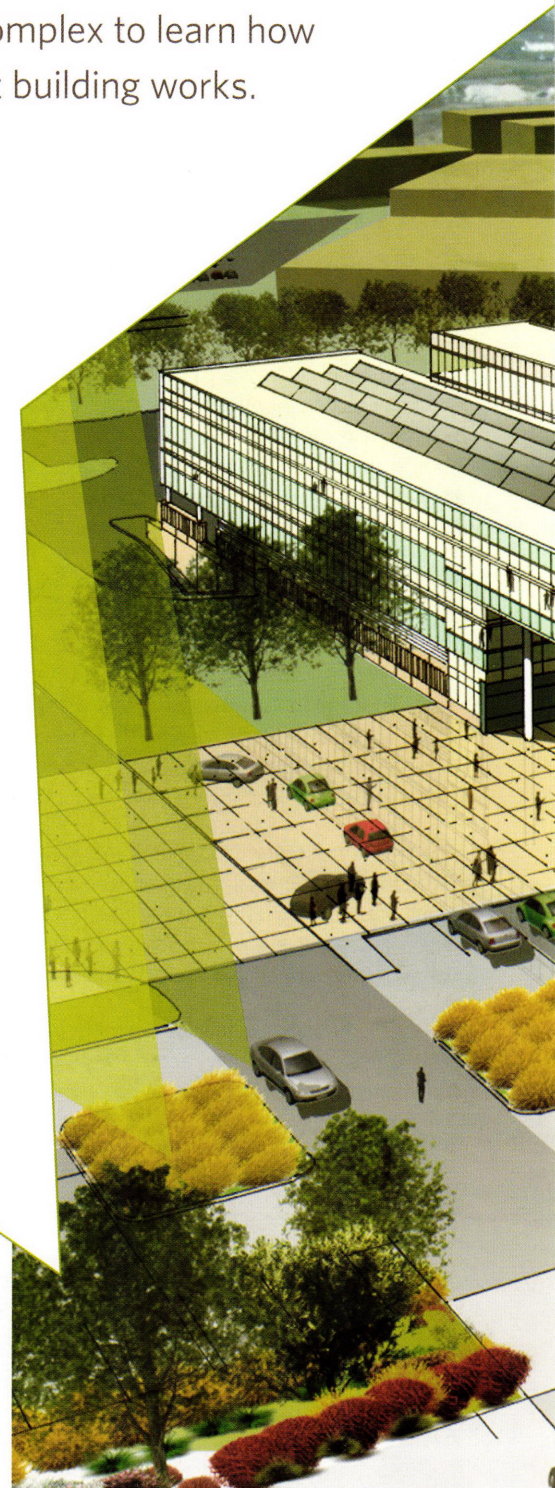
That wasn't all. Saggau also challenged the architects to "incorporate at least one energy-efficiency feature that's never been used in

any building before. Because for this research to evolve, people need to take the risks and push the envelope." Perkins+Will's sustainable-design guru, Doug Pierce, AIA, had a simple reply: "We can do that!"

The resulting innovation utilizes nearby Arbor Lake as a geothermal heating and cooling system that, in combination with under-floor displacement ventilation, dramatically improves indoor air quality and workplace productivity. The first-of-its-kind heating and cooling system, just one of the building's more than 100 green initiatives, will help the four-level, 166,000-square-foot, glass-clad complex operate approximately 50 percent better than what Minnesota code mandates.

Two renewable energy sources—a mid-scale commercial wind turbine and a solar photovoltaic array—will produce 12 to 15 percent of the total energy needed by the building when it opens this spring. Three-story atriums in the middle of the building (black-box functions like restrooms and mechanicals were pushed to either end) bring daylight deep into the structure, "thus making the building more energy-efficient while creating a dynamic and healthy work environment," Pierce explains.

*A commercial wind turbine and a solar photovoltaic array will generate up to 15 percent of the total energy needed by the building.*



“In a sustainably designed work environment, every part of the building has to perform multiple roles to achieve optimal system-wide efficiencies. In other words, every component in the design contributes synergistically to functional goals, operational goals, economic goals, sustainability goals, and ultimately to a beautiful future for our planet.”

—Architect Dave Dimond





“The building will be open to anyone who wants to see any of the energy features we have. It’s going to be an educational lab for smart construction. And one of the most energy-efficient office buildings in the world.”

—David Saggau, president and CEO of Great River Energy

*Opposite: Three-story atriums in the middle of the building flood common areas with light. Construction photos below: The project's leading innovation is the use of nearby Arbor Lake as a geothermal heating and cooling system.*



PERKINS+WILL



LUCIE MARUSIN



LUCIE MARUSIN

## GREAT RIVER ENERGY HEADQUARTERS

### Location:

Maple Grove, Minnesota

### Client:

Great River Energy

### Architect:

Perkins+Will  
www.perkinswill.com

### Principal-in-charge:

Dave Dimond, AIA

### Project lead designer:

Dave Dimond, AIA

### Sustainable design planning:

Doug Pierce, AIA

### Energy modeling:

The Weidt Group  
www.twgenenergy.com

### Mechanical and electrical engineer:

Dunham  
www.dunhameng.com

### Landscape architect:

Close Landscape Architects  
www.closeandarch.com

### Construction manager:

McGough Construction

### Size:

166,000 square feet

### Cost:

\$42 million

### Completion date:

March 2008

### Renderings:

Perkins+Will

In addition, the building's poured-in-place concrete structure replaced more than 50 percent of the Portland cement with fly ash (a post-industrial waste recycled from coal-fired power plants). Ninety-five percent of construction waste was diverted from landfills, while recycled and locally manufactured products and Forest Stewardship Council woods were used throughout. The project is saving more than two million gallons of water annually by using water-efficient faucets and fixtures, as well as rainwater to flush toilets and irrigate landscaping. That's a 90 percent reduction in city water use over a similar office building.

The list goes on. Spectrally selective glass, sunshades, and light shelves were incorporated into the south façade, while glazing in the east and west façades was reduced to control glare and solar heat gain. And the building uses new super-energy-efficient "green" elevators that reduce energy use by 60 percent over traditional hydraulic elevators.

But the building is more than just a compendium of energy-saving strategies and technologies, says project principal and lead designer Dave Dimond, AIA. "In a sustainably designed work environment, every part of the building has to perform multiple roles to achieve optimal system-wide efficiencies," he explains. "In other words, every component in the design contributes synergistically to functional goals, operational goals, economic goals, sustainability goals, and ultimately to a beautiful future for our planet."

So not only will the new GRE headquarters reduce carbon emissions by more than 1,800 tons annually (with 1,500 tons reduced by energy-design features and 300 tons via on-site renewable systems), according to Tom McDougall, Assoc. AIA, of The Weidt Group, which modeled the building's energy systems; the building, sited on a 12.5-acre former gravel pit, will also include an education center that demonstrates for visitors the building's many green technologies. The center will feature real-time measurements of energy use, renewable energy production, water use, and rainwater collection.

"If people don't spend time in our building, seeing how things work, we've missed the point," says GRE's Saggau. "The building will be open to anyone who wants to see any of the energy features we have. It's going to be an educational lab for smart construction. And one of the most energy-efficient office buildings in the world."

Indeed, the building's highly visual demonstration of the cost-effectiveness of sustainable design to a broad audience of consumers may turn out to be its greatest achievement. "The magic of this building, what I'm most excited about, is that the incremental cost of building LEED Platinum versus run-of-the-mill construction is five percent," Saggau enthuses. "Meaning, in the long term, we have a six-year payback on the cost of the building. As a nation, and certainly as a state, we've got to mandate construction along these lines because we're running out of resources." **AMN**

**MINNEAPOLIS' RED STAG SUPPER CLUB,  
THE FIRST LEED-REGISTERED RESTAURANT  
IN THE STATE, PROVES DINERS CAN EAT WELL  
AND DO RIGHT BY THE ENVIRONMENT**

# Going Stag Is Going Green



BY HEATHER BEAL

Restaurants are resource hogs, consuming more energy and producing more waste per square foot than any other commercial facility. This is precisely what makes them prime candidates for demonstrating how the art, science, and economics of sustainability can be masterfully woven together to create beautiful, sensual places where employees want to work and diners choose to linger. Such is the case with Red Stag Supper Club, one of the first LEED-CI-registered restaurants in the United States—and the first in Minnesota. (The project is aiming for LEED Gold certification, the second highest rating; the CI stands for commercial interiors.)

While local restaurateur Kim Bartmann had integrated sustainable practices into the operation of her two hip Uptown dining and entertainment venues, Bryant Lake Bowl and Barbette, she decided her third restaurant should go beyond “buying products locally, using fluorescent bulbs, and purchasing paper goods with recycled content,” she says. “I wanted to raise the bar in all places, from the menu and operations to design and construction.”

Bartmann settled on a vacant Northeast Minneapolis warehouse as the location for Red Stag because she felt its heavy timber frame and brick materials were perfect for the North Woods dining concept she envisioned and because the warehouse space would allow her to apply her “penchant for salvaging stuff.” Then she set about assembling a team of architects, engineers, energy modelers, and construction personnel who could see her eco-friendly vision through to completion.

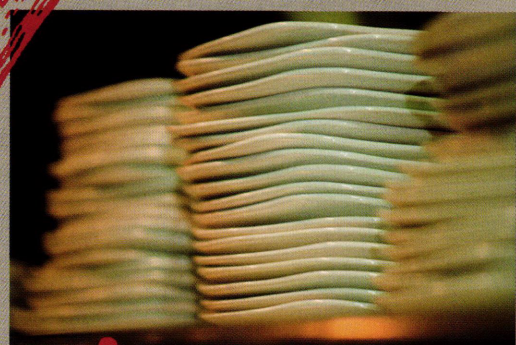
*The designers creatively combined salvaged, reclaimed, and new furnishings and materials to reduce waste while adding warmth, beauty, and authenticity to Red Stag's interiors.*





“Restaurant owners can only incrementally affect the costs of ‘real product’—goods, labor, taxes, and insurance. Reducing occupancy costs, on the other hand, could significantly increase my chances for success. I believe sustainability is the last frontier for securing a competitive edge.”

—Red Stag owner Kim Bartmann



*Red Stag's design dispels the myth that sustainability must be blatant to raise awareness. By providing a familiar, comfortable setting and useful information, the restaurant subtly inspires diners to consider the environmental impact of their daily activities.*



“This project required an integrated design/build process because many details had to be worked out on-site. Some people would bring laptops to our weekly team meetings. If we had a question about an item a subcontractor submitted for approval, we could quickly check for LEED compliance via the Web.”

—Architect David Loehr, Studio 2030

## ASSEMBLING THE TEAM

In early 2007, Bartmann met Bill Bieganeck, founder of Energy Misers ([www.energymisers.biz](http://www.energymisers.biz)), at a hospitality convention. “A lot of companies can sell you resource-saving equipment,” she says. “But Bill knows how to make all the pieces work together and relate to everything else going on in a restaurant.”

Bartmann also learned that the U.S. Green Building Council’s LEED certification program goes beyond rating sustainable design and construction practices to address how resources are used once a restaurant is open. “Up to 40 percent of my occupancy costs are from utilities and waste,” she explains. “Restaurant owners can only incrementally affect the costs of ‘real product’—goods, labor, taxes, and insurance. Reducing occupancy costs, on the other hand, could significantly increase my chances for success. I believe sustainability is the last frontier for securing a competitive edge.”

Armed with this information, Bartmann hired Walsh Bishop Associates to complete the drawings needed for a building permit and Studio 2030 to design the interiors and orchestrate the LEED certification process, with the help of Jeffrey Swainhart, Allied AIA. Through networking she found construction personnel who were interested in learning more about sustainability by working on the project. “Lori Reese of WonderWoman Construction was willing to tackle the unique challenges sustainability would pose and flexible enough to share the general contractor’s role with me,” says Bartmann. “If a subcontractor didn’t care about sustainability, I knew I’d be paying to drag someone along.”

“This project required an integrated design/build process because many details had to be worked out on-site,” explains Studio 2030 project architect David Loehr, AIA. “Some people would bring laptops to our weekly team meetings. If we had a question about an item a subcontractor submitted for approval, we could quickly check for LEED compliance via the Web.”

Balancing the high energy and water demands of a commercial kitchen with “creature comfort” and health and safety standards is a daunting challenge for most restaurants. Because Red Stag was adding LEED requirements to the mix, Bartmann hired local engineering firm Dunham to lay out the mechanical and electrical systems, develop performance specifications, and provide commissioning services. Bieganeck recommended equipment, modeled potential for resource/cost savings, and confirmed compliance with performance specifications. “All subcontractors had to verify that what they built or installed *performed* as specified,” Loehr says.

## REDUCING CONSUMPTION AND WASTE

From the beginning, the design/build team focused on the “reduce” part of “reduce-reuse-recycle.” Bieganeck researched resource-conservation options for kitchen systems and equipment because these consume more than half the energy and water used by restaurants. “Hood systems typically account for 75 percent of a commercial kitchen’s HVAC load because they run 100 percent of the time,” Bieganeck explains. “The Melink Intelli-Hoods will save Red Stag thousands of dollars in energy costs each year because they have variable-speed exhaust fans and only operate while cooking is occurring.”

Throughout the restaurant, photo or occupancy sensors and timers relate lighting and equipment use to specific needs and hours of operation. High-efficiency dishwashers and pre-rinse sprayers in the kitchen; dual-flush toilets, micro-flush valves, and no-touch faucets in the bathrooms; and tankless water heaters and low-flow sink aerators will likely reduce water use by 70 percent from what is required by comparable, less eco-friendly restaurants.

>> continued on page 62

## RED STAG SUPPER CLUB

### Location:

Minneapolis, Minnesota

### Client:

Kim Bartmann  
[www.redstagsupperclub.com](http://www.redstagsupperclub.com)

### Interior architect:

Studio 2030  
[www.studio2030.com](http://www.studio2030.com)

### Principal-in-charge:

Rachelle Schoessler Lynn, Allied AIA

### Project architect:

David Loehr, AIA

### Project lead designer:

Rachelle Schoessler Lynn, Allied AIA

### Architect of record:

Walsh Bishop Associates  
[www.walshbishop.com](http://www.walshbishop.com)

### Energy modeling:

Energy Misers, LLC

### Mechanical and electrical engineer:

Dunham

### General contractor:

WonderWoman Construction

### LEED assistant:

Jeffrey Swainhart, Allied AIA

### Size:

4,000 square feet

### Cost:

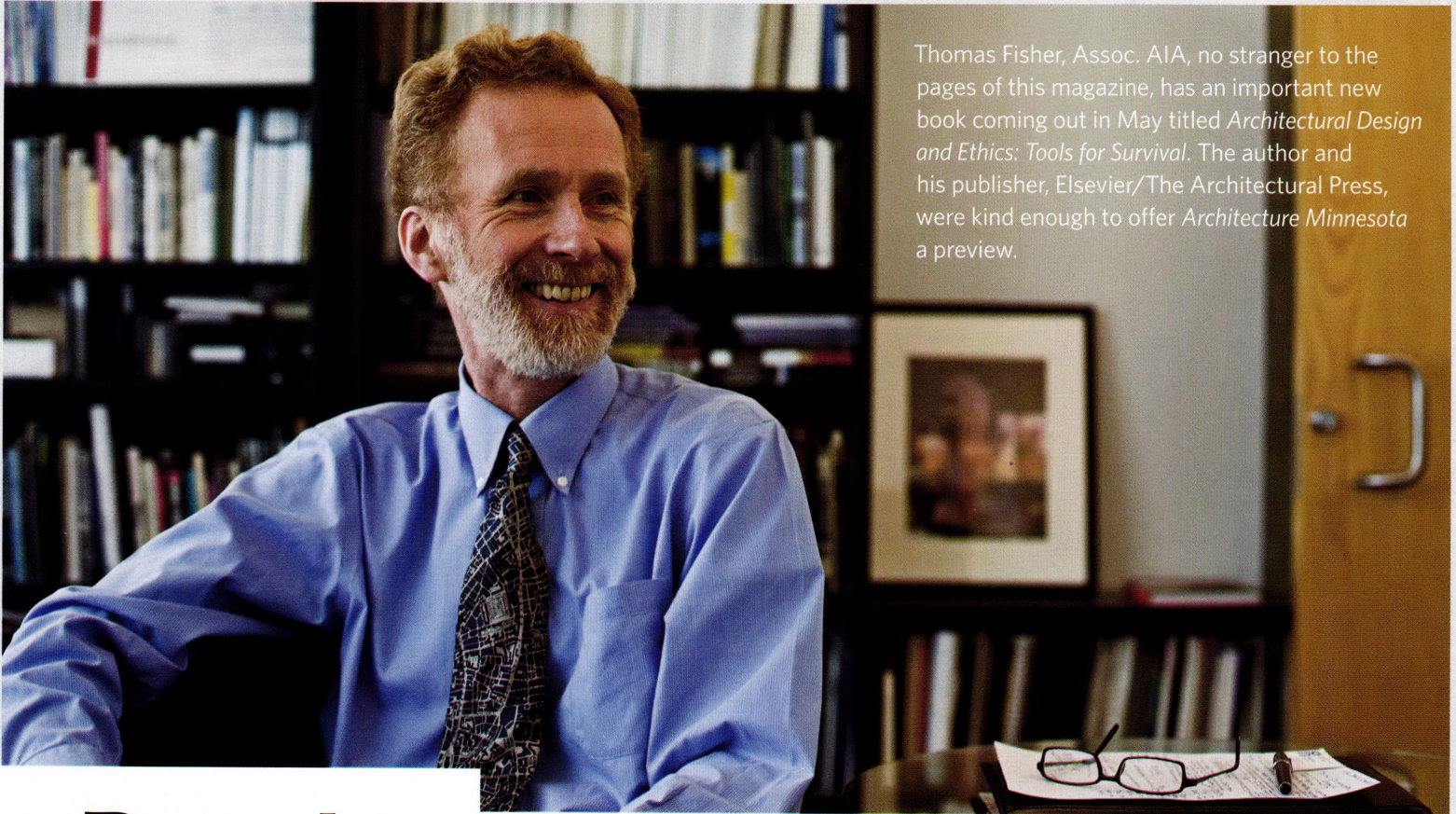
\$480,000

### Completion date:

November 2007

### Photographer:

Eric Melzer, Eric Melzer Photography



Thomas Fisher, Assoc. AIA, no stranger to the pages of this magazine, has an important new book coming out in May titled *Architectural Design and Ethics: Tools for Survival*. The author and his publisher, Elsevier/The Architectural Press, were kind enough to offer *Architecture Minnesota* a preview.

DON F. WONG

# Bound to Make a Difference

“Think of this book,” writes Thomas Fisher, in his soon-to-be-published *Architectural Design and Ethics*, “as a kind of survival guide for a global collapse, a collapse that I hope we will avoid, but one that we need to prepare for in case we can’t.

The book addresses the two main areas that I believe will be most critical if things start to fall apart: ethics and design. Ethics offers us tools in dealing, psychologically, with the hardships that will ensue, and design gives us the means to address our physical needs when many of the supports we now depend on for that may be gone. A post-collapse world will look and be very different from our own, with many fewer material comforts and physical resources at our disposal. But, if we prepare properly for it, it can also offer a higher quality of life, one in which the inner riches of an ethical life can compensate for the decline in material resources. Such a topic may sound grim to some, but I see it as just the opposite. The best way to address

a major threat is to be ready for it. Indeed, emergency preparedness may well become a primary part of what ethicists and designers do: helping people envision alternative futures that take into account all possible threats and that show how we can construct environments that enable us to live better lives.”

THE FOLLOWING EXCERPT IS TAKEN FROM CHAPTER FIVE, “DRAFTING A NEW SOCIAL CONTRACT.”

At the recommendation of well-meaning friends, I went to a place called Wrentham Village outside of Boston, a place that had a particularly architectural appeal, recalling the name of the eighteenth-century architect, Sir Christopher Wren. But Wrentham Village would have baffled Wren. The village had some features that he would have understood well: nicely scaled pedestrian streets, Tuscan-columned colonnades, publicly accessible squares, and the occasional signpost to help people get their bearings.

But those traditional forms had a peculiar function. Instead of the mix of uses we might expect in a village, there stood row after row of outlet stores for national franchises, most of them offering clothing and accessories or domestic goods. Although many people walking around that hot summer day had rather less covering than Wren would have been used to, the skimpiness of their clothing stood in sharp contrast to the sheer quantity of apparel in those stores, whose windows had large signs touting their deeply discounted prices. Indeed, with everything on sale, it wasn't price that set one store off from another, so much as design—from the design of the clothing in the windows to the design of the store interior to the design of the logo and “look” of each brand.

Despite the old-English quality of its name and public spaces, Wrentham Village seemed classically American: a fake community, built in an open field at the far edge of a city, offering people seemingly unlimited choice at low prices. Companies clearly liked the format, since almost every storefront had a tenant, although it must not be an easy place in which to do business with so many competitors all around, each trying to outdo the other's already low prices while also trying to reinforce loyalty to and the exclusiveness of their identity. The slightly desperate feel of the place was reinforced by the many double-glass doors propped open to the pedestrian walk, as store owners tried to entice passers-by inside by cooling the sweltering outdoor air. While that tactic must have worked, given the number of stores doing it, it also seemed like just another way for these chains, with their already discounted merchandise, to bleed more dollars; what they didn't lose in clearance sales, they might lose in air-conditioning a summer day. It didn't seem economically sustainable any more than it was environmentally sustainable.

Wrentham Village prompts the question of how long commercial America can keep going like this, with plentiful goods and low prices based on the assumption of inexpensive and plentiful fossil fuels. James Howard Kunstler, in *The Long Emergency*, calls this “sleepwalking into the future,” in which we seem oblivious to the probability that we have already passed or will soon pass the peak in the planet's oil reserves, at which time cost of fossil fuels will start to soar. When that happens, “all of our accustomed modes of activity,” observes Kunstler, will “change in the direction of smaller, fewer, and better”<sup>1</sup>. Behind Kunstler's critique of our “drive-in utopia” of suburban sprawl and lifestyle centers like Wrentham Village lies the question

of what can give meaning and direction to our lives once some of the essential ingredients of our old social contract, with its encouragement of conspicuous consumption, have disappeared? What might a new, more sustainable social contract entail, a new “religion of hope” as Kunstler puts it? If virtue ethics gives us the tools to develop a good character, contract ethics can help us develop a good society, one in which people, as a group, agree upon certain rules of mutual benefit in order to achieve a good life. In times of stability, a community or culture might not dwell much on its social contract, on the agreements that enable a society to function, but in times of great change or impending threats, such as we now face at a global scale, the re-evaluation of such contracts can become critical if we are to thrive under the new conditions. To consider what a new social contract for us might be, it can help to look at previous efforts, all of which respond to the pressures of the times in which these ideas were developed.

In the new social contract, freedom would be a matter of  
*how much we can live without*, as Thoreau said,  
*how simply we can live,*  
*so that others can simply live,*  
as Gandhi put it.

In a future in which many of us may be on the move  
or left without much, a social contract that encourages us  
to live lightly has a real advantage.

The social contract theory of seventeenth-century philosopher Thomas Hobbes reflects the frequent warfare and political turmoil he experienced during his life. He envisioned a state of nature in which he famously described human life as “solitary, poor, nasty, brutish, and short,” and human groups engaged in constant warfare “of every man, against every man”<sup>2</sup>. That led, said Hobbes, to our agreeing to a social contract in which we would gain security and prosperity in exchange for living under and by the laws and dictates of a government, the Leviathan. Whatever else we might think of Hobbes's social contract, it reflects a hostility to living in a state of nature, and, like the materialist philosophy Hobbes espoused, it embodies a view of society as a human construct whose success is measured in material terms, quite apart from the natural world.

For the eighteenth-century philosopher Jean-Jacques Rousseau, living in a time of relative peace in Europe, people were happy and at peace in the state of nature<sup>3</sup>. Inequalities formed, thought Rousseau, when people began to see nature in terms of their property and possession, and when they agreed to enter into a social contract in which government would ensure the least amount of authority necessary to enable people to live as close to the original state of nature as possible, protecting people's rights, while maximizing their personal freedom. Here, we see the romanticizing of nature, to which we yearn to return, even as we resign to live in societies that Rousseau saw as always having the potential to corrupt.

A third social contract theorist, the twentieth-century philosopher John Rawls, wrote in an era defined by racial segregation, ethnic prejudice, and economic disparity, and so his theory of justice engages in a thought experiment in which we make decisions about the fair

Rousseau to autonomous individuals living close to nature, and Rawls to a group of people delegated to make that decision based on a consensus process. All three, though, rest their social contracts on the idea that humans have the right to use the natural world—other species and the planet itself—for their benefit, and to redistribute it as they see fit. Which is why we have come to a point where we need a new social contract, one that takes into account, as the philosopher Peter Singer argues, the joy and suffering of all sentient beings, not just humans but all non-human animals as well, in our ethical decisions.

What might such a social contract be like, one that sees us as inseparable from and stewards of nature? Singer, in his essay "Environmental Ethics," argues that "the arguments grounded on the interest of present and future human beings, and on the interests of the sentient nonhumans who inhabit the wilderness, are quite sufficient to show that, at least in a society where no one needs to destroy wilderness in order to survive, the value of preserving the remaining significant areas of wilderness greatly exceeds the values gained by their destruction"<sup>5</sup>. A new social contract might turn Hobbes on his ear and see how we humans have created a condition in which life for most other species is now "solitary, poor, nasty, brutish, and short," and that the Leviathan government we now need is one that sees how human well-being is intimately tied to the well-being of all the other species on the planet on which we depend for everything, from the medicines we need to the oxygen we breathe.

At the same time, such a society would recognize, as Rousseau and Rawls did, that human inequities are equally devastating to everyone, the wealthy as much as the poor. Singer, in his essay "The Good Life," writes:

In a society in which the narrow pursuit of material self-interest is the norm, the shift to an ethical stance is more radical than many people realize. In comparison with the needs of people starving in Somalia, the desire to sample the wines of the leading French vineyards pales into insignificance. The preservation of old-growth forest should override our desire to use disposable paper towels. An ethical approach to life does not forbid having fun or enjoying food and wine, but it changes our sense of priorities ... there is a desperate need to do something now about the conditions in which people live and die, and to avoid both social and ecological disaster. There is not time to focus our thoughts on the possibility of a distant utopian future. We must reinstate the idea of living an ethical life as a realistic and viable alternative to the present dominance of materialist self-interest.

What if we envisioned a social contract based on the ... idea that

*the natural world involves not scarcity, but overwhelming abundance?*

There is almost *250 times more solar energy* striking the earth's surface than the amount of energy humans now consume in a year ...

A utopia of natural abundance would

*not give license to individuals or groups to waste or damage* the natural environment.

Indeed, it would seem that the reason people do so is because of a perception of its scarcity.

distribution of resources and services under a "veil of ignorance" about any knowledge of our previous existence or personal situation<sup>4</sup>. From this "original position," people would always want to ensure that any social contract would benefit the least advantaged person, since we might be that person. Rawls dispenses with the idea of a "state of nature," and he tends to view the natural world as a set of resources that we distribute or not, depending upon what seems most just.

Indeed, all three see the natural world in a similar way, differing mainly in how they would parcel it out. Hobbes would entrust that distribution to a powerful central authority,

That most contract ethics view nature as a resource there for us to distribute reflects a deep-seated insecurity about our place in the natural world, evident in virtue and religious ethics as well. Aristotle, for example, saw human reason placing us in a superior position to all other animals, who “live by appearances and memories, and have but little of connected experience”<sup>6</sup>. His emphasis on moderation would have us be judicial in our treatment of non-humans, and would not support the excessive use of natural resources, but Aristotle’s ethics does little to counter the fundamental difference he sees between humans and all other nature, an inequality that finds its echo in our current environmental dilemma, where moderation in our use of fossil fuels means little when even our judicious use of them will eventually prevent future generations from having access to them at all or where moderation in our killing of animals means little when enough humans do enough killing to lead to the species’ extinction. Moderation in the exercise of an evil is still evil.

Likewise, the Judeo-Christian tradition sees a fundamental separation between humans from the rest of nature, not based on reason, but on revelation. The book of Genesis recounts how “God created man in his own image ... and ... said to them, ‘Be fruitful and multiply, and fill the earth and subdue it; and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth.’”<sup>7</sup> Such dominance over nature has given us license to exploit and manipulate the environment and, paradoxically, to end up creating conditions that threaten our own existence as a species, countering the command to be fruitful and multiply.

A new social contract would recognize and reward people according to how well they would husband finite resources, improve the natural environment, serve those most in need, and give as much as possible to others. Equity would no longer be, as it was for Hobbes and Rousseau, primarily a matter of keeping greed in check, since that assumes that the primary motive of human action is to acquire as much property or power as possible. In the new social contract, freedom would be a matter of how much we can live without, as Thoreau said, and equity a matter of how simply we can live, so that

others can simply live, as Gandhi put it. In a future in which many of us may be on the move or left without much, a social contract that encourages us to live lightly has a real advantage.

This all sounds quite utopian, but we need to make a distinction between different types of utopias, some of which do as much damage as that which they seek to redress and others which can put in place processes that enable us to improve our situation. Mark Lilla, in *The Reckless Mind*, covers some of the negative aspects of utopia we need to take care to avoid, showing how intellectuals—whom he calls “philop-tyrants”—can wreak havoc when they attempt to impose an idea on the world<sup>8</sup>. One of the characteristic interests of such philo-tyrants is “the right ordering of cities and household,” something that designers, especially in the last two centuries, have sometimes fallen prey to, designing rightly ordered cities, often for political tyrants, whether democratically elected or not, that have created much misery in their wake. Lilla reminds us that no single idea or singular image of a good life can fit all. Instead, it has to be a view of life—one of inquiry, contemplation, understanding, modesty, and responsibility—that can take many forms depending on the people and the place.

Lilla also suggests a distinction we need to keep in mind between the thinker and the tyrant. “Philosophy,” he writes, “is a kind of controlled erotic life that hopes to attain what love unconsciously seeks: eternal truth, justice, beauty, wisdom. Few are capable of such a life, and most of those who aren’t will gratify their yearnings in predictable ways and lead middling lives. Others, though, become utter slaves to their drives, and nothing will control them.” Lilla notes that:

Socrates describes the tyrannical soul as one in which the madness of love ... drives all moderation out and sets itself up as ruler, turning the soul itself into “a tyranny established by love.” The philosopher also knows the madness of love, the love of wisdom, but he does not relinquish his soul to it; he remains in control, governing himself. The tyrannical man is the mirror image of the philosopher: he is not the ruler of his aspirations and desires, he is a man possessed by love madness, the slave of its aspirations and desires, rather their ruler<sup>9</sup>.

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## First Avenue North

<< continued from page 13

way you're talking." Carol was in such a hurry during these days that she hardly registered her husband's reservations.

CAROL AND FRANCISCO thought it important to lead by example, and so they conceived two brilliant initiatives for the city.

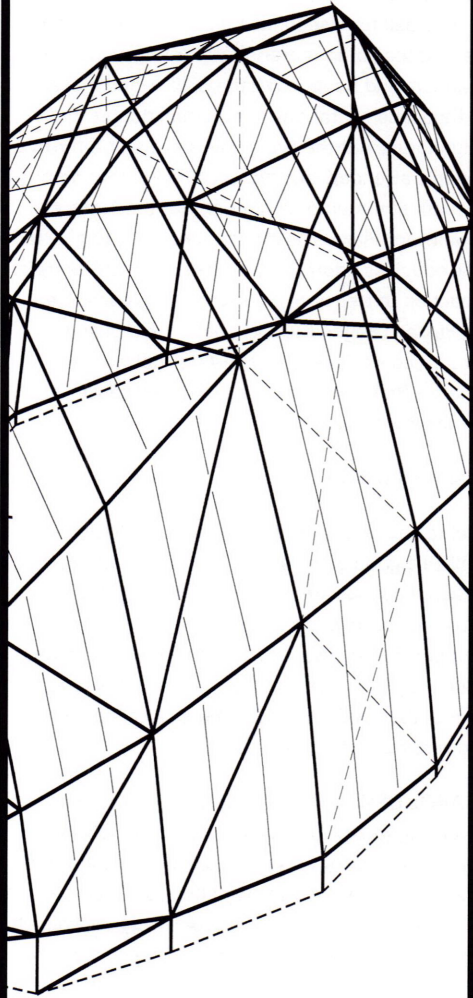
The first, coined Boulevards of Banners, was Francisco's idea, and it called for bedecking the city with celebratory fabrics. Before audiences and at dinner tables Dr. Martini painstakingly traced the history of urban banners all the way back to ancient Rome. He argued persuasively that, in the absence of color and life on downtown's abandoned avenues, the city could at least invoke a festive urban spirit with brightly decorated canvas. An ardent rhymester, he cheerfully concluded his stump speeches with a smart jingle: "Tho' empty streets abound, the City Beautiful needs color all around. Light poles aflutter, it's known, cheer up even the most somnolent gutter..."

While outwardly supportive of Francisco's banner movement, Carol was privately skeptical. Her own scheme dared to dream bigger, she thought. Downtown Mill City, she knew, needed a public gathering place—a park, plaza, or piazza. And she knew just the spot for it: a vacant parcel across the street from Gopher County Central Library. Archer Quasar, coaxed into action with the promise of a case of Algerian absinthe, agreed to prepare architectural drawings on a pro bono basis.

The two spent long nights developing Carol's vision. At the middle of the block, Carol thought a large green lawn, defined by two large stands of maples and honey locusts, would invite people to set out blankets and picnic gear. Their plan showed pavilions housing clean public restrooms at each corner of the block and a large platform for musical and theatrical performances on the side opposite the library. Local artists would be invited to submit sculptures for seven locations in the park, and, in the corner nearest First Avenue North, the city's primary entertainment corridor, a circular plaza would be built with stone pavers laid out as a map of North America. Mill City, at the very center of the continent, would be marked with a brass wreath of wheat and corn cobs, the city's emblem. Carol and Archer named the

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*framed art*



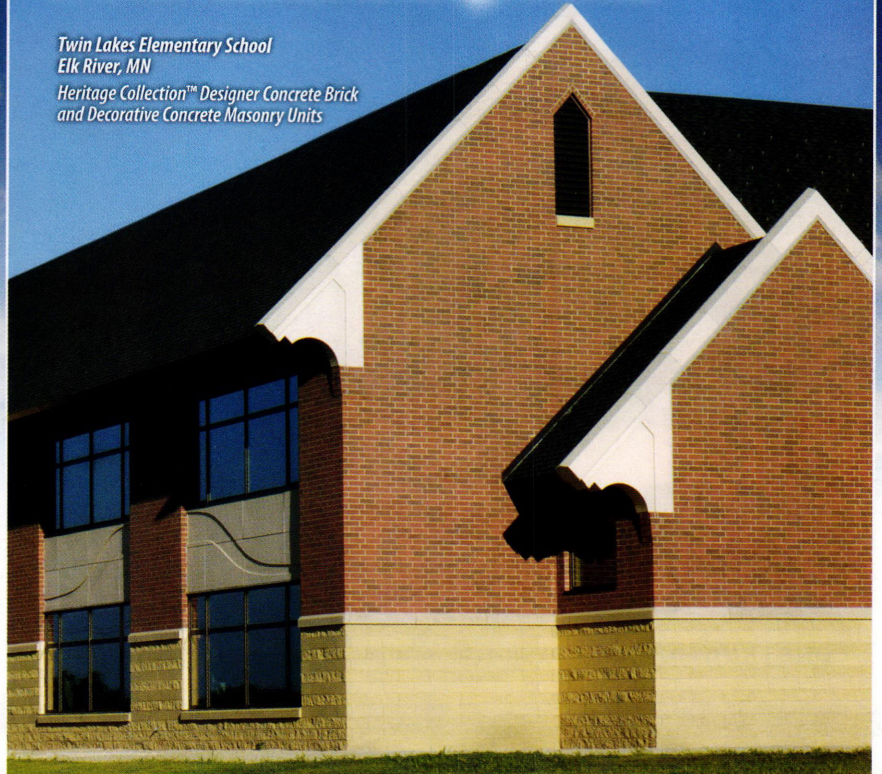
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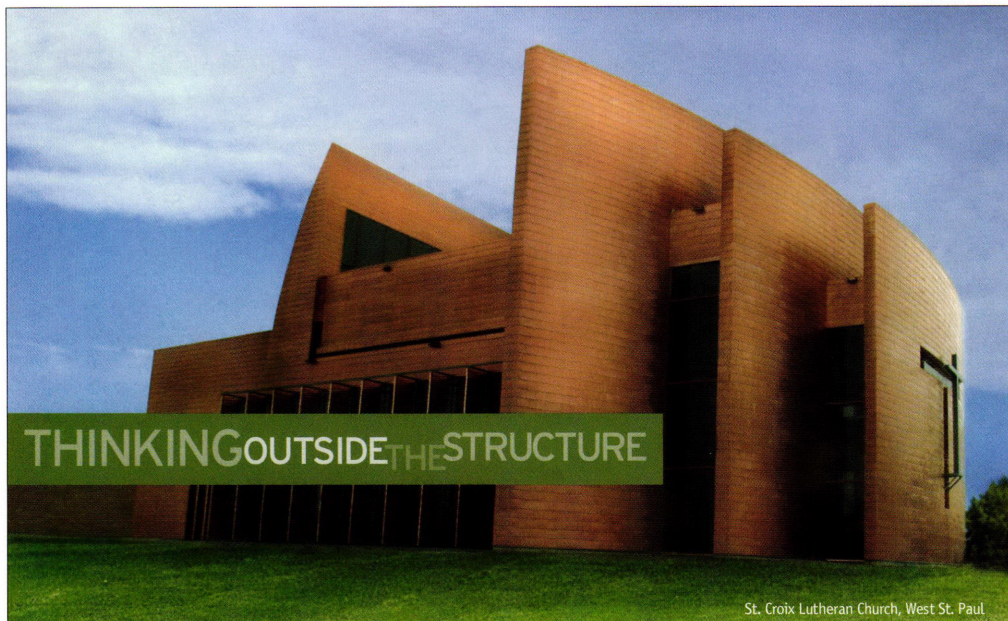
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## First Avenue North

<< continued from page 56

project Boulez Plaza, after the French explorer and fur trader who first made encampment on this side of the Mississippi River.

Together, Francisco and Carol touted their plans in a series of presentations to various neighborhood and civic groups. They received the blessing of the mayor and endorsements from the city council and the Downtown Business Congress. The *Daily Bread Tribune* lauded their efforts in an editorial.

High on their early success, the duo planned a civic ball to raise funds for both projects. Carol rented the library's grand hall for the event—titled “Banners and Boulez: What a Ball!”—and mailed a thousand invitations to potential donors and dignitaries. But the event was a disaster. Fifty-five people attended, and not even half of that number bought commemorative bricks for the Territorial Boulevard Plaza. The mayor, scheduled to give the introductory address, cancelled due to an allergic reaction to tree nuts he unknowingly consumed at Peking Dragon the night before. Carol and Francisco explained to reporters—all two of them—that a light rain was the likely cause of the low turnout.

Carol knew better.

Polite and agreeable, the people of Mill City talked a good game about city improvements when they knew the improvements to be only remote possibilities. They were happy to voice support for an idea, so long as its realization was not likely to happen on their watch or take money out of their wallets. When the idea called for commitment, they fell silent.

CAROL DROVE HOME that late-spring night knowing there would be no plaza or billowing banners. Pausing at a stop sign at a neighborhood park she knew well, she watched as a man walking his dog along a small pond took a seat on a bench. He seemed in no rush to return home. Good girl, he whispered to his companion. Carol could see a white star magnolia in full bloom in the moonlight. Through her open windows she inhaled the first wafts of wet earth, nightcrawlers, and lilac. It drained the tension from her neck and shoulders and relaxed her grip on the steering wheel.

The city will come, she thought, although always at too slow a pace. She lifted her foot off the brake and drove the rest of the way home to bed. **AMN**





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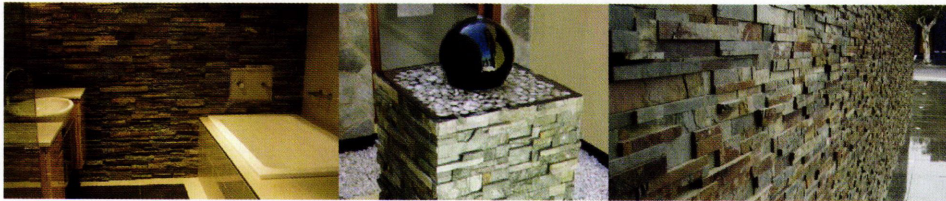
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## The Stuff of Legends

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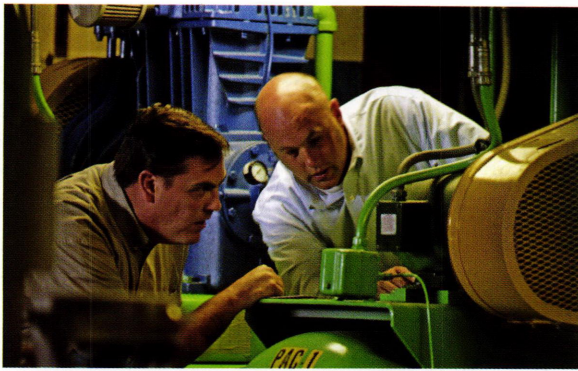
**The Struggle between Good and Evil** One day in a budget meeting the contractor suggested to the owner that a column under the “endless bridge” would save money. Nouvel bellowed, “I would rather cut off my own arm!” Undaunted, the contractor rose again to offer great savings if we omitted one of the three lighting masts. Nouvel responded that this would be “like plucking the feather off a lady’s fine hat.” Humiliated, the contractor sat down. The cantilevered bridge and the three lighting masts were saved.

**Between Dreams and Reality** One evening, as Jean and I were returning from one of many client dinners, we stumbled by a Harley Davidson with the “perfect” paint color for the building. It was an iridescent paint that changed color from different angles. After months of research into hot rod paint, we finally realized that hot rods are constantly repainted and fade miserably when they come out of the garage.

Inside the building, the ceiling of the McGuire Theater had to match the finish on a computer mouse at one of our desks. To produce the ghostly images on the interior walls, we researched exotic acid-free papers from Egyptian papyrus to French onionskin before finally settling on the perfect solution: the photocopy machine down the street at the company that prints our drawings. We custom-designed the restroom sinks, but the Guthrie drew a line in the sand regarding custom urinals. Happily, we found what we were looking for in a prison-supply catalog.

**Team Tribulations** No telling of the Guthrie odyssey would be complete without reference to the tribulations of the team that spent five years on the voyage. Who could forget the arrival of the French team at our office, cigarette smoke billowing from their newly purchased 1965 Ford Fairlane as they opened the doors. Or the Minneapolis engineer who, before he went to Paris, publicly proclaimed his intent to gain another foot of plenum space for ductwork. He returned, devastated and embarrassed, with one foot less than before he left. Or the handrail designed by the French minimalist that, when leaned upon, crumbled like a rotting tooth.

I can only speculate that as Ulysses returned from Troy there were some lighter moments that didn’t find their way into the epic legend. Yes, the making of the Guthrie was a serious artistic undertaking. But for me, a lighthearted appreciation of the journey was essential to surviving this architectural odyssey. **AMN**



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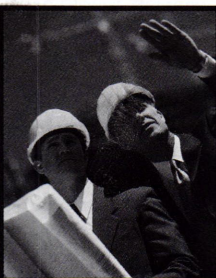


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## Going Stag Is Going Green

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Red Stag is the first restaurant in the nation to be fully illuminated by LEDs (light-emitting diodes), which use 10 to 20 percent of the electricity needed for incandescents, produce very little heat, and can be dimmed. They also last up to 10 times longer than fluorescent sources but don't contain mercury. "I didn't want this restaurant looking like a giant fluorescent lightbulb," Bartmann says, "so Bill made sure to find warm-colored LEDs."

Some energy conservation measures are more subtle. By using mostly locally grown and organic ingredients in his savory regional dishes, chef Bill Baskin helps reduce the amount of energy used to transport food and the quantity of fossil fuels invested in fertilizers and pesticides.

### REUSING AND RECYCLING

Extensive reuse of salvaged items not only reduced the amount of energy and raw materials needed to produce new products, it also added warmth, beauty, and authenticity to Red Stag's interiors. The designers were inspired by the challenge of weaving together salvaged, reclaimed, and new furnishings and materials.

"Kim found a bar with a dark wood finish that was ideal for a North Woods-style supper club," says Studio 2030's Rachele Schoessler Lynn, Allied AIA, the project's lead designer. "Later, when she purchased reclaimed wood flooring, we not only had to think about how it could work with the bar and other interior-design features but also about how to sustainably refurbish the flooring. The stains and finishes had to meet LEED's low-VOC requirements yet be durable enough for high-traffic use."

Solid-core doors from a nearby construction site, a marble bar top, booths, light fixtures, an upright grand piano, and a Depression-era beer can collection were saved and integrated into Red Stag's interior design. A local distributor had just enough Forest Stewardship Council-certified Douglas-fir veneer left over to panel the dining area.

"Red Stag easily achieved the maximum LEED points for using salvaged items," says Schoessler Lynn. "We began to wonder if there would be enough places left for us to use materials with recycled or rapidly renewable content. LEED isn't

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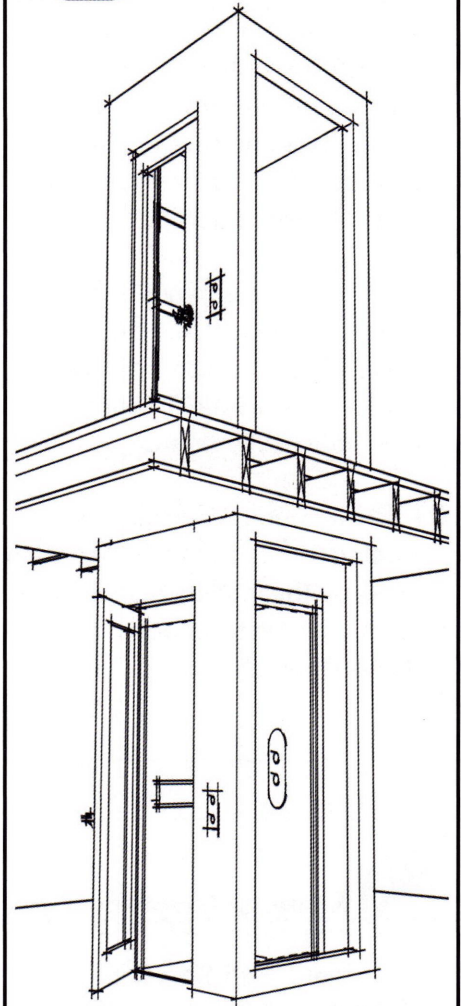
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## Bound to Make a Difference

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For the designer, like the philosopher, the challenge becomes one of controlling and governing the ideals we can so easily fall in love with, lest we become tyrants to ourselves as well as to others. It also helps to see utopian ideas, like that of contract ethics, in their context. Thomas More wrote the first modern book on the subject, *Utopia*, in part as a protest to the “enclosure laws” of England, when the once open commons had become fenced and off limits to those who used to wander across it<sup>10</sup>. How much does a desire to envision a new social contract with nature arise from a similar sense that we are running out of what we once saw as common, such as fresh water or fossil fuels? We have had our own “enclosure” of such things, with corporations increasingly controlling access to seed stocks, spring water, and fuel sources. But, unlike More’s island of Utopia, our returning such things to a commons would entail a global effort, turning the planet into a kind of Utopia in space. Garrett Hardin has argued that the “tragedy of the commons” arises from his belief that people will exploit anything that is common for their own personal benefit, but only if we retain the old ethics of our separation from and superiority over nature, which creates a sense of scarce resources over which we have to fight to control<sup>11</sup>.

But what if we envisioned a social contract based on the opposite idea, that the natural world involves not scarcity, but overwhelming abundance? There is almost 250 times more solar energy striking the earth’s surface than the amount of energy humans now consume in a year, over four times the amount of fresh water than even Americans, the most water-wasteful population on earth, use in a year<sup>12</sup>. A utopia of natural abundance would not give license to individuals or groups to waste or damage the natural environment. Indeed, it would seem that the reason people do so is because of a perception of its scarcity. Rousseau’s lament of humans putting the first stake in the ground to say that they owned a piece of the land comes from the knowledge that there was a finite amount of it. But that has extended to things for which there are ample supplies—food, water, and energy. When people perceive a material or energy

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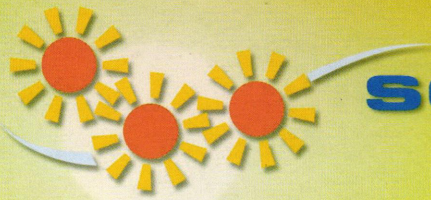


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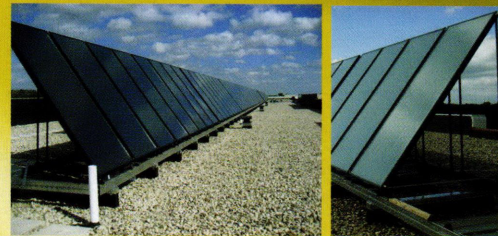
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**Commercial Installation**

## The Breuer Zone

<< continued from page 31

sides and by the choirs. Overhead, a perforated canopy suspended by thin rods and wires, in combination with the colored light filtering through the north-facing stained-glass wall, creates ambient lighting effects rivaling those of the most admired historical churches and cathedrals. "By the time the church was actually built," says Thimmesh, "the design had grown on us and we were quite enthusiastic about it."

In the years since Marcel Breuer developed his comprehensive plan and buildings for St. John's, a number of architects have contributed to the plan's realization and expansion, including Hugh Newell Jacobsen; Rafferty Rafferty Tollefson Lindeke Architects; Hammel, Green and Abrahamson; Ellerbe Becket; Bentz/Thompson/Rietow; Traynor, Hermanson & Hahn; and, most recently, VJAA, with its designs for the guesthouse (page 36) and the chapter house renovation and addition (page 32). "Things have been built, more or less, where Breuer plotted them," says Father Thimmesh of these campus additions. "In a much larger sense Breuer's plan was followed. He really met our future needs in a way that has been extraordinarily satisfactory." **AMN**

## Going Stag Is Going Green

<< continued from page 62

about chasing points, though. It's about making the best choices for the project, the environment, and the community."

### THE BOTTOM LINE

While making her restaurants more sustainable conveys Bartmann's personal values, she emphasizes that "sustainability isn't just good for the environment and our health; it's good for business."

"After the payback period of 12 to 18 months," she continues, "we'll be saving thousands of dollars *each month* in utility costs for Red Stag. This touches every aspect of my business: from the quality of food and staff compensation to the design of the work and dining environments and overall profitability."

By combining the warmth, comfort, and uniqueness of North Woods dining with sophisticated green technology, Red Stag will surely inspire the design of new restaurants for many years to come. **AMN**

## Bound to Make a Difference

<< continued from page 65

source to be scarce, its value goes up, as does the desire to hoard or use it while supplies remain, thus accelerating its depletion.

A new social contract would make a distinction between the finite aspects of nature—land, minerals, fossil fuels—that we need to control so that future generations can also benefit from them, the renewable aspects of nature—life forms, fresh water, solar and wind energy—that we need to steward so that we don't use more than the supply can renew itself, and the infinite aspects of nature—human knowledge, understanding, kindness, love—which we should use and grow as rapidly as possible. This would, in some sense, turn our existing contract on its head, for we sometimes seem to have a dearth of human compassion and understanding, as almost every social indicator shows; an impoverished effort to harness the wind and sun for energy; and a system that encourages the exploitation of finite resources—land, minerals, fuels, water, and other life forms—to the point of extinction or depletion. It's enough to make us wonder if the most endangered thing of all is human intelligence. **AMN**



## DIRECTORY OF CONSULTING ENGINEERING FIRMS

With this issue, *Architecture Minnesota* presents the 16th directory of Minnesota firms providing consultative engineering services. Principals of these firms are members of the American Council of Engineering Companies of Minnesota, AIA Minnesota or firms not aligned with either organization.

Engineers provide those critical design skills that enable our entire built environment to be structurally safe, comfortably warm and well lit and environmentally friendly. They also design our highways and bridges, water treatment facilities and power generation plants.

In Minnesota, you will find there is a wealth of engineering talent available for your next project. Study this directory and call either the American Council of Engineering Companies of Minnesota (ACEC) at (952) 593-5533 or the American Institute of Architects Minnesota (AIA Minnesota) at (612) 338-6763 for additional information and assistance.

### LEGEND

<b>PE</b>	Professional Engineer
<b>PG</b>	Professional Geologist
<b>AIA</b>	American Institute of Architects (Registered)
<b>AICP</b>	American Institute of Certified Planners
<b>CCM</b>	Certified Construction Manager
<b>CID</b>	Certified Interior Designer
<b>CIH</b>	Certified Industrial Hygienist
<b>ASLA</b>	American Society of Landscape Architects
<b>PLS</b>	Professional Land Surveyor (registered)
<b>RA</b>	Registered Architect
<b>RCDD</b>	Registered Communications Distribution Designer
<b>RLS</b>	Registered Land Surveyor
<b>LS</b>	Land Surveyor (registered)
<b>SE</b>	Structural Engineer (Certified)

## ALBERTSON ENGINEERING INC.

2198 Goodrich Avenue  
St. Paul, MN 55105  
Tel: (651) 699-5083  
Fax: (651) 699-5084  
Email: shane@albertson-engineering.com  
www.albertson-engineering.com  
Established 1998

### Firm Principal

J. Shane Albertson, PE, LEED

Mechanical consulting engineering for HVAC, plumbing, fire protection, process piping, refrigeration piping, temperature controls, energy management and HVAC system commissioning for commercial, industrial, medical, educational and municipal projects.

*Waconia Public Works Facility, Waconia, MN; Edina Fire Station No. 1, Edina, MN; Twin City Magic and Costume Renovation, St. Paul, MN; St. Cloud State University Public Safety Center and Ramp, St. Cloud, MN; Metro Transit Park and Ride Ramps, Minnetonka and Bloomington, MN; Camp Unistar Commercial Kitchen Upgrade, Cass Lake, MN*

## AMERICAN ENGINEERING TESTING, INC.

550 Cleveland Avenue North  
St. Paul, MN 55114-1804  
Tel: (651) 659-9001  
Fax: (651) 659-1379  
Email: info@amengtest.com  
www.amengtest.com  
Year Established 1971  
Other MN Offices: Chanhassen, Crosby, Duluth, International Falls, Mankato, Marshall, Rochester, Rogers, Saint Paul  
Total in MN Offices: 264  
Other Offices: Bonita Springs and Palatka, FL; Pierre, Rapid City and Beresford, SD; Eau Claire, Menomonie and Wausau, WI  
Total in Other Offices: 47  
Contact: Bob Struve, PE (651) 659-1342

### Firm Principals

Terry E. Swor, PG  
Richard Stehly, PE  
Robert Kaiser  
Daniel Larson, PE  
Mike Schmidt, PE  
Thomas Venema, PE  
Jeff Voven, PE

*continued next column*

American Engineering Testing, Inc. (AET) provides environmental, geotechnical, materials and forensic engineering and laboratory services. We provide services to both public and private sector clients. As a multi-disciplinary firm, we have a diverse group of problem solvers to provide comprehensive solutions to our clients. We believe this, along with collaboration with our business partners, saves our clients time and money.

*MN Twins Ballpark, Minneapolis, MN; Thompson West Expansion, Eagan, MN; ALDI Distribution Center, Faribault, MN; Lumen on Lagoon, Minneapolis, MN; The Carlisle High Rise, Minneapolis, MN; Ivy Tower, Minneapolis, MN*

## ARMSTRONG, TORSETH, SKOLD & RYDEEN, INC.

8501 Golden Valley Road, Suite 300  
Minneapolis, MN 55427  
Tel: (763) 545-3731  
Fax: (763) 525-3289  
Email: information@atsr.com  
www.atsr.com  
Established 1944  
Total in MN Office: 82  
Contact: Paul W. Erickson, AIA  
(763) 545-3731

### Firm Principals

Paul W. Erickson, AIA  
James T. Lange, PE  
Gaylen D. Melby, PE  
Terry L. Stofferahn, PE

AT&S&R is a multi-disciplined architectural/engineering firm providing mechanical and electrical engineering for educational facilities, churches and public buildings. Other services include civil engineering for site design and storm water management as well as technical design for video, voice, data and security systems. Specialized designs for energy conservation measures including passive solar, heat recovery systems, thermal storage (ice), variable air volume, displacement ventilation and energy management systems.

*Anoka-Hennepin School District, Roosevelt Middle School Ventilation Upgrade, MN; Osseo Area Schools, Waver Lake Elementary School Energy Management and Control System Upgrade, MN; Rochester School District, Willow Creek Middle School Pool Filter Replacement, MN; Minnesota State Academy for the Deaf, Noyes Hall Auditorium HVAC and Electrical Upgrades; MN; Minneapolis, St. Paul Metropolitan Transit Commission Fire Alarm System Upgrades for all Facilities, MN*

## BKBM ENGINEERS, INC.

5930 Brooklyn Boulevard  
Minneapolis, MN 55429  
Tel: (763) 843-0420  
Fax: (763) 843-0421  
Email: rlamere@bkbm.com  
www.bkbm.com  
Established 1967  
Total in MN Office: 45  
Contact: Ronald J. LaMere, PE  
(763) 843-0438

### Firm Principals

Thomas J. Downs, PE  
Ronald J. LaMere, PE  
Andrew M. Rauch, PE  
John B. Thiesse, PE  
Thomas J. Cesare, PE  
Roger L. Oberg

BKBM Engineers is a nationally recognized firm. Our structural and civil expertise is present in project types such as residential, office, parking, education/academic, municipal/government, site engineering/conceptual planning with public and private development and more. Our restoration staff has expertise in evaluation and rehabilitation of many types of structural systems and facades. We have restored several buildings on the national/regional historic registers.

*St. John's Guesthouse, St. John's University, Collegeville, MN; Macalester College, Athletic Facility, St. Paul, MN; Ramsey County Law Enforcement Center, St. Paul, MN; Ivy Towers Hotel/Condominiums, Minneapolis, MN; St. Anthony Falls Heritage Center (Mill City Museum), Minneapolis, MN; Terra Springs Condominiums (civil), Stillwater, MN*

**BONESTROO**

2335 West Highway 36  
St. Paul, MN 55113  
Tel: (651) 636-4600  
Fax: (651) 636-1311  
Email: info@bonestroo.com  
www.bonestroo.com  
Established 1956  
Other MN Offices: St. Cloud, Rochester  
Total in MN Offices: 390  
Other Offices: Milwaukee, Chicago  
Total in Other Offices: 50  
Contact: Amy Stresheim, Mktg. Mgr.  
(651) 604-4862

**Firm Principals**

Tom Madigan, PE  
Tom Syfko, PE  
John Shardlow, AICP  
John Uban, ASLA  
Dan Edgerton, PE  
Stuart Krahn, RLA, LEED AP

Bonestroo provides innovative, practical planning and engineering solutions for the commercial and industrial market. We will assemble a team from our multidiscipline staff that meets your needs and budget. Our personnel include civil, structural, electrical, and mechanical engineers, traffic and transportation engineers, water and wastewater treatment engineers, water and natural resources scientists and engineers, landscape architects, planners, GIS specialists, and construction services specialist.

*Bonestroo Building Stormwater Management, Roseville, MN; Hudson Road East and Radio Drive Reconstruction, Woodbury, MN; Heart of the City Master Plan, Design Guidelines and Ordinances, Burnsville, MN; TH 61/Jamaica Avenue/East Point Douglas Road Interchange Roundabouts, Cottage Grove, MN; I-35E Corridor Alternative UrbanArea-wide Review (AUAR), Lino Lakes, MN; Huber Park, Shakopee, MN*

**BRAUN INTERTEC CORPORATION**

11001 Hampshire Avenue South  
Minneapolis, MN 55438  
Tel: (952) 995-2000  
Fax: (952) 995-2020  
Email: info@braunintertec.com  
www.braunintertec.com  
Established 1957  
Other MN Offices: St. Paul, St. Cloud, Lakeville, Rochester, Hibbing, Albertville  
Total in MN Offices: 378  
Other Offices: Fargo, Bismarck, La Crosse  
Total in Other Offices: 43  
Contact: Liz Wortman (952) 995-2070

**Firm Principals**

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Robert J. Janssen, PE  
Charles R. Brenner, PE  
Jon A. Carlson, PG  
Michael M. Heuer, PE  
Steven J. Flaten, AIA

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*I-35 Bridge, Minneapolis, MN; Minnesota Twins Ballpark, Minneapolis, MN; West Side Flats, St. Paul, MN; Central Library, Minneapolis, MN; Department of Human Services, St. Paul, MN; MacPhail Center for the Arts, Minneapolis, MN; Guthrie Theater Expansion, Minneapolis, MN*

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8201 Norman Center Drive, Suite 150  
Bloomington, MN 55437  
Tel: (952) 288-4740  
Email: gsieve@burnsmcd.com  
www.burnsmcd.com  
Established 1898  
Other MN Office: Worthington  
Total in MN Offices: 13  
Other Offices: Kansas City, Chicago, Houston, St. Louis, Denver, Atlanta, San Diego, Miami, Cincinnati, Philadelphia, Phoenix, San Francisco, Washington D.C., New York  
Total in Other Offices: 2,260  
Contact: Gene Sieve (952) 288-4740

**Firm Principal**

Gene Sieve, PE, LEED AP

*continued next column*

Burns & McDonnell provides engineering, architecture, construction, environmental and consulting services. Founded in 1898, Burns & McDonnell is 100 percent employee-owned. Nearly 2,500 engineers, architects, scientists, planners, estimators, economists, and technicians work in 20 offices throughout the U.S. and abroad. Markets include: aviation, civil works, transportation, environmental, defense, commercial, institutional, healthcare, industrial facilities, power, T&D, chemical and food.

*San Diego BSL-3 Lab, San Diego County, CA; Methodist Boerne Medical Center, Boerne, TX; Tsunami Warning Center (LEED Certified), Palmer AK; SW Minnesota Wind Transmission Projects, Nobles County, MN; NWA Maintenance Hangar, Minneapolis, MN; Warren E. Burger Federal Building (LEED Commissioning), St. Paul, MN*

**CAIN OUSE ASSOCIATES, INC.**

1310 East Highway 96  
White Bear Lake, MN 55110  
Tel: (651) 426-9549  
Fax: (651) 426-5048  
Email: jcain@cainouise.com  
www.cainouse.com  
Established 1983  
Total in MN Office: 12  
Contact: Jay J. Cain, PE (651) 426-9549

**Firm Principals**

Jay J. Cain, PE  
Wallace M. Ouse, PE  
Scott D. Thomas, PE

Mechanical and electrical engineering for all types of facilities. Project types include churches, schools, public works, healthcare, retail and housing. Specialties include lighting design, ground source heat pumps and public works special systems. Clients include architects, engineers and institutional owners such as the University of Minnesota and entertainment complexes such as Mille Lacs Casino and government entities.

*Sholom Home East, St. Paul, MN; Jackpot Junction Expansion, Morton, MN; St. Anthony Mills Apartments, Minneapolis, MN; Calvin Christian School Expansion, Edina, MN; Lake Ann Athletic Field Lighting, Chanhassen, MN; Peter Christianson Health Care Center, Lac du Flambeau, WI*

**CLARK ENGINEERING CORP.**

621 Lilac Drive North  
Minneapolis, MN 55422  
Tel: (763) 545-9196  
Fax: (763) 541-0056  
Email: ccasperson@clark-eng.com  
www.clark-eng.com  
Established: 1938  
Total in MN Office: 38  
Other Offices: Aberdeen, Sioux Falls  
Total in Other Offices: 24  
Contact: Cory Casperson (763) 545-9196

**Firm Principals**

Cory Casperson, PE  
Tim LaBissoniere, PE  
Hadi Sajadi, PE  
Abi Assadi, PE  
Don Weigel, PE

Clark Engineering Corporation provides structural engineering, civil engineering and land surveying services for educational, commercial, industrial, and public sector clients. Full-service structural services for new projects, as well as restoration and alterations to existing facilities. Clark also offers specialized services in blast resistant structures, vibration, and material handling systems. Clark offers civil engineering for site development and storm water management.

*Black Bear Casino Hotel and Parking Ramp, Cloquet, MN; 8200 Tower and Parking Ramp, Bloomington, MN; Woodbury City hall Expansion, Woodbury, MN; Cornerstone MOB, Woodbury, MN; Anoka County Public Safety Building, Anoka, MN; New Richmond Elementary, New Richmond, WI*

### DARG BOLGREAN MENK, INC.

7575 Golden Valley Road, Suite 210  
Golden Valley, MN 55427  
Tel: (763) 544-8456  
Fax: (763) 544-8914  
Email: info@dbm-inc.com  
www.dbm-inc.com  
Established 1966  
Total in MN Office: 7  
Contact: Harry D. Menk (763) 544-8456

#### Firm Principals

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Complete structural engineering services for commercial/retail, office/warehouse, academic, industrial, governmental, medical/health, housing, religious and parking facilities. With expertise in steel, concrete, masonry and wood, DBM has engineered new construction, additions and renovations/restorations on over 5,000 projects in 21 states.

*Waconia Public Works, Waconia, MN; Chemical Dependency Hospital, Fergus Falls, MN; Marina Restaurant, Breezy Point, MN; Lakeshore Oaks Elderly Housing, Duluth, MN; Shakopee Aquatic Center, Shakopee, MN; Columbia Heights Retail Stores, Columbia Heights, MN*

### DATA CORE ENGINEERING, INC.

1700 West Highway 36  
700 Rosedale Towers  
Roseville, MN 55113  
Tel: (651) 604-3200  
Fax: (651) 639-9618  
Email: info@dcedesign.com  
www.datacoreeng.com  
Established 1991  
Total in MN Office: 7  
Contact: John St. Pierre, RCDD/NTS  
(651) 604-3218

#### Firm Principals

James W. Giefer, PE  
D. Lane Hersey, PE

Data Core is a technology consulting firm. We provide technology planning and design services to architects and engineers for the integration of computer, audio/visual, telephone and other communication and security camera systems for both new construction and renovation projects.

*continued next column*

*World Jewelry Center, Las Vegas, NV; University of Minnesota Duluth Labovitz School of Business and Economics, Duluth, MN; Santa Barbara College, Santa Barbara, CA; Allan Hancock College, new library lobby revisions, Santa Maria, CA; U.S. Army Reserve Training Centers and Maintenance Facilities, Nationwide; Douglas County Metro Center Technology Design, Superior, WI*

### DLR GROUP

9521 West 78th Street  
Minneapolis, MN 55344  
Tel: (952) 941-8950  
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Email: dhorkey@dlrgroup.com  
www.dlrgroup.com  
Established 1966  
Total in MN Office: 73  
Total in Other Offices: 538  
Other Offices: Chicago, Colorado Springs, Denver, Des Moines, Omaha, Orlando, Overland Park, Philadelphia, Phoenix, Portland, Sacramento, Seattle  
Contact: Don Horkey, PE (952) 941-8950

#### Firm Principals

Griff Davenport, AIA  
Matt Johnson, AIA, LEED AP  
Troy Miller, REFP  
Jeffrey Fenimore, AIA  
Don Horkey, PE, LEED AP  
Kelly Artz, PE, LEED AP

As a national, full-service architecture, engineering, planning and interior design firm, DLR Group's engineering services – mechanical, electrical, structural, civil, commissioning and technology/communications – are integrated into each project team. DLR Group engineers are client-focused and support the overall design goals by addressing sustainability, cost-effectiveness, indoor air quality, end-user needs, life-cycle costs, and long-term maintenance.

*Century College Library and Science Center, White Bear Lake, MN; Farmington High School, Farmington, MN; Scott County Jail and Law Enforcement Center, Shakopee, MN; Prior Lake School District Commissioning, Prior Lake, MN; Richfield School District Mechanical and Electrical Upgrades, Richfield, MN; Moundsview Public Schools Mechanical and Electrical Upgrades, Moundsview, MN*

### DOLEJS ASSOCIATES INC.

1624 North Riverfront Drive  
Mankato, MN 56001  
Tel: (507) 625-7869  
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Email: mdolejs@dolejsinc.com  
Established 1977  
Other MN Office: Lakeville  
Contact: Mike Dolejs, PE (507) 625-7869

#### Firm Principals

Joseph Dolejs, PE  
Christopher Dolejs, PE  
Michael Dolejs, PE, LEED AP

Dolejs Associates provides mechanical and electrical design services for the building industry. Building types include educational, recreational, churches, engineered housing, hotels, restaurants and public works. An experienced and stable staff provides expertise in HVAC, plumbing, fire protection, temperature control, lighting, power, communication and life safety systems.

*Hosanna Lutheran Church, Lakeville, MN; Public Works Facility, Faribault, MN; Marina Lodge Condominiums, Fairmont, MN; Sleepy Eye Medical Clinic, Sleepy Eye, MN; Southeast Technical College Addition and Remodel, Red Wing, MN; District 917 CDA School, Rosemount, MN*

### DUNHAM ASSOCIATES, INC.

50 South Sixth Street, Suite 1100  
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Tel: (612) 465-7550  
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Email: info@dunhameng.com  
www.dunhameng.com  
Established 1960  
Total in MN Office: 90

#### Firm Principals

Kathleen Kolbeck, PE, LEED AP  
Dale Holland, PE, LEED AP  
Jay Rohkohl, PE, LEED AP  
Steve Gentilini, PE, LEED AP  
Ron Feldhaus, PE, LEED AP

Dunham is committed to delivering the best mechanical and electrical engineering service for each of our clients. Our dedicated teams serve aviation, commercial, education, healthcare, hospitality and retail clients. Dunham also offers specialized expertise in mission critical facilities, commissioning, telecommunications, sustainable design, LEED, Indoor Air Quality and CFD modeling.

*continued next column*

*Microsoft Campus, Fargo, ND; Oceanaire Seafood Room, Multiple Locations; Maple Grove Hospital, Maple Grove, MN; Hinckley Hotel and Casino, Hinckley, MN; Minneapolis Community and Technical College Health Sciences Renovation, Minneapolis, MN; Burnsville Performing Arts Center, Burnsville, MN*

### ELLERBE BECKET, INC.

800 LaSalle Avenue  
Minneapolis, MN 55402  
Tel: (612) 376-2000  
Fax: (612) 376-2271  
Email: info@ellerbebeck.com  
www.ellerbebeck.com  
Established 1909  
Total in MN Office: 243  
Other Offices: Dallas, Kansas City, San Francisco, Washington D.C., Dubai, United Arab Emirates; Doha, Qatar  
Total in Other Offices: 452  
Contact: Steve Wernersbach, PE  
(612) 376-2311

#### Firm Principals

Jon Buggy, AIA  
Steve Wernersbach, PE  
Randy Jacos, PE, LEED AP  
Dan Dickenson, PE, LEED AP  
Kimberly Pierson, PE  
Jon Iverson, PE

Ellerbe Becket's engineering team has a proven history of success in the execution of technically complex projects, including new construction, renovation and building systems retrofits. The team offers experience in a wide range of facility types, including hospitals and clinics, mission critical facilities, laboratories, workplace environments, learning environments and heating/cooling plants.

*Department of Veterans Affairs Sioux Falls Surgery Addition and Renovation, Sioux Falls, SD; NRG Energy Inc., Multiple Projects, Minneapolis, MN; Regions Hospital Expansion, St. Paul, MN; Dow Chemical Company Building 2030 Renovation and Expansion, Midland, MI; St. Joseph's Hospital Air Handling Unit Upgrade, Marshfield, WI; Sanford USD Medical Center Central Plant Expansion, Sioux Falls, SD*

**ENGINEERING DESIGN  
INITIATIVE**

420 North Fifth Street, Suite 565  
Minneapolis, MN 55401  
Tel: (612) 343-5965  
Fax: (612) 343-5982  
Email: jhruby@edilimited.com  
www.edilimited.com  
Established 2002  
Total in MN Office: 19  
Contact: Jay Hruby (612) 343-5965

**Firm Principals**

Jay Hruby, PE  
Larry Svitak, PE

EDI provides innovative M/E engineering solutions for a variety of building types. Our services include M/E engineering, building commissioning, energy modeling and daylight modeling services. EDI is committed to delivering designs that are energy efficient, maintainable and sustainable. We are passionate in our creative design, attention to detail and commitment to teamwork – from defining initial performance goals through validation by commissioning.

*St. John's Abbey Guesthouse and Chapter House, Collegeville, MN; Wright County Law Enforcement Center, Buffalo, MN; St. Cloud Public Library, St. Cloud, MN; SPPS Central High School Technology Upgrade, St. Paul, MN; City of Minneapolis Water Works Maintenance Facility, Fridley, MN; Blue Earth County Law Enforcement Center, Mankato, MN*

**ENVIRONMENTAL RESOURCES  
MANAGEMENT**

190 East 5th Street, Suite 255  
St. Paul, MN 55101  
Tel: (651) 225-4554  
Fax: (651) 225-4655  
Email: Brian.Whiting@erm.com  
www.erm.com  
Established 1971  
Total in MN Office: 17  
Other Offices: Over 135 offices in more than 40 countries global  
Total in Other Offices: 3,000+  
Contact: Brian Whiting (651) 225-4554

**Firm Principals**

Dan Reinke, PE  
Chris Weggemann  
Brian Whiting

*continued next column*

LEED Accreditation auditing and certification (new and existing buildings); sustainability planning and auditing; Environmental Impact Assessments and Statements (EIA/EIS); site investigation and remediation/brownfields; brownfields grant applications; water and waste water treatment services; M&A/Due Diligence (Phase I and II); demolition and decommissioning services.

*North Met Mine Site EIS, Northern Minnesota*

**ERICKSEN ELLISON  
AND ASSOCIATES INC.**

2635 University Avenue West, Suite 200  
St. Paul, MN 551143  
Tel: (651) 632-2300  
Fax: (651) 632-2397  
www.eeaengineers.com  
Established 1954  
Total in MN Office: 23  
Contact: Terri Fleischhacker (651) 632-2300

**Firm Principals**

William F. Thiesse, P.E.  
James H. Art, P.E.  
Todd A. Peterson, P.E.  
Terri A. Fleischhacker

A mechanical/electrical engineering firm designing building systems for higher education, K-12 libraries, churches, judicial/corrections, municipal, recreational, residential, retail, medical, corporate and industrial clients. Systems include HVAC, plumbing, ground source heat pumps, fire protection, specialty lighting, critical power, voice/data communications, sound enforcement, security/surveillance and facility infrastructure.

*Minneapolis Central Library, Minneapolis, MN; Macalester College Athletic and Recreation Facility, St. Paul, MN; Grinnell College Campus Center, Grinnell, IA; MCF Faribault M & E Infrastructure Renovation, Faribault, MN; Ramsey County Correctional Facility Renovation and Expansion, Maplewood, MN; Eli Lilly Corporate Data Center, Indianapolis, IN*

**ERICKSEN, ROED  
AND ASSOCIATES, INC.**

2550 University Avenue West, Suite 2015  
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Email: info@ericksenroed.com  
www.ericksenroed.com  
Established: February, 1985  
Total in MN Office: 55  
Other Office: Eau Claire, WI  
Total in Other Offices: 7  
Contact: Bud Ericksen or Colleen Berg  
(651) 251-7570  
Other Office: Eau Claire, WI

**Firm Principals**

Alfred (Bud) Ericksen, PE  
James D. Roed, PE  
William T. Buller, PE  
Michael A. DeSutter, PE  
Roert A. Curtis, PE  
Robert J. Quinn, PE

Full-service structural engineering for retail, medical, commercial, educational, computer centers, high-rise offices, housing, parking facilities, sports and recreational facilities, as well as conduct investigations of existing structures for remodeling and renovation. We are registered as Professional Engineers in Minnesota and throughout the United States, as well as the owner of the ER-POST Precast Building (ER Patented) System.

*Guthrie Theater and Parking Ramp, Minneapolis, MN; North Memorial Maple Grove Medical Campus and Ramp, Maple Grove, MN; Wright County Justice Facility, Buffalo, MN; Gateway Center – Augsburg College Dormitory, Parking, Retail and Administrative, Minneapolis, MN; University of Minnesota Carlson School of Business Hanson Hall, Minneapolis, MN; Target Stores, Nationwide*

**FOSTER, JACOBS  
& JOHNSON, INC.**

345 Canal Park Drive, Ste. 200  
Duluth, MN 55802  
Tel: (218) 722-3060  
Fax: (218) 722-1931  
Email: mail@fjj.com  
Established 1922  
Total in MN Office: 14  
Contact: James Johnson (218) 722-3060

**Firm Principals**

James R. Johnson, PE  
Charles F. Jacobs, PE

Full-service mechanical and electrical consulting services, including design and preparation of contract documents for fire protection, plumbing, HVAC, controls, lighting, power distribution, communications and life safety systems and Addition and Remodel, Duluth, MN; Virginia Regional Medical Center/SMDC Medical Office Building, Virginia, MN

**FUTRELL FIRE CONSULT  
& DESIGN, INC.**

8860 Jefferson Highway  
Osseo, MN 55369-1500  
Tel: (763) 425-1001  
Fax: (763) 425-2234  
Email: scottf@ffcdi.com  
www.ffcdi.com  
Established 1989  
Total in MN Office: 6  
Total in Other Offices: 6

**Firm Principals**

Scott A. Futrell, PE (WI)  
Rich Pehrson PhD, PE (MN, SD, AR, OK)

Fire protection engineering, fire alarm and suppression system design, risk analysis, plan and engineering report reviews, special instructions, commissioning, expert witness, third-party review and project management.

*3M Company, Various Locations Nationwide; MSOP Moose Lake, Moose Lake, MN; University of Minnesota Armory Building, Minneapolis East Bank Campus, MN, MnSCU Trafton Science Center, Mankato, MN; Bemidji State University Linden Hall, Bemidji, MN; Warroad Border Station, Warroad, MN*

**GAUSMAN & MOORE ASSOCIATES, INC.**

1700 West Highway 36  
700 Rosedale Towers  
Roseville, MN 55113  
Tel: (651) 639-9606  
Fax: (651) 639-9618  
Email: gmmail@gausman.com  
www.gausman.com  
Established 1935  
Other MN Office: Duluth  
Total in MN Offices: 52  
Other Offices: Portland, Los Angeles  
Total in Other Offices: 24  
Contact: Mark Leutgeb, Bus. Dev.  
(651) 604-3141

**Firm Principals**

James W. Giefer, PE  
James A. Keller, PE, LEED AP  
D. Lane Hersey, PE  
Robert B. Full, PE  
Dave T. Blume, PE, LEED AP  
Edward L. Studniski, PE  
James D. Manning, PE

Gausman & Moore provides mechanical, electrical, fire protection, and technology support services. Areas of special expertise include sustainable design (LEED® AP), mission critical power systems, forensic investigations, lighting design, and health care.

*World Jewelry Center, Las Vegas, NV; University of Minnesota Duluth Labovitz School of Business and Economics, Duluth, MN; El Capitan Theatre, Hollywood, CA; Business Center, Santa Barbara College, Santa Barbara, CA; Cloquet Community Memorial Hospital Remodeling and Addition, Cloquet, MN; U.S. Army Reserve Training Centers and Maintenance Facilities, Nationwide; Retail, Nationwide*

**HOWARD R. GREEN COMPANY**

2550 University Avenue West, Suite 400N  
St. Paul, MN 55114  
Tel: (651) 644-4389  
Fax: (651) 644-9446  
Email: rfroberg@hrgeen.com  
www.hrgeen.com  
Established 1913  
Other MN Office: Grand Rapids  
Total in MN Office: 46  
Other Offices: Cedar Rapids, Des Moines, Moline, St. Louis, Sioux Falls, Sioux City  
Total in Other Offices: 200  
Contact: Rick Froberg, AIA, RRC  
(651) 644-4389

**Firm Principals**

Rick Froberg, AIA, RRC  
David Raby, PE  
Jack Broz, PE  
Dawn Horner, PE

HRG offers a full range of engineering services from civil and structural to mechanical and electrical with expertise in all major building systems. Specialty services include roof consulting, window replacement, masonry restoration, waterproofing and site engineering. Project types include institutional, municipal, educational, water/wastewater, transportation, commercial and industrial.

*University of Minnesota Duluth Darland Administration Building Recladding, Duluth, MN; Minneapolis City Hall Courtyard Green Roof Waterproofing Design, Minneapolis, MN; MnSCU, Rochester Community and Technical College Memorial Hall Structural Column Repair, Rochester, MN; State Architect's Office, History Center Window and Curtainwall Evaluation, St. Paul, MN; Mounds View Public Schools Masonry and Roof Design and Construction Administration, Mounds View, MN; Metro Transit Heywood Bus Garage (HVAC design), MN*

**HALLBERG ENGINEERING, INC.**

1750 Commerce Court  
White Bear Lake, MN 55110  
Tel: (651) 748-1100  
Fax: (651) 748-9370  
Email: hei@hallbergengineering.com  
www.hallbergengineering.com  
Established 1984  
Total in MN Office: 47  
Other MN Office: White Bear Lake (Schools for Energy Efficiency-SEE)  
Total in Other Offices: 6  
Contact: Gina Halter (651) 748-4385

**Firm Principal**

Joseph W. Hallberg, PE

HEI is a mechanical and electrical consulting engineering firm that specializes in the design of mechanical, electrical and technology systems, along with building analysis and commissioning. Our services also include system upgrades and retrofits to improve indoor air quality and energy conservation. Our Schools for Energy Efficiency (SEE) program was created in response to our school districts' needs which provides schools with the tools they need to save energy and money through energy-efficient strategies.

*New Chanhassen High School, MN; New East Ridge High School; New St. Michael/Alberville High School; Moose Lake Correctional Facility, Moose Lake, MN; Rainforest Cafes, Various Locations; United Health Group Data Park Building LEED Commissioning, MN*

**HAMMEL, GREEN AND ABRAHAMSON, INC.**

701 Washington Avenue North  
Minneapolis, MN 55401  
Tel: (612) 758-4000  
Fax: (612) 758-4199  
Email: info@hga.com  
www.hga.com  
Established 1953  
Other MN Office: Rochester  
Total in MN Offices: 291  
Other Offices: Milwaukee, Sacramento, Los Angeles, San Francisco  
Total in Other Offices: 218  
Contact: Julie Luers, Dir. Mktg.  
(612) 758-8600

**Firm Principals**

Chuck Cappellin, PE, LEED AP  
Jeff Harris, PE, LEED AP  
Leigh Harrison, PE, LEED AP  
Kenny Horns, PE, LEED AP  
Doug Maust, PE, LEED AP  
Yan Shagalov, PE

*continued next column*

HGA has engineering expertise in the design of a broad range of facility types. In addition to traditional civil, mechanical, structural and electrical engineering, HGA has specialists in commissioning, clean environments, industrial processes, central plants, utility infrastructure, existing condition surveys, facility assessments, telecommunications systems design, healthcare technology applications design, structural special inspections, and specialty lighting. HGA engineers serve both prime consultants and sub-consultants.

*Fairview Health System (ambulatory care facility), Maple Grove, MN; Minnesota Bio-business Development Center, Rochester, MN; Minnesota State University, Trafton Science Center, Mankato, MN; SurModics, Eden Prairie, MN; University of Minnesota, Children's Hospital/Fairview, Riverside Campus, Minneapolis, MN; University of Minnesota, Science Teaching and Student Services Center, Minneapolis, MN*

**HEYER ENGINEERING**

123 3rd Street North, Suite 600  
Minneapolis, MN 55401  
Tel: (612) 238-3805  
Fax: (612) 238-3806  
Email: dave@heyer-eng.com  
www.heyerengineering.com  
Established 1983  
Total in MN Office: 6  
Other Office: Fargo  
Total in Other Office: 21  
Contact: Dave Bruns (612) 238-3805

**Firm Principals**

Jim Heyer, PE  
Dave Bruns, PE

Heyer Engineering offers full-service structural engineering with offices in Minneapolis and Fargo. Established in 1983, Jim Heyer, PE is licensed and has designed structures in 38 states. Over a 24-year period, more than 7,000 projects have been accomplished, including all types of occupancies and construction materials. Over the years, we have formed excellent relationships with our clients, who frequently use our services for the majority of their projects. This is the result of our dependability, quality designs, creativity and wealth of experience.

*Chanhassen High School, Chanhassen, MN; Horizon Middle School, Moorhead, MN; Ralph Engelstad Arena, Grand Forks, ND; Northwest Aerospace Training Center, Eagan, MN; Jackson Place/Bluff Block, Elk River, MN; Innovis Health Medical Center, Fargo, ND*

**I & S ENGINEERS  
& ARCHITECTS, INC.**

1409 N. Riverfront Drive  
Mankato, MN 56001  
Tel: (507) 387-6651  
Fax: (507) 387-3583  
Email: bcolway@is-ea.com  
www.is-ea.com  
Established 1973  
Other MN Office: Faribault  
Total in MN Office: 90  
Contact: Beth Colway (507) 387-6651

**Firm Principals**

Chad C. Surprenant, PE  
Ken Surprenant, PE  
Jason Hoehn, PE, SE  
Mark Cipos, AIA, CID  
Chuck Brandel, PE  
Brian Gjerde, PE, SE

I&S blends creative style with realistic function. Knowing that every project is unique and deserves special attention, I&S creates environments that are consistent with our clients' values and goals. By providing architecture, interior design, civil, structural, mechanical and electrical design services, as well as land surveying, natural resources management and landscape architecture in-house, we develop the most creative and effective solutions that meet our clients' needs.

*SAGE Electrochromics, Faribault, MN; Mankato Skyway, Mankato, MN; Heintz Toyota/Scion, Mankato, MN; Iverson Reuvers Law Firm, Bloomington, MN; Prior lake Fire Station, Prior Lake, MN; Holiday Inn Express, Mankato, MN*

**INSPEC, INC.**

5801 Duluth Street  
Minneapolis, MN 55422  
Tel: (763) 546-3434  
Fax: (763) 546-8669  
E-mail: fking@inspec.com  
www.inspec.com  
Established 1973  
Other Offices: Milwaukee, Chicago  
Contact: Fred King (763) 546-3434

**Firm Principals**

Dwight Benoy, PE  
Gary Patrick, AIA  
Mike Remington, PE  
David W. Campbell, AIA

Inspec offers our clients smart engineering for roofs, walls, pavements and waterproofing. Our services include survey and evaluation, failure investigation, design and consultation, expert witness testimony, construction administration and observation, on-site and lab testing, and customized facility management programs. We also specialize in historic building renovation and outdoor athletic facilities.

*Glensheen, Duluth, MN; Minnesota State Capitol, St. Paul, MN; American Swedish Institute, Minneapolis, MN; Minnesota State Colleges and Universities (54 campuses), Statewide; Anoka County, MN; University of Chicago, Chicago, IL*

**KIMLEY-HORN AND  
ASSOCIATES, INC.**

Suite 345N  
2550 University Avenue West  
St. Paul, MN 55114  
Tel: (651) 643-0400  
Fax: (651) 645-5116  
Email: jon.horn@kimley-horn.com  
www.kimley-horn.com  
Established 1967  
Total in MN Office: 53  
Other Offices: Raleigh (Corporate);  
65 offices nationwide  
Total in Other Offices: 2,400  
Contact: Jon Horn, PE (651) 643-0406

**Firm Principals**

Gary Ehret, PE  
Jon Horn, PE  
Mike Hermann, PE  
Paul Danielson, PE  
Gary Christensen, PE  
Mark Bishop, PE

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Kimley-Horn and Associates, Inc. is a national consulting engineering firm with a St. Paul office that has significant local experience serving architects, municipalities, counties, state agencies, and private developers. We provide a wide range of services including municipal engineering, transit, traffic engineering, environmental, landscape architecture, urban design, structural engineering, and aviation.

*Northstar Corridor, Big Lake to Minneapolis, MN; Metropolitan Airports Commission Landside Projects, Minneapolis-St. Paul International Airport, MN; Anoka Municipal Parking Ramp, Anoka, MN; Central Corridor, Minneapolis to St. Paul, MN; Legacy Parkway, Maplewood, MN; Northwest Quadrant, New Brighton, MN*

**KRECH, O'BRIEN, MUELLER &  
ASSOCIATES, INC.**

6115 Cahill Avenue  
Inver Grove Heights, MN 55076  
Tel: (651) 451-4605  
Fax: (651) 451-0917  
Email: jkrech@komainc.com  
www.komainc.com  
Established 1987

**Firm Principals**

James H. Krech, PE  
Michael J. Lisowski, PE  
Matthew J. Van Hoof, PE  
Daniel J. O'Brien, AIA  
Brady R. Mueller, AIA  
Mark R. DuBois, AIA

KOMA offers structural engineering, architecture, interior design and construction management services. Registered structurally in 24 states, typical structural projects include industrial, commercial, institutional, ecclesiastical, forensic, agricultural, blast resistance, and hazardous waste containment. Specialties include granular material storage, hazardous liquid containment, corrosive environments, blast resistance, and aluminum greenhouse design.

*Mall of America, New Theme for Park, Bloomington, MN; International Union of Operating Engineers, Local 49 Training Facility, Pine City, MN; Woodbury High School HVAC Upgrade, Woodbury, MN; Citizens State Bank, Hudson, WI; Hastings Area YMCA, Hastings, MN; St. Benedict's Senior Community Center, St. Cloud and Monticello, MN*

**KRECH OJARD  
& ASSOCIATES, P.A.**

227 West First Street, Suite 200  
Duluth, MN 55802  
Tel: (218) 727-3282  
Fax: (218) 727-1216  
Email: mail@krechojard.com  
www.krechojard.com  
Other Offices: Eau Claire, WI;  
Bellingham, WA  
Contact: Michael J. Metso, PE  
(218) 727-3282

**Firm Principals**

David Krech, PE  
Rich Ojard, PE  
Marvin Anderson, PE  
Jeff Heller, PE  
Russell Betts, AIA

The firm provides civil, structural and industrial mechanical engineering services, as well as surveying. Specialty areas include bulk material handling, railway and marine design as well as general consulting services for commercial and industrial facilities.

*Consumers Energy Coal Handling Facility, Holland, MI; Midwest Energy Resources Corporation Expansion, Superior, WI; Charter Films Manufacturing Facility, Superior, WI; CLM Lime Plant Expansion, Superior, WI; Kirby Plaza Expansion, University of Minnesota, Duluth, Staples Distribution Center, Beloit, WI*

## LANDFORM

800C Butler Square  
100 North 6th Street  
Minneapolis, MN 55403  
Tel: (612) 252-9070  
Fax: (612) 252-9077  
Email: ckrall@landformmsp.net  
www.landform.net  
Established 1994  
Total in MN Office: 52  
Other Office: Phoenix  
Total in Other Office: 5  
Contact: Carolyn Krall (612) 252-9070

### Firm Principals

Darren Lazan, RLA  
Steve Johnston, PE  
Carolyn Krall, AIA  
Kendra Lindahl, AICP

Landform is a multi-disciplinary consulting firm that offers a full range of site design, planning and engineering services for projects from site selection through construction completion. Our broad base of local and national clients includes developers, architects, builders and private and public clients. Landform's professional resources of over 50 people include civil engineers, architects, landscape architects, planners, urban designers and land surveyors.

*ADC Telecommunications World Headquarters, Eden Prairie, MN; Methodist Hospital Heart and Vascular Center, St. Louis Park, MN; The Marquis, Williamsburg, VA; Current lee Vista, Orlando, FL; Chipotle, Minneapolis, MN; Promenade Shops at Lakemoor, Eagle, ID*

## LARSON ENGINEERING, INC.

3524 Labore Road  
White Bear Lake, MN 55110  
Tel: (651) 481-9120  
Fax: (651) 481-9201  
Email: info@larsonengr.com  
www.larsonengr.com  
Established 1979  
Total in MN Office: 58  
Other Offices: Scottsdale, Atlanta, Naperville, Chicago, St. Louis, Omaha, Appleton, Milwaukee  
Total in Other Offices: 164  
Contact: Kesh Ramdular, PE (651) 481-9120

### Firm Principals

Lee Granquist, PE  
Kesh Ramdular, PE  
Jack Pastore, SE, AIA  
Henry Voth, SE  
Roger Pocta, PE

*continued next column*

Larson Engineering is a consulting engineering firm providing structural, civil, mechanical and process industries engineering services. We excel in curtain wall design and renovation, lifeline anchor inspections, pavement maintenance programs, athletic surfaces, and commercial/industrial structures. A member of the U.S. Green Building Council, we are especially proud of our work on bio-fuels, wind turbines, and LEED-certified structures.

*Volunteers of America Children's Treatment Center, Minneapolis, MN; Howard Lake-Waverly-Winsted High School, Howard Lake, MN; Minnetonka Public Schools Pavement Maintenance Management Program, Minnetonka, MN; Multifeder Technology, Hugo, MN; Miami Dolphins Stadium Addition, Miami, FL; Century College Learning Resource Center, White Bear Lake, MN*

## LHB, INC.

21 West Superior Street, Suite 500  
Duluth, MN 55802  
Tel: (218) 727-8446  
Fax: (218) 727-8456  
Email: info@lhbcorp.com  
www.lhbcorp.com  
Established 1966  
Other MN Office: Minneapolis  
Total in MN Offices: 170  
Contact: Richard A. Carter, AIA, CID, LEED AP (612) 338-2029

### Firm Principals

William Bennett, PE  
David Sheedy, PE  
Jay B. Bergman, PE  
Joseph Litman, PE  
Timothy E. Korry, PE  
David T. Williams, PE, FPE, LEED® AP

LHB consists of civil, electrical, mechanical, and structural engineers, land surveyors, architects, interior designers, and landscape architects. We focus on education, government, public works, healthcare, pipeline, commercial, industrial, and housing markets. LHB provides community planning, and designs systems, performance programs, sites, utilities, and buildings. We value performance-based design and utilize a variety of sustainable guidelines including ENERGYSTAR and LEED.

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*Chatfield Wastewater Treatment Plant and Office Remodel, Chatfield, MN; Quality Bicycle Products LEED® NC Gold Office and Warehouse Expansion, Bloomington, MN; Midtown Eco-energy Bio-mass Facility Renovation, Minneapolis, MN; Whole Foods Co-op LEED® Certified Remodeling, Duluth, MN; Oneka Elementary School, Hugo, MN; U.S. Army Corps Air Reserve Security Forces Design-build Facility, St. Paul, MN*

## LKPB ENGINEERS, INC.

1935 West County Road B2, Suite 300  
St. Paul, MN 55113  
Tel: (651) 633-1223  
Fax: (651) 633-1355  
Email: karla.sampson@lkpb.com  
www.lkpb.com  
Established 1969  
Total in MN Office: 48  
Contact: Karla Sampson (651) 288-6110

### Firm Principals

Peter A. Potvin, PE  
Leonard A. Lundquist, PE  
Gayland Bender, PE  
John M. Killeen, PE  
Jon D. Haack, PE

LKPB Engineers, Inc. (LKPB) is a mechanical and electrical consulting engineering firm that was founded in 1969. The firm provides services to clients in settings such as education, health care, corporate, commercial, historical, recreational and government environments. Services include design phases, master planning, construction documentation, construction administration and commissioning.

*University of Minnesota TCF Stadium, Minneapolis, MN; Fogo de Chao Restaurant, Minneapolis, MN; Dan Abraham Healthy Living Center, Mayo Clinic, Rochester, MN; Navy Federal Credit Union LEED Commissioning, Pensacola, FL; Berkshire School Hockey Complex, Sheffield, MA; 8200 Normandale Lakes Office Tower and Parking Deck, Bloomington, MN*

## LOUCKS ASSOCIATES

7200 Hemlock Lane, Suite 300  
Minneapolis, MN 55369  
Tel: (763) 424-5505  
Fax: (763) 424-5822  
Email: home@loucksassociates.com  
www.loucksassociates.com  
Established 1976  
Contact: Mike O'Brien (763) 424-5505

### Firm Principals

Thomas G. Loucks  
Jeffrey A. Shopek, PE  
Paul J. McGinley, PLS  
Michael J. St. Martin, PE  
Paul A. Kangas, ASLA

Services include site layout, grading, storm water conveyance systems, water quality retention ponds, wetland mitigation, EAW/EIS documents, Phase I and II ESAs, groundwater contamination, ALTA title surveys, site feasibility studies, comprehensive plan amendments, rezoning, permitting and approvals for industrial, commercial, retail, corporate campus, assisted living community, senior co-op, townhome and education facilities.

*Maple Grove Hospital, Maple Grove, MN; Allianz Corporate Facility, Golden Valley, MN; Boston Scientific, Maple Grove, MN; CVS Pharmacy, Various Locations, MN; Minnesota State Fair, St. Paul, MN; 317 Groveland Condos, Minneapolis, MN*

**MATTSON MACDONALD  
YOUNG, INC.**

901 North 3rd Street, Suite 100  
Minneapolis, MN 55401  
Tel: (612) 827-7825  
Fax: (612) 827-0805  
Email: info@mattsonmacdonald.com  
www.mattsonmacdonald.com  
Established 1983  
Total in MN Office: 15  
Contact: Stephanie Young (612) 827-7825

**Firm Principals**

David H. Macdonald, PE  
Stephanie Young, PE  
Eric Bunkers, PE  
Joe Cain, PE

MMY provides structural engineering design on a broad, comprehensive range of projects including housing, retail, office, churches, manufacturing, medical, education and government facilities. Our breadth and depth of expertise allows us to seamlessly move between new, existing and historic buildings and allows us to incorporate the structural design into the architectural vision.

*St. Croix Lutheran High School Chapel, West St. Paul, MN; Humboldt Mill Condominiums, Minneapolis, MN; Swedish Institute Solarium Restoration, Minneapolis, MN; Chambers Hotel, Minneapolis, MN; Bloomington Public Works Facility, Bloomington, MN; Brainerd YMCA, Brainerd, MN*

**MBJ CONSULTING STRUCTURAL  
ENGINEERS**

12 South Sixth Street, Suite 810  
Minneapolis, MN 55402  
Tel: (612) 338-0713  
Fax: (612) 337-5325  
Email: jglasper@mbjeng.com  
www.mbjeng.com  
Established 1955  
Other MN Office: Duluth  
Total in MN Offices: 48  
Other Office: Tempe, AZ  
Total in Other Office: 10  
Contact: Joan Glasper (612) 604-3603

**Firm Principals**

Daniel E. Murphy, PE  
Michael J. Ramerth, PE  
Jerod Hoffman, PE  
Anthony J. Polusny, PE  
Brion Szwed, PE

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50 years of thorough, responsive, and creative structural design for all building types. Committed to provide design solutions that fulfill the architectural vision while maintaining constructability and value to the owner. Services include design, analysis, feasibility studies, construction documents, field observation, special inspections, forensics, and ramp condition surveys.

*Reflections at Bloomington Central Station, Bloomington, MN; Abbott Northwestern Heart Hospital, Minneapolis, MN; MacPhail Center for Music, Minneapolis, MN; Bell Museum of Natural History, University of Minnesota, Minneapolis, MN; University of Minnesota/Fairview Children's Hospital, Minneapolis, MN; Swenson Science Laboratory (UMD), Duluth, MN*

**MCCONKEY JOHNSON  
SOLTERMANN, INC.**

241 Cleveland Avenue South, Suite B2  
St. Paul, MN 55105  
Tel: (651) 698-5626  
Fax: (651) 698-5628  
Email: mjseng@qwest.net  
www.mconkeyjohnsonsoltermann.com  
Established 1978  
Total in MN Office: 6  
Contact: Richard W. Johnson, PE  
(651) 698-5626 x16

**Firm Principals**

Richard W. Johnson, PE  
Christian Soltermann, PE

Structural engineering consulting services for commercial, industrial, institutional and residential projects. Structural assessments of existing structures. Design office that stresses cooperation, communication and a knowledgeable exchange of ideas. Licensed in 15 states.

*API Corporate Headquarters, New Brighton, MN; The Salvation Army Castleview Apartments, Rochester, MN; LOGIS Office Addition, Golden Valley, MN; Gander Mountain, Various Locations; Glenwood State Bank, Alexandria, MN; Home State Bank, Hutchinson, MN*

**MICHAUD COOLEY ERICKSON**

333 South Seventh Street, Suite 1200  
Minneapolis, MN 55402  
Tel: (612) 339-4941  
Fax: (612) 339-8354  
Email: info@michaudcooley.com  
www.michaudcooley.com  
Established 1946  
Total in MN Office: 115  
Contact: Coley Konop (612) 673-6964

**Firm Principals**

Dean A. Rafferty, PE  
Douglas C. Cooley, PE  
Joseph A. Tennyson

MCE designs HVAC, plumbing, fire protection, electrical, illumination, security, life safety, audio visual, building automation, voice data and other special systems. Feasibility and deficiency studies, reports and master planning. Tenant representation and fit-up services, commissioning, facilities management, IAQ analysis, and LEED certification.

*The New Guthrie Theater, Minneapolis, MN; Allianz Life II, Golden Valley, MN; Boston Scientific, Maple Grove, MN; Target, Locations Nationwide; Wells Fargo SOC, Shoreview, MN; W.E. Burger Federal Building, St. Paul, MN*

**MJP ASSOCIATES, LTD.**

4362 Oakmeade Lane  
White Bear Lake, MN 55110  
Tel: (651) 426-7037  
Fax: (651) 426-6643  
Email: mike@mjp-associates.com  
www.mjp-associates.com  
Established 1993

**Firm Principal**

Michael J. Preston, PE

Specialized structural engineering services tailored to high-end residential projects, specialized component evaluation, and miscellaneous structures including investigative studies, feasibility studies, structural analysis, design, and construction observation.

*Existing Building Renovation, Hudson, WI; Private Residence, Nova Scotia, CAN; Private Residences Renovation and New, Various Locations, MN; Major Private Residence, Lake Calhoun, MN; Field Stone Retaining Walls, Various Locations; Exterior Metal Stud Curtainwall, Various Locations*

**NORTHERN TECHNOLOGIES, INC.**

6588 141ST Avenue NW  
Ramsey, MN 55303  
Tel: (763) 433-9175  
Fax: (763) 323-4739  
Email: marc@northerntechinc.com  
www.northerntechinc.com  
Established 1996  
Other MN Office: St. Cloud  
Total in MN Office: 20  
Other Offices: Fargo, Grand Forks  
Total in Other Offices: 30  
Contact: Marc Shannon (701) 232-1822

**Firm Principals**

Marc Shannon, PE  
Bret Anderson, PE  
Mike Wasmund, PE  
Dan Gibson, PE  
Chris Rasmussen, PE

Available services include: geotechnical (soil and bedrock) engineering, materials testing, environmental site assessments, soils and ground water remediation services, monitoring well construction and abandonment, air quality services, forensic investigations, metallurgic and corrosion analysis, instrumentation, geo-technical and construction materials testing, quality assurance and quality control, owner's project representation.

*Chanhassen Schools, Chanhassen, MN; Bemidji Airport, Bemidji, MN; Le Sueur-Henderson Schools, MN; Howard Lake High School, Howard Lake, MN; Bio-diesel Plant, Hallock, MN; Microsoft, Fargo, ND*



## OLSSON ASSOCIATES

6600 France Avenue South, Ste. 230  
Edina, MN 55435  
Tel: (952) 941-0477  
Fax: (952) 941-0644  
Email: MinneapolisAdmin@oaconsulting.com  
www.oaconsulting.com  
Established 1956  
Total in MN Office: 35  
Other Offices: Omaha, Grand Island,  
Hastings, Holdrege, South Sioux City,  
Scottsbluff, NE; Sioux City, IA; Overland  
Park, KS; Riverside, Springfield, MO;  
Phoenix, Tucson, Denver  
Total in Other Offices: 700  
Contact: Brandon Anderson, PE  
(952) 927-3805

### Firm Principals

Roger Severin, PE  
Patty McManus, MS  
Jack Lynch, RLA  
Brandon Anderson, PE  
Tim Gross, PE  
Jeff Rhoda, PE

Olsson Associates provides a full range of comprehensive design and consulting engineering services, including land development, urban design and planning, landscape architecture, environmental sciences, survey, transportation engineering and planning, water/wastewater, water resources, structural, mechanical/electrical, specialty lighting, and power electrical. Olsson Associates ranks 169th in Engineering News Record's Top 500 Design Firms, and CE News' Top Places to Work.

*Regions Hospital Expansion, St. Paul, MN; 1101 West Broadway Renovation, Minneapolis, MN; Fire Station #22 Addition, St. Paul, MN; Wal-Mart Super Centers, Various Locations, MN, ND, WI; Mystic Meadows Residential Development, Farmington, MN; 46th and Hiawatha TOD Strategy, Minneapolis, MN*

## REIGSTAD & ASSOCIATES, INC.

192 West 9th Street, Suite 200  
St. Paul, MN 55102  
Tel: (651) 292-1123  
Fax: (651) 292-8015  
Email: greigstad@reigstad.com  
www.reigstad.com  
Established 1979  
Total in MN Office: 33  
Other Office: Gulfport, MS  
Total in Other Office: 2  
Contact: Gordon H. Reigstad (651) 292-1123

### Firm Principals

Gordon H. Reigstad, PhD, PE, SE  
Charles R. Ashton, PE  
David A. Senter, PE (CA, CO, ND, SD, WI)

Reigstad & Associates is a full-service engineering firm specializing in structural design of all types of buildings. Our Precast Division can handle a wide spectrum of projects including multi-story garages, stadia/raker systems and complete building systems. The Parking Garage Division provides full-service parking consulting. Our services include site planning, functional and conceptual design and wayfinding/signage design.

*Harrah's Margaritaville Casino and Resort, Biloxi, MS; Island View Resort West Parking Garage, Gulfport, MS (Prime Professional); Epic Systems Corporation, Madison, WI; South Beach Condominiums, Biloxi, MS; St. Patrick's High School, Biloxi, MS; Camerata Apartments at Hoigaard Village (precast), St. Louis Park, MN*

## SEBESTA BLOMBERG

2381 Rosegate  
Roseville, MN 55113  
Tel: (651) 634-0775  
Fax: (651) 634-7400  
Email: info@sebesta.com  
www.sebesta.com  
Established 1994  
Other MN Office: Rochester  
Other Offices: Arlington (VA), Boston,  
Cedar Rapids, Dallas  
Total in Other Offices: 239

### Firm Principals

James J. Sebesta, PE  
Paul J. Blomberg, PE  
Dean R. Sharpe, PE  
Oleksa P. Breslawec, PE  
Tony R. Litton, PE  
Jay J. Rudberg, PE

*continued next column*

Sebesta Blomberg provides engineering, construction support, commissioning, facility support, energy management, environmental, LEED® certification, central plant and renewable energy services to private and public sector markets. Sebesta Blomberg is headquartered in Roseville, MN with offices in 10 states, the District of Columbia and Shanghai.

*University of Minnesota Nicholson Hall, Minneapolis, MN; Department of Defense Commissioning - Pentagon, Arlington, VA; Partners Health Care 70 Francis Street Building, Boston, MA; Mayo Foundation, Stabile and Eisenberg, Rochester, MN; Dallas-Fort Worth International Airport, Dallas, TX; Ball State University, Central Plant Engineering, Muncie, IN*

## SHORT ELLIOTT HENDRICKSON INC. (SEH)

3535 Vadnais Center Drive  
St. Paul, MN 55110  
Tel: (651) 490-2000  
Fax: (651) 490-2150  
www.sehinc.com  
Established 1927  
Other MN Offices: Brainerd, Duluth, Gaylord, Glencoe, Grand Rapids, Minneapolis, Minnetonka, Rochester, St. Cloud, Virginia, Worthington  
Total in MN Offices: 430  
Other Offices: Appleton, Ashland, Boulder, Denver, Fort Collins, Lakewood, Pueblo, Cheyenne, Chippewa Falls, Madison, Milwaukee, New Richmond, Rice Lake, Shebotgan, Superior, Wausau, Lake County (IN), Omaha, Sioux Falls  
Total in Other Offices: 725  
Contact: Michael Kraemer, CEO/Pres.  
(651) 490-2000

### Firm Principals

Michael Kraemer, PE  
Nancy Schultz, AIA  
Dan Boxrud, PE  
Glenn Schreiner, PE  
Steve Gausman, AIA  
Jim Newman, PE

Full-service professional consulting firm specializing in civil, structural, electrical, mechanical, traffic, transportation, environmental and waste resources engineering, architecture and landscape architecture; GIS; community planning and construction administration. Projects include municipal building, water, wastewater, highway, airport, flood control and industrial/educational/institutional sector projects.

*continued next column*

*UMORE Park Development, Rosemount, MN; MCES Meter Stations Improvement Project; I-35W Access Project, MN; Central and Zachary Water Treatment Plant Expansions; Metropolitan Airport Commission's East Reliever Airports, MN*

## STEEN ENGINEERING, INC.

5430 Douglas Drive North  
Crystal, MN 55427  
Tel: (763) 585-6742  
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Email: steen@steeneng.com  
www.steeneng.com  
Established 1993

### Firm Principals

Mark R. Brengman, PE  
Steven M. Youngs, PE  
Eugene A. Striefel

Steen Engineering provides Mechanical and Electrical Engineering design from feasibility studies to preparing construction documents. Design experience includes corporate, municipal, medical, hospitality, institutional and retail. Providing HVAC, plumbing, fire protection, lighting, power distribution, life safety, automatic temperature control, energy and analysis and deficiency studies.

*SBM Fire Station, Blaine, MN; Seward Co-op, Minneapolis, MN; McDonalds/Old Country Buffets, Nationwide; Hospitality, Nationwide; Skilled Nursing/Assisted Living Facilities, Nationwide; Northwestern Health Sciences University, Bloomington, MN*

**STRUCTURAL DESIGN ASSOCIATES, INC.**

10900 Noble Avenue North  
Champlin, MN 55316  
Tel: (763) 560-5300  
Fax: (763) 560-5400  
Email: gduerr@sdaeng.com  
www.sdaeng.com  
Established 1989  
Other MN Office: Brainerd  
Total in MN Offices: 12  
Contact: Gregory J. Duerr (763) 560-5300

**Firm Principal**

Gregory J. Duerr, PE

Structural Engineers providing design, construction documents, reports, and construction administration services for projects in the educational, industrial (manufacturing, warehousing, equipment supports, and repairs), commercial, municipal, medical, and renovation fields. Services provided to Architects, Owners, Contractors, Developers and others.

*Buffalo High School, Buffalo, MN; Green Bay Packaging Addition, Wausau, WI; Conference Center for Andersen Windows, Bayport, MN; Redwood Falls Hospital Addition, Redwood Falls, MN; Brentwood Hills Apartment, Inver Grove Heights, MN; Rosedale Retail and Theatre Addition, Roseville, MN*

**TKDA**

444 Cedar Street, Suite 1500  
St. Paul, MN 55101-2140  
Tel: (651) 292-4400  
Fax: (651) 292-0083  
Email: facilities@tkda.com  
www.tkda.com  
Established 1910  
Other MN Office: Grand Rapids  
Total in MN Offices: 205  
Other Offices: Chicago, Kansas City, Los Angeles  
Total in Other Offices: 13  
Contact: Thomas S. Stoneburner, PE  
(651) 292-4400

**Firm Principals**

William E. Deitner, PE  
Thomas S. Stoneburner, PE  
Jack W. Griffin, PE  
Kevin R. Cullen, PE  
Christopher E. Rand, PE  
John W. Ahern, PE

*continued next column*

Full-service Facilities Division specializing in: industrial, renewable fuels, government, education, and sports and recreation. Services: mechanical, electrical, structural, civil/site, architecture, interiors, landscape architecture. Systems: structural and architectural building systems, boiler and chiller, process piping, HVAC, plumbing, utilities, fire protection, power distribution, lighting, fire alarm, security, instrumentation and controls. Site: access roads, rail, parking lots, utilities, water supply, wastewater treatment.

*Flint Hill Resources Administration (Inver Grove Heights) and Shops Buildings (Rosemount), MN; Saint Paul College Trades Area Remodeling and Additions Phases 1 and 2, St. Paul, MN; Hastings Public Works Facility Office Expansion, Hastings, MN; College of St. Scholastica Wellness Center Addition, Duluth, MN; Andersen Steam Generation Facility, Bayport, MN; Pacific Ethanol Facilities, Western U.S.*

**ULTEIG ENGINEERS**

5201 East River Road, Suite 308  
Minneapolis, MN 55421-1027  
Tel: (763) 571-2500  
Fax: (763) 571-1168  
Email: info@ulteig.com  
www.ulteig.com  
Established 1944  
Other MN Office: Detroit Lakes  
Total in MN Offices: 127  
Other Offices: Fargo, Bismarck, Sioux Falls  
Total in Other Offices: 217  
Contact: Dan Sargeant (763) 277-6212

**Firm Principals**

Craig Anderson  
Dan Sargeant, PE  
Gerry Floden, PE, PLS  
Mike Fisher, PE

Ulteig Engineers is an employee-owned company delivering comprehensive engineering, planning and surveying services to a wide range of public and private clients. Our Building Services practice is comprised of professionals representing multiple disciplines, working together to serve our clients with integrated building and site design solutions. We provide civil, electrical, mechanical, structural, and fire protection engineering and lighting design services.

*Douglas County Hospital, Alexandria, MN; Southern Minnesota State University, Marshall, MN; Central Bank, St. Michael, MN; French River Hatchery, Duluth, MN; Brownstones on France, Edina, MN; Cass County Jail, Fargo, ND*

**VAN SICKLE, ALLEN & ASSOCIATES**

2955 Xenium Lane North, Suite 10  
Plymouth, MN 55441  
Tel: (763) 559-9100  
Fax: (763) 559-6023  
www.vaaeng.com  
Established 1978  
Other MN Office: Roseville  
Total in MN Offices: 76  
Other Office: Hutchinson, KS  
Total in Other Office: 4  
Contact: Tracy Eustace (620) 662-2062

**Firm Principals**

Keith W. Jacobson, PE  
Scott A. Stangeland, PE  
S. (Shawn) Shahriar, PhD, PE  
Bernie A. Hansen  
Kelsey F. Brown

We are committed to exceeding the expectations of our clients, providing collaborative thinking, proactive communication, innovative solutions, and unparalleled service and support. Engineering consultants providing structural and civil engineering services for commercial, corporate, retail, hospitality, educational, government, healthcare, industrial, senior housing and parking facilities. Designing A Bright Future Together.

*American Medical Systems, Minnetonka, MN; Target Corporation, Nationwide; Minnesota Dental, Minneapolis, MN; Slumberland/Golf Galaxy, Nationwide; Shaller Family Shalom East Campus, St. Paul, MN; Lincoln County Courthouse, Canton, SD*

**WENZEL ENGINEERING INC.**

10100 Morgan Avenue South  
Bloomington, MN 55431  
Tel: (952) 888-6516  
Fax: (952) 888-2587  
Email: info@wenzelengineering.com  
www.wenzelengineering.com  
Established 1990  
Total in MN Office: 6  
Contact: Tracy Clark, Office Manager  
(952) 888-6516

**Firm Principals**

Lowell E. Wenzel, PE  
Patricia A. Cole, PE  
Jeff A. Segar, PE

Wenzel Engineering, Inc. is a structural engineering firm dedicated to understanding and meeting our clients' goals. Our experience includes new facilities, renovations, additions, and investigations for commercial, industrial, public, retail, educational, religious and healthcare clients.

*Fond du Lac Tribal College, Cloquet, MN; Soil Nailed Wall, Route 169, Clay County, MO; Regions Hospital Expansion, St. Paul, MN; St. Cloud State University, St. Cloud, MN; Selective Demolition, 401 2nd Avenue, Minneapolis, MN; Wissco Steel/Lejeune Steel, Barronette, WI*

**WESTWOOD PROFESSIONAL SERVICES, INC.**

7699 Anagram Drive  
Eden Prairie, MN 55344  
Tel: (952) 937-5150  
Fax: (952) 937-5822  
Email: wps@westwoodps.com  
Established 1972  
Other MN Offices: St. Cloud, Brainerd  
Total in MN Offices: 175  
Contact: Dan Parks, Dir. (952) 906-7435

**Firm Principals**

Dwight Jelle, PE  
Paul Greenhagen, LS  
Dale Beckmann  
Dan Parks, PE  
Richard Wiebe, ASLA  
Jason McCarty, PE, LEED

*continued next column*

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Our services include construction surveying, storm water management, erosion control monitoring, archaeology, environmental permitting, civil engineering, traffic and parking, site/master planning, landscape architecture, GIS, 3D laser scanning, and visualization.

*Riverdale Village, Coon Rapids, MN; Mall of America ULI Parking Expansion Analyses, Bloomington, MN; Tatanka Wind Farm and Transmission, ND and SD; Midway Super Target Store, St. Paul, MN; Hennepin Village, Eden Prairie, MN; Cobblestone Lake, Apple Valley, MN*

### WOLD ARCHITECTS AND ENGINEERS

305 St. Peter Street  
St. Paul, MN 55102  
Tel: (651) 227-7773  
Fax: (651) 223-5646  
Email: mail@woldae.com  
www.woldae.com  
Established 1968  
Total in MN Office: 94  
Other Offices: Palatine, IL; Troy, MI  
Total in Other Offices: 30  
Contact: Kevin Marshall, PE (651) 227- 7773

#### Firm Principals

Michael S. Cox, AIA  
R. Scott McQueen, AIA  
Vaughn Dierks, AIA, LEED AP  
Kevin Marshall, PE  
Matt Mooney, PE  
Lucia Anderson, PE, LEED AP

Wold Architects and Engineers provides a full range of services to meet the facility needs of our public sector clients. Services include systems analysis, troubleshooting, options analysis, budgeting, project design, construction administration, project closeout and commissioning.

*Dakota Communications Center, Empire, MN; Eagle Creek Elementary, ISD 720, Shakopee, MN; Meeker County Public Works, Litchfield, MN; Washington County Campus 2025 Improvements, Stillwater, MN; State of Minnesota Administration and Capitol Building Chilled Water Connection, St. Paul, MN; Roseville High School Addition and Renovations, Roseville, MN*

### YAGGY COLBY ASSOCIATES

717 3rd Avenue SE  
Rochester, MN 55904  
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Fax: (507) 288-5058  
Email: info@yaggy.com  
www.yaggy.com  
Established 1970  
Other MN Office: Eagan  
Total in MN Offices: 100  
Other Offices: Mason City, IA, Delafield, WI  
Total in Other Offices: 62  
Contact: Jose L. Rivas, AIA (507) 288-6464

#### Firm Principals

Scott Samuelson, PE  
Mike Court, PE  
Jose Rivas, AIA  
Chris Colby, AIA  
Robert Ellis  
Terry McCarthy

Municipal, transportation, land development and building and site services including grading and utility plans, storm water management, water and wastewater treatment and permitting, traffic studies, bridge and highway design, geo-technical and structural design, landscape design, wetland delineation and environmental studies, topographical surveys, ALTA survey and plats.

*ROC 52 Design Build, Rochester, MN;  
1st Street Pedestrian Plaza, Rochester, MN;  
Iowa DOT Rest Areas; Byron City Hall, Byron, MN; St. Olaf Lutheran Church, Austin, MN;  
Village on Third Housing, Rochester, MN*

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**The Petters Pavilion**

page 32

Location: Collegeville, Minnesota  
 Client: St. John's Abbey  
 Architect: VJAA  
 Project team:  
 Vincent James, FAIA (principal); Jennifer Yoos, AIA (principal); Nathan Knutson, AIA (managing principal); Paul Yaggie, AIA (project architect); James Moore, AIA (project architect); Mary Springer, AIA; Karen Lu; Carl Gauley; Laura Reneke; Jennifer Pedtke; Dzenita Hadziomerovic; Lev Bereznycky; Jay Lane; Scott Aspenson; Thomas Clark; Donovan Nelson  
 Structural engineer: BKBM Engineers  
 Mechanical engineer: Engineering Design Initiative Ltd.  
 Electrical engineer: Engineering Design Initiative Ltd.  
 Civil engineer: BKBM Engineers  
 General contractor: Knutson Construction Services  
 Landscape architect: oslund.and.assoc.  
 Landscape project team: Thomas Oslund (principal); Joe Favour  
 Interior design: VJAA  
 Concrete masonry: Arriscraft (concrete veneer block); American Artstone (concrete-block site walls and structural columns, custom perforated block)  
 Flooring systems/materials: K. Johnson (Integral Color Polished Concrete)  
 Wood flooring: St. John's Abbey (installation by Anderson Ladd)  
 Carpet and tile: Multiple Concepts Interiors  
 Window systems: Wausau Windows; Pilkington Proflit; W.L. Hall  
 Concrete work (exposed): Knutson Construction Services  
 Precast concrete: Molin Concrete Products; American Artstone (custom benches)  
 Millwork: Wilkie Sanderson  
 Photographer: Paul Crosby

**St. John's Abbey and Monastery Guesthouse**

page 36

Location: Collegeville, Minnesota  
 Client: St. John's Abbey  
 Architect: VJAA  
 Project team:  
 Vincent James, FAIA (principal); Jennifer Yoos, AIA (principal); Nathan Knutson, AIA (managing principal); Paul Yaggie, AIA (senior project architect); Karen Lu (project manager); James Moore, AIA (co-project architect); Dzenita Hadziomerovic; Carl Gauley; Lev Bereznycky; Jay Lane; Andrew Dull; Donovan Nelson; Jennifer Pedtke  
 Structural engineer: BKBM Engineers  
 Mechanical engineer: Engineering Design Initiative Ltd.  
 Electrical engineer: Engineering Design Initiative Ltd.  
 Civil engineer: BKBM Engineers  
 Construction manager: Knutson Construction Services  
 Landscape architect: oslund.and.assoc.  
 Landscape project team: Thomas Oslund (principal); Joe Favour  
 Interior design: VJAA  
 Concrete masonry: Arriscraft (concrete veneer block); American Artstone (concrete-block site walls and structural columns, custom perforated block)  
 Flooring systems/materials: K. Johnson (Integral Color Polished Concrete)  
 Wood flooring: St. John's Abbey (installation by Anderson Ladd)  
 Carpet and tile: Multiple Concepts Interiors  
 Window systems: Wausau Windows; Pilkington Proflit; W.L. Hall  
 Concrete work (exposed): Knutson Construction Services  
 Precast concrete: Molin Concrete Products; American Artstone (custom benches)  
 Millwork: Wilkie Sanderson  
 Photographer: Paul Crosby

**Great River Energy Headquarters**

page 44

Location: Maple Grove, Minnesota  
 Client: Great River Energy  
 Architect: Perkins+Will  
 Principal-in-charge: Dave Dimond, AIA  
 Project lead designer: Dave Dimond, AIA  
 Project manager: Gerry Voermans, AIA  
 Project architect: Doug Pierce, AIA

Project team:  
 Tony Layne, Assoc. AIA; Russell Philstrom; Kathryn Martenson; David Little, Assoc. AIA; Jim Foran; Meredith Hayes Gordon, Assoc. AIA; Tom Beck, AIA; Jon Wollak; Lisa Pool; Dennis Sachs, AIA; Ed Heinen; Michelle Hammer; Dave Koenen  
 Energy modeling: The Weidt Group  
 Structural engineer: BKBM Engineers  
 Mechanical engineer: Dunham  
 Electrical engineer: Dunham  
 Civil engineer: RKL Incorporated  
 Lighting designer: Dunham  
 Interior design: Perkins+Will  
 Construction manager: McGough Construction  
 Landscape architect: Close Landscape Architects  
 Landscape project team: Jean Garbarini; Frank Fitzgerald  
 Architectural precast: Gage Brothers  
 Stone: Cold Spring Granite  
 Cabinetwork: Aaron Carlson  
 Flooring systems/materials: Tate Access Floors; Shaw Carpet  
 Window systems: Twin Cities Glazing; Vista Wall  
 Architectural metal panels: Centria  
 Concrete work: McGough; Cemstone  
 Millwork: Aaron Carlson  
 Renderings: Perkins+Will  
 Photography: Perkins+Will

**Red Stag Supper Club**

page 48

Location: Minneapolis, Minnesota  
 Client: Kim Bartmann  
 Interior architect: Studio 2030  
 Principal-in-charge: Rachelle Schoessler Lynn, Allied AIA  
 Project architect: David Loehr, AIA  
 Project lead designer: Rachelle Schoessler Lynn, Allied AIA  
 Project manager: Rachelle Schoessler Lynn, Allied AIA  
 Project team: J. Chesnut; Malea Jochim  
 Architect of record: Walsh Bishop Associates  
 Graphic designer: Play  
 Energy modeling: Energy Misers, LLC  
 Mechanical engineer: Dunham  
 Electrical engineer: Dunham  
 Interior design: Rachelle Schoessler Lynn, Allied AIA  
 LEED assistant: Swainhart Construction Services

General contractor: WonderWoman Construction  
 Flooring systems/materials: InterfaceFLOR (carpet tile); DalTile (floor tile)  
 Wood floors: salvaged  
 Wall tile: Royal Mosa  
 Wood panels: salvaged Forest Stewardship Council-certified wood  
 Booths: salvaged from the Minneapolis Marriott  
 Upholstery fabric: DesignTex  
 Furniture: salvaged  
 Marble bar top: salvaged from the Minneapolis Marriott  
 Millwork: Samantha Floyd  
 Tin ceiling: American Tin Ceiling Company  
 Acoustical ceiling tile: USG  
 LED lighting: Albeo Technologies  
 LED can lights: Permlight  
 Tankless hot-water heaters: Rinnai  
 Toilets: Caroma  
 Bathroom faucets: Toto  
 Urinal and Intelligent Logic EcoPower flush valve: Toto  
 Faucet aerators and pre-rinse valves: Niagara Conservation  
 Hand dryers: Dyson AirBlade  
 Exit signs: Egress Technologies  
 In-line electric tankless hot-water heaters: Eemax  
 Induction cook top: Diva De Provence  
 LED MR-16 bulbs for track lighting: Color Kinetics  
 Photographer: Eric Melzer

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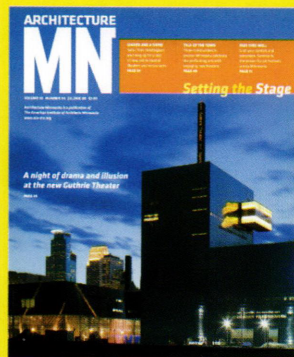
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