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With the winter winds howling, head indoors for botanical art, photography, and ceramics classes. The whole family is welcome.

Two architecture firms with a futuristic bent get their due in handsome Phaidon monographs. If you wade in, you might not make it out.

It's 2057 and Jean Nouvel's Guthrie is facing the wrecking ball. Some story lines just won't go away.

The Futurama exhibit at the 1939 World's Fair promised a wondrous new world of materials, and we've been transfixed ever since.

Photographer Maxwell MacKenzie captures remnants of an earlier time in Otter Tail County, before all traces disappear.

Janet Lofquist's Infinite Voices installation embraces that diversity.

Take a look at any sustainable-design initiative in Minnesota. There's a good chance Doug Pierce, AIA, has had a hand in it.

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A few years back, someone — I can’t remember who — asked me to name four or five things I couldn’t live without. The answers came easily: Diet Coke, air-conditioning, Tylenol PM, and my CD collection. I’m not exactly proud of this list — I would have preferred to say bicycle, library card, and Naked Juice — but there it is. Fast-forward to the present, and my cell phone has been upgraded from convenience to true necessity. Oh, and with my MP3 player always close at hand, I’ve nearly forgotten what CDs look like.

But after assembling this forward-looking issue, I imagine I’ll be setting my sights a little higher in the years and decades ahead. For example, I know that if I ever live or work in a space in which a wall serves variously as a wall, a window, a light source, a TV, a communication device, a touch screen, a digital artwork, and a sound system, I’ll never go back to just a plain old wall. Who in their right mind would? And the magic wall is just a drop in the bucket. The smart buildings of the future will adjust — even change shape — in response to changing conditions outside (wind, temperature, sunlight) and inside (e.g., number of occupants). Once we get a taste of buildings that recognize us and adjust to our preferred settings for visual and acoustic privacy and thermal comfort, we’ll wonder how we ever did without.

Likewise, in the not-so-distant future, when the effects of climate change have multiplied, carbon-neutral, zero-emission buildings (page 42) that generate their own renewable energy will be the only acceptable way to build. In fact, sustainable design may become a redundant term, since all design will, by necessity, be centrally concerned with renewable energy and environmental stewardship.

In his feature article on a future course for architectural practice (page 38), Thomas Fisher, Assoc. AIA, highlights two sustainable projects — Druk White Lotus School in India’s Himalayan Mountains, by the multinational firm Arup Associates, and Calhoun Photography Studio in New Orleans, by Minneapolis firm Shelter Architecture — that are designed for extreme environmental conditions. “What makes the Arup project noteworthy,” Fisher writes, “is how the designers used the school not just to do a lot for people who have very little, but also to demonstrate how we might all have to build in the future, when energy and water resources are as scarce in the rest of the world as they are in the high-altitude desert of Ladakh.” Meanwhile, in New Orleans, Shelter is helping to rebuild a celebrated studio that was destroyed in the flooding that followed Hurricane Katrina. The new studio’s first-floor gallery is designed to allow floodwaters to pass through, should disaster strike again.

Photographers Keith Calhoun and Chandra McCormick Calhoun and the teachers and students at the Himalayan school can appreciate how indispensable the right kind of architecture can be. Soon enough, sustainable design will be something none of us can live without. I just hope there’s eco-friendly refrigeration in the future. My Diet Coke has got to be ice cold.

Christopher Hudson
hudson@aia-mn.org
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ARCHITECTURE

AIA Minnesota

AIA Minnesota is the voice of the architecture profession dedicated to serving its members, advancing their value, and improving the quality of the built environment.

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If pottery, oil painting, or photography interests you, the Edina Art Center has you covered. The center even offers a class in creating your own greeting cards. Some of the classes are set up like a one-room schoolhouse in order to promote interaction between children and adults. So bring your child or grandchild—or the whole family—with you. With so many activities offered, everyone is sure to find something that appeals to them. Edina Art Center is conveniently located near Southdale Mall. Members receive a discount on all classes.
edinaartcenter.com

Minneapolis School of Botanical Art

In the dark days of winter, get a taste of spring at the Minneapolis School of Botanical Art. Located at the Bakken Museum on the west side of Lake Calhoun in Minneapolis, this school offers an aesthetic and scientific approach to botanical art. Instruction begins with basic drawing and watercolor painting and moves toward more advanced levels and master classes. The Minneapolis School of Botanical Art also offers a certificate program for people looking to acquire a professional certificate in the field.
minnesotaschoolofbotanicalart.com

Northern Clay Center

Like to roll up your sleeves and get your hands dirty? Then the Northern Clay Center in Minneapolis is the place for you. Some of the great classes taught here are in hand-building, wheel-throwing, terra-cotta, and ceramics, and there is instruction for all age levels. In addition to classes, the center is available for special events such as birthday or office parties. A gallery devoted to rare ceramic art is well worth your time, as is the Artists of the Month exhibit in the sales gallery.
northernclaycenter.org

Hoping to stay warm and dry this winter? Try your hand at art in these toasty classrooms across the state.

The Great Indoors

Rochester Art Center

Each year, the Rochester Art Center offers more than 100 educational programs for visitors of all ages. The classes, workshops, film presentations, lectures, and gallery tours are all designed to encourage an understanding of and appreciation for the visual arts. Popular hands-on programs for youth include Teen Studio Sessions and the summertime Total Arts Day Camp. In an effort to make art accessible to more students, the center offers several scholarships for its classes and workshops.
rochesterartcenter.org

Duluth Art Institute

This winter, the Duluth Art Institute is featuring a number of drawing classes, including one of their most popular courses, Drawing from Life. Learn just how much detail goes into portraiture and human drawings, and have fun doing it. The institute also offers several ceramics courses, from beginner to advanced. Members receive a discount on all classes. While you're there, don't forget to check out the rest of the museum, including the Lake Superior Watercolor Society Exhibition on display through early February.
duluthartinstitute.org

Compiled by Emily Dowd
Concrete block products can prevent the spread of fire to and from other building materials. Balanced fire design consists of four key elements: Fire detection, suppression, education and containment. Concrete masonry is a very economical way to provide fire containment.
MORPHOSIS
By Thom Mayne and Val Warke.
Phaidon Press, Paperback 2006

Paging through the newly released paperback of the eponymous monograph Morphosis (first published in hardcover in 2003) is like flying headfirst into a spider’s web. Once you get in, it’s hard to get out. Spread after spread of large, tightly cropped photographs of angled concrete and plaster planes, exploding metal traces, and ghostly perforated veils both seduce and disorient the reader. The less one comprehends the images, the more one aches to know more, to see things from another angle, to find that one full view that explains the entire composition. But the images, like the work of this renegade architecture firm, offer no such comprehensive understanding. Morphosis hails from the French-art-film school of architecture: their work shuns anything like a clear narrative, story resolution, or moral purpose—but the scenery is gorgeous.

Since Morphosis founder Thom Mayne serves as both author and subject, it’s a safe bet the book’s entrancing, fragmentary visual style is entirely by design. “Our strategies are provisional, ad hoc, assimilating the accidental and preserving the fragments of impulses left unfulfilled,” Mayne writes, ever the existential tease.

Printed on heavy, sumptuous paper, Morphosis is soaking wet with photographs and lightly peppered with line drawings. Save for the rare caption—and the mostly disposable essay by Mayne and Warke tucked in the back—the volume is text free. In other words, it’s a perfect architecture book for architects.

FUTURE SYSTEMS
By Deyan Sudjic, Phaidon Press 2006

The first thing everyone says about this catalog of the work of British firm Future Systems is that the cover is very shiny. The volume, which looks like a high school trigonometry textbook wrapped in aluminum foil, suffers from a fragile binding that may not last until the end of this paragraph. Appropriately, this ode to a lifetime of speculative works is itself eye-catching, brash, sexy, and marked by the fleeting beauty of the new. (Crack, rip. Well, there it is, then. Honey, where’s the tape?)

Founded in 1979, the iconoclastic Future Systems studio has produced an hallucinogenic roster of unbuilt futuristic urban villages, light fixtures, champagne buckets, a floating pedestrian bridge, and furniture, most of which get ample coverage in this 240-page portfolio. The firm’s six-story Selfridges department store in Birmingham, England—an awe-inspiring windowless, bulbous blue mass covered in silver pushpins the size of trash-can lids—is by far the most internationally famous of its few realized projects.

Many readers will find it challenging to differentiate the built projects from the theoretical stuff. The photorealism of the conceptual projects merges almost seamlessly with the unreality of the constructed work, and the entire oeuvre is drawn from the firm’s signature palette of blob-like shapes, glistening plastic surfaces, bold colors, and overtly sexual forms that are difficult to explain in mixed company without blushing (especially the skyscrapers). But as firm principal Amanda Levete says, summarizing their design philosophy, “It’s better to do architecture that is described as ‘erotic’ than to be labeled as ‘high-tech.’” Meeoooow.

—Phillip Glenn Koski, AIA
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DATELINE: MARCH 15, 2057
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Under the blazing sun of a typical March afternoon, a dozen dignitaries and philanthropists joined the Guthrie Theater’s creative director, Shamus O’Malley, on the southern bank of the Minnesota River to break ground on the new home for the world-renowned entertainment-arts and virtual-extreme-sports complex. A large crowd of Guthrie patrons and civic boosters looked on as the esteemed group dug their gold spades into the crumbling asphalt of the long-abandoned Valleyfair amusement park.

Clapping the dust off his translucent white, UV-resistant gloves, Mr. O’Malley mounted the stage to address the crowd with Guthrie president Persephone Cowles-Dayton, the willowy heiress, who sported her trademark deep-rimmed, switchgrass hat. “And thus the curtain is raised,” boomed O’Malley in his cultivated Irish brogue, “on the next act in this theater’s dramatic evolution. Here we build a new Guthrie on the Minnesotan!”

“Bravo! Bravo!” Ms. Cowles-Dayton chimed in. “This is a great day for theater and virtual-sports enthusiasts across the Minnesota Metro and around the globe. From Doha to Calcutta, from Taipei to Mexico City, the eyes of all the world’s cultural capitals are watching in anticipation as we usher in a new era of creative-class, popular entertainment.”

Plans for the new complex were unveiled the preceding day at a fundraising event in the highly exclusive Crystal Court lobby of the IDS Residences Tower in Minneapolis. Designed by Indian architect Theodore “Teddy” Singh, the new facility will include a faithful re-creation of the original building’s signature thrust stage for ‘live-actor’ dramatic performances, an expanded 40,000-square-foot black-box Dowling Memorial Theater and Wedding Hall; 18 hologram stages; 4-D NASCAR, bungee-jumping, and whitewater digi-domes; and a 60-room wilderness lifestyle condo-hotel. Architecture critics have recently weighed in, lauding the design for its richly ornamented retro-neoclassical exterior and sprawling site plan, which was inspired by the imperial Roman estate Hadrian’s Villa.

The highly engineered ceremonies were marred somewhat by a small contingent of protesters, who set up camp near the event’s VIP entry gates. Holding signs reading “Save Nouvel’s Guthrie!” the group has drawn increasing media attention over the past few weeks for its opposition to the proposed demolition of the existing Guthrie building on the Mississippi River in downtown Minneapolis. Organized under the name Save Our Guthrie, Goodness, Yes! (SOOGY), the group is led by Lucinda Wu Rubenstein, a noted preservation bulldog and fearless grassroots organizer.

Speaking to reporters following the groundbreaking, Rubenstein made her case for preservation.

“While the new design unveiled yesterday may be quite lovely, we are adamantly opposed to the Guthrie’s plans to demolish Jean Nouvel’s masterpiece,” Lucinda Wu Rubenstein explained. “If anything, the building should be historically designated and restored to its previous architectural glory. It is Nouvel’s greatest achievement in the Western hemisphere and a dearly loved landmark that would be sorely missed by the quarter million high-rise residents living on either side of St. Anthony Falls.”

In response to a reporter’s suggestion that the existing structure no longer serves the needs of a contemporary entertainment-arts institution, Rubenstein shot back, “The current Guthrie is more than a machine for making theater in! We need to save this building so that future generations can enjoy the beauty of its dark, mysterious hallways, the thrilling crush of people funnelled up and down its two escalators, and the unrivaled views of the Dasani Falls Waterpark from the tip of its Endless Bridge. To say these experiences don’t matter is shortsighted.”

A key actor in the pending demolition and a long-time Guthrie partner is the enormously endowed McGuire Foundation. Remaining strategically quiet as the preservation debate unfolds, the foundation owns the Minneapolis Guthrie complex as well as the land it was built on—the property acquired during the economic depression of the early 2030s when the theater was on the verge of financial collapse. Since that time, the McGuire Foundation has leased the building back to the Guthrie organization for one dollar a year. The demolition of the Nouvel building will allow the foundation to move ahead with its plans to expand the adjacent Gold Medal Flour Park, a privately operated, gated canine recreation facility. McGuire representatives declined to be interviewed for this story.

Organizers of the new project feel that many concerns of demolition opponents can be addressed through readily available virtual reality technologies. According to the Guthrie’s website, the new facility will “re-create inch by inch, and byte by byte, the full experiential environment of Nouvel’s original design through the latest advances in holography. Not only will the existing building be preserved in two historic mitigation holographic suites in the new complex, the entire Nouvel design will be available online for home viewing. In many ways the new Virtual Guthrie on the Mississippi will be a superior product because

>> continued on page 54
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New materials are all the rage, and they have been for the past century

A History of the Future

At the 1939 World’s Fair in New York, visitors to the General Motors Futurama exhibit were given a thrill-ride tour around a quarter-scale model of the American landscape, projected into the year 1960 (prediction: suburbs). In the accompanying Previews of Progress exhibit, gawking spectators saw how new materials would transform their future lives. They were told:

[In the year 1960] textile filaments derived from coal, water, and air are stronger and finer and more elastic than any fiber now in use. Threads of rubber and glass are already being woven into cloth. Fabrics will be poured like paper and made into clothes so cheap that it won’t pay to launder them. Plastics, clear as glass, strong as steel, inexpensive as clay, will find new uses in homes, airplanes, automobiles... In architecture, new materials, processes, prefabrication will tie up the concept of planning.

On the eve of World War II, the idea that strong and useful materials could be mixed up in the lab, with some scientific ingenuity and “coal, water, and air”—resources so abundant they were rarely given a second thought—must have been as appealing as the idea today that we might power our cars with used french-fry oil.

The story of architecture in the 20th century is, inevitably, the story of the development and implementation of new materials—manmade substitutes for expensive natural materials and materials created in the lab (or the backyard shed, as was often the case) for their own wondrous promise. Before the 19th century, buildings were constructed of stone and wood, with a little iron thrown in for future archaeologists to discover. But as early as 1906 the means, methods, and materials of construction had expanded sufficiently to warrant the publication of the first printed guide to building materials for architects: the venerable Sweet’s Catalog.

A quick scan through any architecture journal, or across the recently built landscape, suggests that material innovation will continue to shape architecture well into the 21st century. But today we see less focus on the creation of entirely new materials than on adapting, combining, and using materials in new ways: Photovoltaics are combined with plastics and other materials, to luminous effect; carbon-based fibers are stretched to create daringly thin and lightweight structural systems; and sustainable construction materials and biomimetic products (see the feature article on biomimicry on page 46) take their cue from nature.

To help the architect and other designers wade through the dizzying array of material innovations, Material Connexion (www.materialconnexion.com)—founded in New York in 1997, with branches in Bangkok, Cologne, and Milan—has become a sort of Uber Sweet’s. More than a catalog, Material Connexion is a full-service physical and online library, available through subscription. Its resident experts guide visitors through the wonders of the 21st-century material world. Meanwhile, this writer is still waiting for the throwaway pants she doesn’t have to launder.

–Nancy A. Miller

Modern architecture was characterized by the use of new materials throughout the 20th century. In our 21st-century culture of experimentation and innovation, organizations such as Material Connexion have emerged to guide architects through the often-dizzying array of material choices.
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While scientists are projecting grim consequences for Earth's habitat should global warming go on unchecked, Pierce is optimistic that, with clear direction and reasonable options, people will make changes to create a more sustainable way of life. And he believes architects are poised to lead the transformation. Buildings, whose construction and habitation consume energy generated mostly from coal and petroleum-burning power plants, are responsible for approximately 47 percent of the greenhouse gases released into the atmosphere (this number combines the CO₂ emitted from energy used for daily building operations—approximately 30 percent of all greenhouse gases—and the emissions generated from manufacturing and transportation used to construct and maintain buildings—approximately 17 percent). By designing more energy-efficient buildings, and eventually those that produce their own renewable energy, architects can play a significant role in reducing global warming. Architects are also well equipped for the task. Pierce argues, because "they're systems thinkers who are in a position to synthesize very broad, challenging topics and create solutions on a societal scale. They do it every day."

For Pierce, the time to act is now, and he's leading by example. In addition to teaching sustainable-design theory and practice at the University of Minnesota's College of Design and chairing AIA Minnesota's Committee on the Environment, he serves on the board of Clean Water Alliance Minnesota and is an active member of the Institute for Market Transformation to Sustainability. He urges people to get involved in their communities, since broad local support eventually trickles up to state and national leaders. As Pierce puts it, promoting sustainable design is a way of gathering momentum on the broader issue: "We have important choices to make about how humans create their presence on the earth."

-Paul Neuhaus, AIA
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ART IN ANY LANGUAGE

An outdoor art installation at St. Cloud State University brings a diverse campus community together

A low-lying gateway to St. Cloud State University’s Lawrence Hall, Janet Lofquist’s multilingual Infinite Voices is a gathering spot where language, representing culture, is a primary point of engagement. The installation consists of two granite bases/benches placed on the radial axis of the site, with each base supporting a crisply folded sheet of stainless steel. Laser cut into the metal are two words—echoes and reflections—translated into the 51 languages currently spoken by St. Cloud State students and faculty (Lawrence Hall houses the offices of the foreign languages department, the Center for International Studies, and the residence hall for international students).

The installation’s resemblance to an unfolding map on a table is accentuated by the angled and intersecting words, which create a roadmap of languages across the pleated surface.

Why echoes and reflections? “Reflections represents the contemplation of a thought or idea,” Lofquist explains. “Echoes, on the other hand, suggests the repetition of a word or idea extending outward and then returning to the sender as something changed, but still recognizable.” Fitting concepts for education and cultural dialogue. don’t you think?

—Susan Andre, Allied AIA

Infinite Voices’ two granite bases each support an unfolding roadmap of languages.
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LEEDING THE CHARGE

In an issue of Architecture Minnesota that explores the future of architecture and design, we present, on the following pages, four building projects that are designed and built for tomorrow. Which is another way of saying these projects are highly sustainable. How do we know this? One good indicator is that all four have received or are close to achieving LEED certification.

For those of you unfamiliar with the name, LEED—the acronym for Leadership in Energy and Environmental Design—is a rating system that offers a “nationally accepted benchmark for the design, construction, and operation of high-performance green buildings,” says the U.S. Green Building Council website (www.usgbc.org). Architects, developers, and builders interested in pursuing a LEED stamp first register their projects with the USGBC. Then begin the process of building up credits in five categories of human and environmental health, sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. Based on the number of credits they achieve, projects are awarded Certified, Silver, Gold, or Platinum certification.

Currently, there are LEED programs for new commercial construction, existing buildings, commercial interiors, and homes, and programs for schools, retail, and healthcare aren’t far off. Like the buildings it certifies, LEED isn’t perfect, but it’s fast becoming the favored national rating system for green buildings. Many federal agencies and state and local governments, for example, have adopted LEED initiatives and incentives.

Will LEED gain traction in Minnesota? We think so. The more Minnesotans learn about the amount of energy buildings consume (see pages 17 and 42) and the impact buildings have on the environment, the more they will demand homes and workplaces like these four LEED projects. And that can only be a good thing.

—Christopher Hudson
REFLECTIONS AT BLOOMINGTON CENTRAL STATION IS ONE OF THE FIRST-EVER MULTI-UNIT RESIDENTIAL BUILDINGS TO PURSUE LEED CERTIFICATION

By Mason Riddle

With Twin Cities traffic congestion regularly triggering an orange alert, the new condominium project Reflections at Bloomington Central Station (on the Hiawatha light-rail line) looks better every day. The two 17-story glass towers, joined by a linear glass lobby, resemble what a Miesian hovercraft about to touch down? The crisply rectilinear towers tread lightly, with a footprint of only 10,000 square feet, and the glass walls reflect the sky and surrounding landscape in high resolution. Whether the interior views north to the Minneapolis and St. Paul skylines are preferable to those south across the expansive Minnesota River valley and adjacent nature preserve is a difficult question to answer.

Even more impressive is the fact that Reflections is every bit as sustainable as it is aesthetically pleasing. In an unorthodox move, the developer and contractor, McCough Companies, is seeking LEED-NC (New Construction) certification for the project, one of the first such requests for a multi-unit residential building. “There aren’t many condominium developers going after LEED certification,” explains Ken Potts, AIA, director of Bright Green, McCough’s Center for Excellence in Sustainability. “As a developer, you don’t own the building or units when the sustainable-design payback kicks in.” But McCough has created a new model with Reflections. “When we’re the developer, and not just the general contractor, we can be a better partner on projects with sustainable-design goals,” Potts enthuses.

The curtain wall's two patterns of glass and anodized aluminum—regularized and confetti—create a visual call and response. The nearly transparent glass provides crystal-clear reflections on the exterior and, from the interior, a heightened perception of the surrounding landscape.
What makes Reflections so green? For one, it's the best kind of transit-oriented development (TOD). The first phase in a 54-acre multi-use development built physically and philosophically on light rail, Reflections is only 110 yards from Bloomington Central Station, easily qualifying it for the LEED public transportation credit. When completed, the development will include additional condominiums and townhomes, class-A corporate office space, retail, a hotel, and a central park. Residents are only a short train ride away from the airport, the Mall of America, and downtown Minneapolis, and the retail will meet daily needs such as dry cleaning, groceries, and dining. This holistic approach to sustainable design minimizes dependence on the automobile and thus fossil fuels, reducing traffic congestion as well as numerous environmental problems, including noise and air pollution.

"Sustainable, high-density, mixed-use TOD is the new era of urbanism, and Reflections is an example of how to do it," explains David Graham, AIA, of Elness Swenson Graham Architects, Inc. (ESG), the project's architect of record. "The people choosing to live here are seeking a more efficient lifestyle. We've provided that by building creative density with high-quality public amenities around transit needs." According to Potts, many condo buyers are considering downsizing from two cars to one.

Move past the project's transit component, and the list of sustainable-design features just keeps going. The floor-to-ceiling glass walls bring natural light to 97 percent of the interior spaces, and nearly 99 percent enjoy exterior views, numbers that easily meet LEED's minimum daylight factor. Recycled materials include rebar, anodized metal framing, insulation, drywall, concrete, and steel.

A pocket of 4.25 inches of air in the triple-glazed inoperable windows virtually eliminates exterior noise.
The under-flooring for sound control is made from 100 percent recycled rubber from car tires, and all of the buildings' paint meets LEED standards for low VOC (volatile organic compounds) content.

The sophisticated, minimalist landscape design, by Minneapolis firm oslund and assoc., uses plant material that will weather Minnesota's unforgiving climate while reducing irrigation needs by 50 percent. The grid-like design, an oblique reference to the region's agrarian roots, links the building to the LRT station and the future park beyond. All parking is below grade, reducing heat islands, and the entire mechanical system is embedded in the ground and screened at grade level with an aluminum trellis.

Potts touts two other green achievements. The first is Reflections' highly engineered stormwater management system. "The quality of stormwater runoff, which ends up in the Minnesota River and nature preserve, is much improved," he says. "When McGough purchased the site, it was a sea of parking lots and rooftops. The water would run off untreated. We now have systems in place that employ a series of Best Management Practices to filter the water before it ever reaches the river, such as the intensive green roof above the parking garage. The park will also filter water." Even the curbless drives are environmentally conscious, designed to further support stormwater management by channeling and containing water within the site.

The second component is the air quality and noise reduction (Reflections is only a stone's throw from the airport) afforded by the building's triple-glazed inoperable windows. A pocket of 4.25 inches of air
between two layers of glass virtually eliminates exterior noise. With the building effectively sealed, the high-performance mechanical system filters air three times before it enters the living units, and there is one complete air exchange per hour. "IEQ [Indoor Environmental Quality] is high and certainly meets LEED criteria," Potts concludes.

For Potts, the beauty is in the details. Graham is more of a big-picture guy. "What really excites me about this project," he says, "is that residents can live in this highly sustainable building overlooking the beautiful Minnesota River valley and, thanks to LRT and intermodal transit, still have easy access to the Twin Cities' best cultural amenities—the Walker, the Guthrie, the new Central Library, the evolving Hennepin Avenue theater district, and eventually, North Loop Village and the new Twins ballpark, to name just a few. All this without having to use their cars." AMN

The two towers are connected by a single-story Miesian lobby (opposite) featuring two identical glass-and-teak vestibules. Bloomington Central Station (left) on the Hiawatha line is only a few steps away. Trellises on both towers (above) add visual interest.

"Sustainable, high-density, mixed-use transit-oriented development is the new era of urbanism, and Reflections is an example of how to do it."

—David Graham, AIA, ESC Architects
A MINNEAPOLIS COUPLE PURSUES A WHOLE NEW LEVEL OF SUSTAINABLE RESIDENTIAL DESIGN: LEED PLATINUM

It all started with the purchase of a Toyota Prius, recalls Salena Gallo, of her and her husband Jeff's conversion to a more sustainable lifestyle. "I needed to buy a new car and decided why not buy one that doesn't burn so much fossil fuel?" Then they saw An Inconvenient Truth, Al Gore's treatise on global warming. With more information gathering ("My husband is a very thorough researcher," Gallo says) came a major decision: to build a sustainably designed house that would fulfill the couple's needs for the next 30-plus years.

"Rather than buy an existing house, we want to build an eco-friendly house for the long haul, that will be healthy for our children and for the environment," says Gallo, director of creative accounts at Olive and Company in Minneapolis. Jeff Gallo is a video and commercial director who offices at home. Prefab construction panels, nontoxic materials, a modern aesthetic, and affordability were among the couple's criteria. So they turned to Shelter Architecture. "We're an architecture and interior-design firm for the middle class that puts its vision into practice through sustainable residential design," explains firm principal John Dwyer, AIA.

Dwyer, fellow principal Jackie Millea, Assoc. AIA, and the Gallos began by selecting the new LEED® home standards as a guideline. They decided to aim for the highest LEED rating, Platinum. The two-story, 1,900-square-foot house with four bedrooms, three bathrooms, and no basement will be completed in February 2007.

A small existing house on the site in Minneapolis' Bryn Mawr neighborhood will be torn down and the debris separated and sent to reuse centers whenever possible. In its place will rise a building envelope of precast-concrete panels designed to collect and hold heat "just as a thermal mass like rammed earth or masonry does," Dwyer says, adding that the wall system boasts an R-30 rating.

The concrete will be left exposed on both the exterior and interior. A super-efficient heat pump will provide supplementary heating (and cooling in the summer) to the radiant-floor heat. The house's flat roof will be painted white to reflect heat, and the detached garage will be planted with a green roof. A courtyard in between those structures will provide the couple (and their future family) with a private outdoor living space in the city.

The Gallos deliberately chose to go without a basement, as a way of forcing themselves to consume less over time (i.e., to avoid the temptation of dumping unused stuff out of sight). Instead, they asked Shelter to rigorously plan their interior and incorporate lots of built-in cabinetry to encourage them to keep life simple and tidy.

Other notable green features include cabinetry constructed of durable, sustainably harvested woods; bathroom tiles made from recycled glass, and kitchen pendant lights made from traffic stoplights; translucent resin-based 3form decorative panels and Kirei Board wall panels made of sorghum stalks; mercury-free light switches; and lots of natural light achieved through strategic window placement.

"This house beautifully exemplifies our mission: to focus on the middle-class home as one of the key factors in determining sustainability on a global level," Dwyer enthuses. According to recent statistics, he adds, the property value of a sustainably designed home, especially one with a high LEED rating, is 3 to 10 percent higher than that of a conventional home. "LEED certification is a big priority for us, because it ensures we've done things right," Gallo says. "We want other people to see that they, too, can design and live in a sustainable house."
“Rather than buy an existing house, we want to build an ECO-FRIENDLY HOUSE FOR THE LONG HAUL, that will be healthy for our children and for the environment.”

—Homeowner Salena Gallo

The Gallos asked Shelter to rigorously plan their interior and incorporate lots of built-in cabinetry to encourage them to keep life simple and tidy.
In keeping with its philosophy, an organic foods store aims for—and receives—LEED certification

By Camille LeFevre

One building, 4,000 co-op member clients, and almost as many opinions about the definition of sustainable design. LHB was faced with this challenge in the adaptive reuse of a former furniture store/Italian restaurant/bar and pool hall as a Whole Foods Co-op in Duluth. So the Duluth and Minneapolis engineering and architecture firm, which has more than 15 years of experience with sustainable design, took the logical step.

“We recommended that the co-op embrace the LEED rating system,” says LHB architect Mark Poirier, AIA. “It’s a nationally recognized tool and benchmark that gave all of us a framework for our decision making about what parts of green design to embrace.”

As a result, the 18,600-square-foot, two-level co-op natural foods store is the first LEED-certified building in Duluth, the third in Minnesota. “We’re so excited we achieved this milestone for our
While the 1953 building was being gutted, the Duluth-based Common Grounds Deconstruction removed all of the wood studs, cabinets, and doors (as well as the nails) to resell in its reuse center. Many of the wood studs, however, ended up back in the building. Some equipment from the co-op’s old store was brought over to the new location. LHB moved the building’s entrance to maximize parking, and all of the asphalt and concrete that was removed was recycled.

In the vestibule, monitors indicate the amount of energy the photovoltaic panels at the back of the store are producing. The building boasts highly efficient mechanical systems, non-ozone-depleting R410 and R404 refrigerants, and air-to-air energy recovery units. Domestic hot water is preheated with waste heat from the store’s refrigeration system. Recycled-rubber flooring; linoleum made from rapidly renewable materials; windows with recycled aluminum frames and glass; low-VOC (volatile organic compound) paints, coatings, and adhesives; cabinets of wheat and sunflower-seed board containing no urea-formaldehyde; proximity to alternative modes of transportation; bike storage and commuter showers; and natural lighting were some of the choices that earned the project LEED credits.

The building’s highly reflective white TPO (thermoplastic polyolefin) roof reduces the interior’s refrigeration load. Much of the exterior is clad with a brick-colored, fiber-cement rain-screen system that uses a Home Slicker drainplane, neoprene gaskets, and horizontal flashings to keep the building dry while shedding rain back toward foundation plantings. Inside, LHB largely left the building’s existing wood joists and roof decking, steel support structure, and concrete-block walls exposed.

The color palette, Poirier says, “was based on natural elements in our environment, like trees, water, and Lake Superior, but the more lively colors were inspired by the produce.” The co-op’s new location not only includes wider aisles, five checkouts, and an expanded deli but also dining areas with views of Lake Superior, a service elevator, a kitchen classroom, and offices. When the store opened in November 2005, Poirier recalls, “people lined up down the block to see their co-op.” Adds Murphy: “From day one, the building didn’t smell like paint or varnish; it smelled like the healthy organic food we sell here.”

“We’re so excited we achieved this milestone for our community. This was not a project with a sole proprietor. LHB helped us meet all of the visions of our members—our environmental as well as our operational goals.”

—Sharon Murphy, Duluth Whole Foods general manager
GOING FOR GOLD

BY MASON RIDDLE

Maybe it was all the employee bikes double-racked on a below-freezing October day. Or the bring-your-dog-to-work coordinator. For sure, the three worm-composting tubs full of dirt, coffee grounds, and fruit peels were conspicuous clues that Quality Bike Products (QBP) is no ordinary corporation. Founded by Steve Flagg and wife Mary Henrickson in their Bloomington home in 1981, QBP is now the largest distributor of bike parts and accessories in the United States, selling to independent vendors like Grand Performance in St. Paul and Penn Cycle in Minneapolis. Its Bloomington headquarters, located on an open campus adjacent to Hyland Lake Park Reserve, totals 250,000 square feet of decidedly casual warehouse and administrative space. T-shirts, tattoos, and tennis shoes underscore QBP's youthful culture.

Perhaps it's no surprise, then, that the progressive Flagg would pursue LEED Gold certification for QBP's recently completed 125,000-square-foot addition. What may surprise some observers is Flagg's insistence that expanding businesses can keep an eye equally on the environment and the bottom line. "We've shown that you can pursue LEED certification with a return on investment," he enthuses. "The building will have a 15-year return on investment or less, which is proof that you can build an environmentally friendly building and do it for sound economic reasons."

The glassy, rectangular two-story addition, designed by the architecture and engineering firm LHB, forms a wide V with the existing building and showcases sustainable design at every turn. Some 34,000 square feet of open, second-floor office space is daylit via a slightly curving glass curtain wall, and the entire addition employs high-efficiency fluorescent lighting with occupancy sensors. The white ceiling, meanwhile, reflects ambient light, reducing exterior light pollution. To make room for the expansion, QBP demolished...
“BY BRINGING THE CONSTRUCTION MANAGER IN AT THE BEGINNING, WE WERE ABLE TO CLEARLY ASSESS THE DESIGN OPTIONS FROM BOTH SUSTAINABILITY AND COST-ANALYSIS POSITIONS. WHAT DIDN’T MAKE FINANCIAL SENSE TO STEVE AND HIS TEAM WAS DROPPED, AND WE PURSUED OTHER AVENUES FOR GOLD CERTIFICATION.”

—LHB principal Rick Carter, AIA
The V-shaped QBP headquarters maximizes its natural setting (it borders Hyland Lake Park Reserve) with rain gardens, retention ponds, drought-resistant indigenous plant material, and open gathering spots for visitors, employees, and their pets.

a building from which 83 percent of the materials were recycled or salvaged. The expansion also uses low-VOC (volatile organic compound) materials, and more than 30 percent of all materials were manufactured locally. Rather than install a green roof, QBP invested in the installation, now in progress, of 40 kW photovoltaic roof panels that will provide an onsite, renewable energy source with an eight-to-ten-year return on investment.

QBP project manager Scott Chambers, like Flagg, emphasizes that the company pursued sustainable design not only for "altruistic" reasons but also because it made good business sense. "Every LEED strategy we considered had to have a payback," he says. "We redeveloped and expanded a light-industrial site. If we had moved, we would have lost employees and eaten up more land for a new building. By building vertically and condensing our inventory storage system, we saved on land and maintenance costs." Indeed, QBP increased their storage density by erecting 30-foot-high shelves in the 36-foot-high space, halving the warehouse footprint. Fork trucks run through narrow aisles on an in-floor wire guidance system as the employee moves up and down in the lift with inventory. Overall, the building’s energy performance exceeds standard codes by 40 percent.

The client-architect team was equally diligent in pursuing eco-friendly design on the exterior. Ponds and rain gardens reduce stormwater runoff, and porous pavers circling the parking lot filter water before it seeps into the ground or retention ponds; these features also eliminate the need for an irrigation system. As for the landscaping, sod runs a distant second to drought-resistant plants and prairie grasses.

According to LHB principal Rick Carter, AIA, QBP is the first metro-area, large commercial company to aggressively seek LEED Gold certification from the outset. "By bringing the construction manager, Kraus-Anderson, in at the beginning, we were able to clearly assess the design options from both sustainability and cost-analysis positions," Carter explains. "What didn’t make financial sense to Steve and his team was dropped, and we pursued other avenues for Gold certification."

In November, QBP submitted documentation to the U.S. Green Building Council for LEED certification. Whether the expansion is awarded Gold or Silver, it serves as proof that green design can be achieved at market-rate cost. "As industry leaders, we wanted to take a leadership role in demonstrating to our employees, vendors, and customers how value is added through sustainable design," says Chambers. "We are a big physical presence in the community and we wanted to set an example. We want to be a good neighbor in spite of our size. But every LEED strategy had to have a payback if we were going to do it. Green design makes an environmental statement but also a strong business statement." AMN
THINKING ABOUT TOMORROW

This has been one fun issue to put together. What architecture enthusiast doesn’t enjoy thinking about the future—how the world is changing, and what that means for architects and the built environment? We at Architecture Minnesota think the future holds some amazing opportunities, as well as some very hefty responsibilities. Actually, those opportunities and responsibilities are already here.

In the following pages, our writers take up topics like: the emerging design economy, and how businesses are seeking out the creative know-how of architects and other design professionals; the blending of humanitarianism and sustainable design both here and halfway around the world, as a way to prepare ourselves for depleted energy and water resources and natural disasters; and the steps architects and builders can take to combat global warming. A workable plan put forward by the nonprofit Architecture 2030, for example, calls for the gradual reduction of building CO₂ emissions to zero over the next quarter-century.

These and other articles will whisk you into the near future. What’s true in life is also true for architecture and design: It’s always good to think ahead.

—Christopher Hudson
In the emerging **design economy**, businesses that understand the value of design are eager to learn the interdisciplinary creative processes of architects and other design professionals.

**Design in Demand**

BY CAMILLE LEFEVRE

David Graham, AIA, has a vision for revitalizing the American city, beginning with downtown Minneapolis: to fill in the existing urban fabric with contemporary, mixed-use residential buildings that will “rebuild neighborhoods in the heart of the city,” he says. But Graham’s not referring to high-end condos of historicist design, to which there appears to be no end in sight. “Right now there is more than enough higher-priced housing available,” he emphasizes.

Instead, his urban-infill vision focuses on sophisticated residential design that a broader spectrum of the population can afford. “The future is design within reach: tasteful, contemporary infill buildings in mid-range prices,” he says, echoing the name of the modernist furniture store while emphasizing the cost difference. Graham, a principal with Elness Swenson Graham Architects, has designed two such projects, the Zenith and the Revue, which will also nurture the public realm by maintaining connections to the street with large windows, street-level entry terraces, landscaped sidewalks, and active mixed-use streetscapes.
In other words, Graham continues, “We’re delivering ownership condos that are attractive to a more design-savvy middle market yet below the cost of most new construction downtown. We’re not only delivering a housing value, but design as value. Using design to differentiate one place to live from the other at a lower price point: That’s the challenge now.”

Sound familiar? It should. Essentially, Graham is espousing a philosophy that’s been part of American culture from at least the Bauhaus era (1920s and 1930s) through Target’s current “Design for All” campaign: the importance of bringing good design to the masses. But the Zenith and the Revue also represent a new phase in this ever-evolving philosophy, and its growing influence. The products of ESG’s interdisciplinary architectural process, in which urban-design principles, landscape architecture, neighborhood context, midrange price point, and the “design to differentiate” concept are creatively integrated, the Revue and the Zenith are physical manifestations of the new “design economy.”

**The Designer’s Skill Set**

A successor to the information or knowledge economy (and the service and manufacturing economies before that), the design economy isn’t merely about style or surface appliqué. The design economy has emerged as businesses turn to the innovations, problem-solving methods, and interdisciplinary creative processes of the design professions to overhaul their work practices in order to compete in the world marketplace.

That’s right. It’s the business world, and not the design professions, that is driving the design economy. In today’s global market of inexpensive, mass-produced products and services, businesses need to find the creative edge with which to attract consumer attention and retain consumer loyalty if they are to survive. That competitive edge is design. Design is the differentiator that communicates value.

“The design economy is not just about styling things. It’s a deeper-trenched understanding of creative issues that businesses are struggling to understand,” explains Stephen Knowles, AIA, a principal with the Minneapolis architecture and design firm Walsh Bishop. “Businesses are trying to figure out how to wrap themselves around and capture that creativity, energy, and marketability that the design professions have always been concerned with.”
Local retail giant Target, with its "Design for All" campaign, and industrial-design firm Worrell, Inc. offer products aimed at increasingly design-savvy consumers.

The creative savvy with which firms like ESG and Walsh Bishop process a complex matrix of user needs, client strategies, and social outcomes into one deceptively simple whole is a skill that design-economy proponents like Roger Martin, dean of the University of Toronto's Joseph L. Rotman School of Management, are urging businesses to learn—and quickly. "Corporations still see themselves as product and service factories, and if they think at all about elegant design, it's in that context," Martin writes in a 2005 online article, "Why Decisions Need Design," for BusinessWeek.

Large corporations, he added, are essentially "decision factories" with "fundamentally flawed" and "extremely low-quality decision design . . . driven more by producer desires than user needs." To succeed in the design economy, Martin continues, businesses must think more as designers do, deeply and multi-dimensionally. "The designer dives well below the surface to fathom exactly how someone will use the artifact to be designed. . . . Great design is characterized by deep user understanding, visualization of creative resolution of tensions, collaborative prototyping to enhance solutions, and continuous modification and enhancement after launch."

Design: The Tie That Binds

In a 2006 article for Fast Company titled "Tough Love," Martin gets right to the point: "Design, in short, is becoming an ever-more-important engine of corporate profit: It's no longer enough simply to outperform the competition: to thrive in a world of ceaseless and rapid change, business people have to out-imagine the competition as well. They must begin to think—to become—more like designers."

To acquire these new skill sets, businesses are turning to Twin Cities architecture and design firms for insight. Walsh Bishop, for instance, receives a steady stream of calls and visits from business representatives who are "very curious about what we do, as they try to figure out how design can add value to what they're producing by deepening their process and marketability," says Knowles, who leads interdisciplinary project teams that include animators, graphic designers, and prototype fabricators, as well as engineers, architects, and interior designers.

In today's global market of inexpensive, mass-produced products and services, businesses need to find the creative edge with which to attract consumer attention and retain consumer loyalty if they are to survive. That competitive edge is design—the differentiator that communicates value.

In his 2005 book A Whole New Mind: Moving from the Information Age to the Conceptual Age, Daniel Pink describes an era in which "artists, inventors, designers, storytellers, caregivers, consolers, big-picture thinkers . . . will now reap society's richest rewards and share its greatest joys." Like the design
The design economy has emerged as businesses turn to the innovations, problem-solving methods, and interdisciplinary creative processes of design to overhaul their work practices in order to compete in the world marketplace.

**The Right Conditions**

As design continues to move from the cultural margins of the elite to mainstream American society, increasingly it’s viewed “not just as a value-added activity that designers do, but as a creative way of thinking that non-designers need to learn,” says Tom Fisher, Assoc. AIA, dean of the University of Minnesota’s new College of Design. “In the global economy, if businesses don’t invest in design, they won’t thrive. I don’t think we’ve ever heard that from the business community before.”

So how did we get here? What contributed to the rise of the design economy? After World War II, Fisher explains, the U.S. “found itself the lone industrial giant, without any real competition.” By the late 1990s, as Thomas Friedman recounts in his 2006 book *The World Is Flat: A Brief History of the 21st Century*, the Internet and global telecommunications had connected three billion people across the planet—particularly in high-population, high-production, low-wage countries like China and India—with unprecedented access to the free market.

>> continued on page 50
Most of us have had a transformative experience in a building, a moment in which we seem to be in the presence of something very deep and very powerful. That experience can take place in a major monument, one of the great buildings of the present or past. But it can also happen in our encounters with the most humble of places, among the poorest or most disadvantaged people, who, for lack of material wealth, seem to have an abundance of the social and spiritual kind. Because architecture is the most expensive of the arts to produce, practitioners rarely get a chance to work with low-income people, but when they do, magic can result.

by THOMAS FISHER, ASSOC. AIA

In separate projects, multinational firm Arup Associates and local firm Shelter Architecture set a humanitarian course for architectural practice in the 21st century
The interiors of the Druk White Lotus School (right) enjoy ample daylight, use local materials, and deploy a heavy timber, braced-frame structure to resist earthquakes. An outdoor court provides play space for the children (below).

Druk White Lotus School

The Druk White Lotus School, located in the village of Shey, high in India’s Himalayan Mountains, offers an example of this magic. Designed by the large multinational firm Arup Associates for the Drukpa Trust, a charity located in the United Kingdom under the patronage of the Dalai Lama, the school seems at once ancient and modern, a stone-and-timber structure with several technically advanced features. Local contractors completed the first phase of the school in December 2001: a nursery school for 80 children. Arup has designed the facility to expand to accommodate 750 to 800 students from the ages of 3 to 18, with a health clinic, open-air Buddhist temple, library, computer and science labs, vocational workshops, a dining hall, and residential units for both students and staff.

What makes the project noteworthy is how Arup's designers used the school not just to do a lot for people who have very little, but also to demonstrate how we might all have to build in the future, when energy and water resources are as scarce in the rest of the world as they are in the high-altitude desert of Ladakh, on the western border of Tibet. As the jury said of the school, when it won World Architecture Awards in 2002 for Best Asian Building, Best Education Building, and Best Green Building, “The whole project is conceived as a model of appropriate and sustainable design. Building materials are mostly indigenous to Ladakh, with careful auditing of sustainable-resource supplies.”

The school’s initial phase has two parallel wings, with one containing the nursery and kindergartens and the other housing the first-year classes and administrative spaces. Between the two timber-framed wings stands a walled, open-air courtyard with a row of trees separating the teaching and play spaces on either side. Locally quarried stone walls enclose the school on the north, east, and west sides, with large glass walls facing south. The master plan calls for additional classroom wings that face south, forming a square in the center of which stand common facilities, with a residential district running along a pedestrian path to the north.

The design evolved out of an unusual process that began in 1997. Every year, Arup gave an engineer or architect a leave of absence to live in Shey and assist the client and contractors. This enabled the Arup designers to understand the severity of the climate and the isolation and seismic volatility of the location. As a result, they used cross-braced, heavy-timber sway frames to counteract earthquake forces, and granite-clad, mud-brick cavity walls to increase thermal performance and durability. Air-lock entrances, ample south-facing windows, and small stoves in each classroom further enhance the heating of the interior in this cold, arid climate. The lack of water also led the designers to develop solar-assisted waterless pit latrines that use natural ventilation and a solar flue to vent off flies and odors, while allowing liquids to percolate back into the soil. At the same time, photovoltaic-powered water pumps draw water for storage in underground tanks.

The school contrasts, says Arup designer Francesca Galeazzi, with “the trend among some local architects and engineers to design new buildings in steel and concrete, an approach wrongly perceived as ‘better’ because it’s identified with Western modernity.” Perhaps it took a Western firm like Arup to see the limitations of such modernity, and to see the potential of what Ladakh’s Buddhist culture has to offer as we look to a future environment that resembles that region. In a series of charts titled “Drivers of Change 2006,” Arup documents the expected rise of the global population to nine billion by 2050, the accepted fact that we have now exceeded the biosphere’s ecological capacity by 20 percent, and the likely prospect that two out of three people worldwide will be affected by water shortages by 2025. With such crises looming, we in the West may have as much to learn from the Ladakh people in how to live joyfully with few resources as they have from us in how to create such remarkable structures.

Arup’s designers used the school not just to do a lot for people who have very little, but also to demonstrate how we might all have to build in the future, when energy and water resources are as scarce in the rest of the world as they are in the high-altitude desert of Ladakh.
The Calhoun Photography Studio and Residence (lower left, right) has a floodable first-floor gallery; the residence and photographic archives are located on the second floor. The rear building (right) uses the same strategy of elevating the living spaces.

Calhoun Photography Studio

Famous for their documentary photography of daily life in New Orleans (see examples on this page and the next), the Calhouns lost more than two-thirds of their nearly 10,000 negatives in the flooding that followed Hurricane Katrina. Dwyer heard about the destroyed studio from a colleague at Tulane University and met with the Calhouns. "The loss of much of their collection was tragic," says Dwyer. "It was not just about the black community but about life itself."

Shelter has developed a schematic design for the studio, reusing cypress, brick, and slate salvaged from the original building. A first-floor gallery, constructed of concrete and glass, will have removable frames to allow future floodwaters to move through the space, while the second floor will contain the residence and the photography storage area, above flood level. A small building out back, erected first, will enable the Calhouns to live on the property during the construction of the main building. "We will be doing a design charrette for the studio and gallery in November," says Dwyer, along with "the official groundbreaking of the back house."

Americans do not have to go halfway around the world, however, to see the future. New Orleans has given us a much closer glimpse of what the dramatic climate changes of the coming century may mean for coastal cities, and what architects have to offer communities seeking to rebuild in the wake of both natural and manmade disasters.

New Orleans has given us a much closer glimpse of what the dramatic climate changes of the coming century may mean for coastal cities, and what architects have to offer communities seeking to rebuild in the wake of both natural and manmade disasters.
As Arup did with the Druk White Lotus School, Shelter has participated in fundraising for the Calhoun project, working with Architecture for Humanity in pursuit of grant money. And in line with Arup’s decision to allow staff to spend large blocks of time on the Himalayan site, Shelter has worked pro bono, on location, to bring the project to a point where fundraising becomes possible. Such donation of time may not seem like a sustainable practice over the long term, but working on projects like the Indian school and the New Orleans studio can have other, more remunerative rewards. Consider the amount of press both projects have received, be it major architectural awards in the case of the Ladakh school or articles about the Calhoun studio in newspapers like the New York Times and Houston Chronicle. Or consider the knowledge gained from developing new building strategies—water-conserving measures in the school, flood-resistant design in the studio—for environmental conditions we may all face in the future.

Architects need to be not only more proactive in helping the most disadvantaged people but also more aware of the prototypical nature of what they design. What arises out of pro bono work can meet the needs of literally millions of people, with the potential profits that follow from that. So while projects like these may not pay the rent over the short term, they offer extraordinary long-term benefits as well as transformative experiences for all involved. And no one can ever take those riches away. AMN
Making a Statement

On October 7, 2004, AIA Minnesota’s board of directors unanimously and enthusiastically adopted a position statement on climate change, propelling the organization into a new role—that of advocating for state renewable electricity standards, public transit funding, and energy-efficient building incentives—with the intent to protect the health, safety, and welfare of the public by reducing greenhouse gas emissions attributable to the built environment. The American Institute of Architects’ recent endorsement of the 2030 “Challenge (carbon-neutral buildings) is now focusing the profession’s attention on global warming at the national level.

AIA Minnesota’s climate change statement was inspired in part by Edward Mazria’s October 2003 Metropolis article “Turning Down the Global Temperature” and by the AIA Minnesota Committee on the Environment’s (COTE) strong desire to support state energy legislation. It set precedent as the first position statement to originate from a local AIA committee and established protocol for formal advocacy within AIA. Look for AIA Minnesota and COTE to continue taking a leadership position on global warming through collaborative ventures with the University of Minnesota’s College of Design, the Minnesota Pollution Control Agency, Fresh Energy, and others. You can download a copy of the AIA Minnesota 2004 Climate Change Position Statement at www.aia-mn.org/committees/pdf/cote/climate_position_04.pdf

—Doug Pierce, AIA, COTE chair

Buildings are major contributors to greenhouse gas emissions, therefore, taking action to reduce the impact of buildings on climate change is part of the architecture profession’s commitment to protecting the health, safety and welfare of the public.

Climate change results primarily from activities that release heat-trapping greenhouse gases such as carbon dioxide (CO₂) and methane (CH₄) into the atmosphere. CO₂ is the primary greenhouse gas. Atmospheric concentrations of CO₂ and CH₄ have been increasing for about two centuries as a result of human activities and are now higher than they have been for over 400,000 years. Since 1750, CO₂ concentrations in the atmosphere have increased by 30 percent and CH₄ concentrations in the atmosphere have increased by 150 percent. The main sources of CO₂ include burning fossil fuels such as coal, gas, and oil, and deforestation. Seventy-five percent of Minnesota’s electricity is produced by coal-fired power plants, and buildings consume 65% of that electricity.

Based on current scientific information about the causes and impacts of climate change, the Members, Officers and Board of Directors of the American Institute of Architects Minnesota herein affirm that AIA Minnesota will advocate for design practices and government policies that reduce greenhouse gas emissions. We are committed to the challenging goal of reducing climate change impacts in the state of Minnesota.

Historically, the American Institute of Architects (AIA) has been a leader in supporting changes that improve our built environment. For example, in the early 1930s when engineers developed insulation and a means to manufacture it, the AIA studied the issue and endorsed the concept. This endorsement contributed to launching new industries and re-thinking the way building envelopes are designed, resulting in improved human comfort, increased productivity and greater energy efficiency.

Today the AIA has an opportunity to support important changes in the way we build, influencing our quality of life now and in the future. By designing to reduce climate change, we can take a leadership position on one of the most critical issues currently facing our state, our nation and our world.

If we do not act to slow global warming, the United Nations Intergovernmental Panel on Climate Change predicts that by the year 2100 the earth’s average temperature is expected to increase three to ten degrees Fahrenheit. Climate change in Minnesota over the next 100 years is projected to occur more than 100 times faster than the change in climate since the last ice Age. In recent decades, the Minnesota fall freeze has been moving later by 1.5 days per decade and spring lake ice-out earlier by 2 days per decade.

If we act now, we can provide for the health, safety and welfare of the public while having a positive impact on the economy. For example, British Petroleum recently developed an internal strategy for curbing carbon emissions, resulting in a ten percent company-wide reduction in those emissions and a $650 million net boost to the company over a three-year period. Germany has created 40,000 jobs manufacturing wind machines while cutting its use of coal in half since 1990. Minnesota wind power could produce 10 times the electricity our state consumed in 2000 when fully developed. Homebuyers could save $81 million a year in energy if their homes were built to be energy-efficient. When passed, the U.S. Climate Stewardship Act of 2003 is projected to provide a net GDP increase of $100 billion to the American Economy by 2015.

The United States has over five million commercial structures and 76 million residential structures. These buildings account for 65 percent of U.S. electricity consumption, 36 percent of U.S. primary energy use, and 30 percent of U.S. greenhouse gas emissions. Over 10 billion square feet of new construction and renovation take place in the U.S. each year. The magnitude of the building sector means that decisions about the future design of new and remodeled structures will be a major determinant of total greenhouse gas emissions. The architectural community must be actively engaged in supporting reduced emissions in order to reduce climate change.

AIA Minnesota represents the interests of architects before local, state and national policy-making bodies. AIA Minnesota’s active involvement in the political process enables the organization to advocate effectively on legislative, regulatory, and related issues of importance to AIA members.

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The 2030 °C Challenge calls for an immediate 50-percent decrease in building emissions, followed by an additional 10-percent cut every five years until the goal of carbon-neutral, zero-emission buildings is reached in 2030.

**The Numbers**

Architecture 2030 and its 2030 °C Challenge offer a bold plan to reduce building CO₂ emissions to zero over the next quarter-century

BY WILLIAM WEBER

Edward Mazria, AIA, is on a coast-to-coast barnstorming tour of the U.S. explaining the facts of global warming and laying out a partial solution to any and all corners. One recent stop was the West Coast Green Conference, where he delivered the opening keynote on Architecture 2030 (www.architecture2030.org)—a nonprofit organization he founded to address global climate change—and its 2030 °C Challenge.

Mazria began his presentation by asserting that the earth is at a tipping point; if anthropogenic global warming continues unchecked, we will not be able to avert massive climate change. A projected increase in average earth temperature of 2°C (3.6°F) by 2050 above pre-industrial levels will melt polar ice caps, causing rising sea levels, killing reefs and fisheries, shifting climate zones, and flooding heavily populated coastal regions. Mazria’s 2003 white paper on the topic—“It’s the Architecture, Stupid!”—identifies one major cause. Roughly half of U.S. energy consumption and an equal percentage of global-warming-causing CO₂ emissions is attributable to buildings and the building industry.

The grim facts explained, Mazria outlined his vision for a workable solution. The 2030 °C Challenge calls for an immediate 50-percent decrease in building emissions, followed by an additional 10-percent cut every five years until the goal of carbon-neutral, zero-emission buildings is reached in 2030. Each year in the U.S. we tear down 1.75 billion square feet of obsolete buildings, build 5 billion square feet new, and renovate an additional 5 billion square feet. This staggering rate of construction means that by 2035 three-quarters of all buildings in the U.S. will be new or renovated. These numbers reveal an opportunity to construct an ecologically compatible built environment in a little over a quarter-century.

In closing, Mazria issued a challenge to the room, the same challenge he posed in an open letter to architects, planners, and builders (available on the Architecture 2030 website) in January 2006: Join the 2030 °C Challenge and act to avert irreversible damage to the environment. The good news is, people are heeding the call. The 2030 °C Challenge has been formally adopted by the American Institute of Architects and the U.S. Conference of Mayors. AMN

Edward Mazria will discuss the 2030 °C Challenge and zero-emission design in Minnesota at the 2007 Earth Day Forum at the University of Minnesota’s College of Design in April. For more information, visit www.cdes.umn.edu

January/February 2007 ARCHITECTURE MINNESOTA 43
An architect with a passion for rural Minnesota leads a statewide effort to help smaller communities plan for the next 50 years.

Minnesota 2058: Thriving by Design, an initiative sponsored by Minnesota Rural Partners and the University of Minnesota’s Center for Rural Design, will kick off with a statewide charrette in 2008.
Love of Country

By Nancy A. Miller

To illustrate his discussion of the future of Minnesota, Dewey Thorbeck, FAIA, director of the University of Minnesota's Center for Rural Design (ruraldesign.coafes.umn.edu), looks to the past. He unfurls a map, dated 1895, and argues that our image of and vision for the state, especially the rural landscape, has not evolved significantly since the year that map was first printed. Thorbeck aims to change that.

He founded the Center for Rural Design in 1997 to bring the innovative thinking of research-based design to rural communities across Minnesota. The small but thriving center, which is unique in the nation, works to understand rural issues and opportunities regionally, attacking the outdated paradigm of a monolithic "outstate" Minnesota.

"We know from working in various regions of the state that the issues are hugely different depending on where you are," says Thorbeck. He and his staff have worked in communities in every corner of Minnesota, and while many issues they examine are unique to the rural landscape, other issues, such as affordable housing, public health, education, transportation, the environment, and even conflicts arising from overdevelopment, are not so different from those faced in urban areas.

However, because most rural cities and townships do not have the resources to undertake comprehensive visioning and planning projects on their own, the Center for Rural Design emphasizes building working partnerships. Research fellow Steve Roos describes the center's working process as "looking at inter-jurisdictional relationships and trying to identify opportunities for people to work together." That approach has spurred Thorbeck and his team to reexamine traditional working methods; for example, they have suggested using landscape features such as watersheds, rather than political boundaries, to construct a planning framework.

Back to the future. With the state's upcoming sesquicentennial in mind, the Center for Rural Design has collaborated with Minnesota Rural Partners to establish a three-year, future-oriented planning effort called "Minnesota 2058: Thriving by Design." Recognizing that rural Minnesota comprises a dynamic, evolving landscape, the initiative aims to be proactive in anticipating issues and opportunities. At the heart of the effort is a multi-regional, statewide charrette planned for 2008 in which the Center for Rural Design and University of Minnesota faculty from a variety of disciplines, along with architects, planners, and community partners, will work together to create a new vision for the future of Minnesota. "In my mind," says Thorbeck, "I see this as a huge celebration throughout the state, in which each region comes together as in an old New England town meeting, to speculate on the next 50 years." Sounds like we'll need a new map. AMN
Graduate architecture students at the University of Minnesota explore the emerging field of biomimicry

Innovative by

By William Weber

In fall 2005, students and faculty at the University of Minnesota's School of Architecture came together for a kickoff workshop for a new graduate studio exploring the application of biomimicry in design. The participants gathered around a table strewn with what appeared to be the contents of a natural history museum diorama—shells, bones, snake skins, bird nests, and every size and shape of seed pod. These items would serve the group as "nature's champions," workshop leader Dayna Ayers Baumeister from the Biomimicry Guild explained, asking the students to "quiet their cleverness" and spend the weekend exploring nature through a new lens. But this was no touchy-feely, ain't-nature-great classroom experience. Rather, it posed profound questions about the ways in which nature can inspire innovative design.

"The underlying ideas of sustainability and biomimicry are the same. Nature already knows how to do what we are trying to figure out—that is, how to live sustainably on the planet."

—John Carmody, director of the University of Minnesota's Center for Sustainable Building Research

It has been 10 years since Janine Benyus' Biomimicry: Innovation Inspired by Nature introduced readers to a new way of thinking about the relationship of nature to design. Her book is a glimpse into the world of cutting-edge scientist-designers who learn from nature to create the technology of tomorrow. Benyus refers to this quest as "the conscious emulation of life's genius" and outlines three ways that we can draw knowledge and inspiration from nature:

NATURE AS MODEL. Biomimicry is a new science that studies nature's models and then imitates or takes inspiration from these designs and processes to solve human problems.

NATURE AS MEASURE. Biomimicry uses an ecological standard to judge the "rightness" of our innovations. After 3.8 billion years of evolution, nature has learned: What works. What is appropriate. What lasts.
NATURE AS MENTOR. Biomimicry is a new way of viewing and valuing nature. It introduces an era based not on what we can extract from the natural world, but what we can learn from it.

Not surprisingly, architecture schools across the country have been early explorers of the ideas contained in Benyus' book. The University of Minnesota studio, led by assistant professor Marc Swackhamer, used model, measure, and mentor as a guide for research and a yardstick for success. Swackhamer devised the course to alternate between periods of research and speculation and periods of synthesis and design, and he often returned to one particular notion espoused by Benyus and Baumeister: quieting human cleverness. "It’s important early in the design process to observe, listen, and analyze rather than problem solve," he explains. Students often jump to conclusions, but here they were encouraged to be curious and to allow for trial and error, which led to richer projects.

As the studio progressed, the students pursued an array of architectural problems, including fire resistance, portable structures, heat retention, acoustic attenuation, and on-site water treatment. For each they sought out a natural champion to both inspire and educate them. Swackhamer, meanwhile, invited biologists from the University of Minnesota’s Bell Museum as well as mechanical engineers to aid the students in their investigations. Biomimetic design can emulate nature in form (physical shape, which follows function), process (the way nature makes and maintains itself, and harvests and stores energy), or ecosystem (the dynamic relationships and dependencies between organisms, both physical and social). Acustomed to the study of form and function, most of Swackhamer’s students took the first—and simplest—approach.

Cream of the Crop

One such student was Ben Pauly. Pauly, Swackhamer recalls, became curious about how nature deals with fire, particularly fast-burning forest fires. In his study of several tree species, Pauly found that the Giant Sequoia is protected from fire by the movement of water through its bark by capillary action. He then proceeded to design a clay-tile skin that could be pre-saturated with water in the event of a fire. "Ben developed a thorough understanding of capillary action, ultimately designing tiles sized and shaped accordingly," Swackhamer explains. "The size and spacing of the openings were all determined by capillary flow." The tiles are ovoid-shaped and interlock end to end to create a cladding system; the pattern of openings resembles simplified Louis Sullivan filigree. The organic shape of the tiles was not intentional; form simply followed function as Pauly studied water movement through the material.

Courtney Kruntorad learned that the barn owl adjusts the feathers on its parabola-shaped face to focus sound into its ears, and relaxes the feathers to dampen sound when it sleeps. Kruntorad eventually designed a beautiful, dynamic wall system of gathered and pleated fabric that can be turned “on” to allow sound to pass through or “off” to dampen sound in response to conditions.
Barn swallow nests combine a base of common materials—mud and saliva—with location-specific materials—twigs, leaves, paper, plastic. These observations led Michael Kisch to design a metal clip—analagous to the mud and saliva—to be used in combination with plastic strapping to form a tensile net that can be filled in with found materials to create a shelter in disaster situations.

Two students’ feathered champions led them in different directions. Michael Kisch used the idea of the barn swallow’s nest-making process to design a system for constructing temporary shelters in disaster situations. Swallow nests combine a base of common materials with location-specific materials. “All swallow nests are made of mud and saliva,” Swackhammer explains. “But in a natural or rural setting a swallow’s nest will also contain twigs, leaves, and other found materials. Likewise a nest in an urban setting will incorporate paper, fabric, and plastic.” These observations led Kisch to design a metal clip—analagous to the mud and saliva—to be used in combination with plastic strapping to form a tensile net that can be filled in with found materials to create a shelter.

Courtney Kruntorad took a more direct form-and-function approach to the problem of sound attenuation. She learned that the barn owl adjusts the feathers on its parabola-shaped face to focus sound into its ears, and relaxes the feathers to dampen sound when it sleeps. Kruntorad eventually designed a beautiful, dynamic wall system of gathered and pleated fabric that can be turned “on” to allow sound to pass through or “off” to dampen sound in response to conditions.

From the outset, Corri Kluba was determined to take a different approach. “Part of what I was trying to do was to explore biomimicry at a large scale,” she says. Ironically, it was a small mouse in her kitchen that started her thinking about architecture as a barrier to the natural world. “All around us is tamed nature,” Kluba says. “I began to wonder if we could live more mutually with nature.” Her curiosity led her to examine mutualisms in nature such as the relationship between fungus and algae, which together form lichen. Ultimately, for Kluba, the relationship between Iridomyrmex ants and the Myrmecodia plant resonated the most.

The ants and the plants have a true mutual relationship,” she explains. “Each gains from the relationship: The plant grows a special chamber in which the ants deposit their waste, which in turn provides nutrients for the plant to grow nectar for the ants.” The closed-loop patterns expressed in the relationship spurred Kluba to think about wastewater patterns on a community scale, and how they might be closed. Specifically, she looked at how a food-producing greenhouse and a Living Machine®—a living wastewater-treatment system pioneered by Canadian biologist John Todd—might be integrated into the fabric of a neighborhood.

It’s Out There

Of course, universities aren’t the only explorers and practitioners of biomimicry. In fact, biomimetic products have already entered the public consciousness, if not the average household. Anyone who watched Aussie Ian
"Thorpedo" Thorpe swim to gold at the 2000 Sydney Olympics will recall his controversial apparel. Signaling the death of the traditional Speedo, he wore a revolutionary full bodysuit made from Fastskin™. The fabric, inspired by the hydrodynamic skin of a shark, has ridges mimicking the V-shaped dermal denticles on sharks; the ridges decrease drag and turbulence, thus increasing a swimmer's speed through the water.

Also on the market is self-cleaning paint that employs the Lotus-Effect®, so termed because it mimics the surface structural characteristics of the self-cleaning lotus leaf. It's fairly simple: The paint surface, like the lotus leaf, is super-hydrophobic, which means that it causes water to bead and roll off. And because of the strong adhesion between water and dirt, the water carries the dirt away with it. The same idea may someday lead to self-cleaning windows.

Looking ahead, biomimicry may make its biggest splash in the area of industrial design and manufacturing. Consider, for example, what the abalone has to teach us (Benyus trumpets this example in her book). An abalone produces a mother-of-pearl-lined shell by secreting proteins or polysaccharides into the water that self-assemble on the inner surface of the shell into a three-dimensional matrix of open compartments; calcium and carbonate ions in the seawater crystallize and fill in the matrix. The result is mother-of-pearl that is twice as strong as our strongest ceramics. Benyus is quick to point out that the mollusk accomplishes all this at ambient temperatures without toxic byproduct or expenditure of large amounts of energy. By contrast, the manufacture of manmade products typically requires a "heat, beat, and treat" approach, referring to the energy use, complexity, and toxicity of most

Instructor Marc Swackhamer devised the course to alternate between periods of research and speculation and periods of synthesis and design, and he often returned to one particular notion espoused by Benyus and Baumeister: quieting human cleverness. "It's important early in the design process to observe, listen, and analyze rather than problem solve," he explains.

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In his study of several tree species, Ben Pauly found that the Giant Sequoia is protected from fire by the movement of water through its bark by capillary action. He then proceeded to design a clay-tile skin that could be pre-saturated with water in the event of a fire.
As the global economy flattened, U.S. business found itself competing for manufacturing, research, and design work, on which it had long held a monopoly. Then came the dot-com bust, followed by the terrorist attacks of September 11, 2001. The trifecta "pushed the country over the edge. It was more than the economy could take," says Bob Worrell, founder of the Minneapolis industrial-design firm Worrell, Inc.

"In 2002, we saw the biggest industry shakeout in the design professions we'd ever seen," Worrell continues. "There was only one place to go: upmarket, with smarter, better-quality, more-sophisticated products that created value through differentiation." For decades, Worrell says, he had encouraged his clients to embrace "the interdisciplinary design process we offer," which drew from the firm's staff of graphic and industrial designers, industrial engineers, an anthropologist, ethnographic researchers, and a prototyping engineer. But the clients balked.

"Today," Worrell says, "our process hasn't changed, but businesses are having to." Whether they want to or not, Fisher emphasizes. "3M apparently has to create a successful product every week to stay in business. And they can't just be doing yellow Post-it Notes in pink. They need to take existing technology and invent something totally new. In this global marketplace, the pressure on companies to keep constantly creative is tremendous."

Hotbeds of Creativity
The creative talent that businesses seek will increasingly be found in the nation's cities, according to Richard Florida's recent research. Florida's article "Where the Brains Are," in the October 2006 issue of The Atlantic, charts the "mass relocation of highly skilled, highly educated, and highly paid Americans to a relatively small number of metropolitan regions." While Florida doesn't cite Minneapolis/St. Paul as one of his "superstar cities," color-coded maps of Minnesota's 1970 and 2000 populations in the article show significant migration to the metro area.

"The physical proximity of talented, highly educated people has a powerful effect on innovation and economic growth," writes Florida,

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Hirst Professor of Public Policy at George Mason University and author of The Rise of the Creative Class (2002). “That’s all the more true in a postindustrial economy dependent on creativity, intellectual property, and high-tech innovation.”

Worrell confirms that, in today’s economy, “Our creativity is becoming an extremely valuable commodity. Our currency is our creativity—the ability to visualize, to think broadly about concepts and possibilities, but also to go deep into the manufacturing segment to provide real products, real value, real revenue opportunity. Our firm has become far more assertive and proactive at promoting our creativity, and our revenues have tripled since 2002.”

The University of Minnesota’s new College of Design, another reflection of this interest in the design economy, will also contribute to the consolidation of creative talent in the Twin Cities, Fisher says. The college, which merged the former College of Architecture and Landscape Architecture with such allied professions as interior, graphic, and apparel design, hopes to “graduate students with broad and deep interdisciplinary knowledge, who can design teapots and buildings but also re-conceive whole businesses, industries, and product lines,” Fisher says. “In today’s design economy, you can’t separate the innovative product from the innovative process and innovative facilities.”

In answer to Florida’s concerns that America’s brainiest cities will also see a drain of “the traditional lower and middle classes,” leaving the urban areas “inhabited by a core of wealthy workers leading highly privileged lives” in high-priced real estate, residences like the Zenith and the Revue by ESG will provide creative professionals of all ages and incomes with the design value they seek—in Minneapolis, at least.

“To create contemporary residences at affordable prices that build on traditional, higher-density urban fabric—that’s a key design principle for me,” Graham says. “It’s all about good design for more people. The beauty is, people can get something aesthetically great for less, if we work at it.”

As Worrell says of the design economy, with all of its challenges, opportunities, and possibilities, “Now is the time for designers.”

As Worrell says of the design economy, with all of its challenges, opportunities, and possibilities, “Now is the time for designers.”

**AMN**
Save the Guthrie! Again.

<< continued from page 13

it captures Nouvel's original design, erasing many of the unfortunate and disfiguring alterations the actual building has endured over the decades."

Ms. Cowles-Dayton has stated publicly that, while she regrets that the move will result in the original theater's demolition, many of the historically significant elements of Nouvel's design were irreparably altered by previous renovations and additions. "The building that was designed is not the building we see today," she explains. "Nouvel's innovative metal-panel cladding with its midnight blue color and ghostly images was removed in the 2012 renovation because of severe UV degradation. Unfortunately, it simply wasn't designed to resist the severe changes in our climate."

According to the records of the Northwest Architectural Archives at the University of Minnesota, the building has endured a number of architectural modifications over its 50-year history—so many, in fact, that only a few of the area's older residents clearly remember the gleaming luster of Nouvel's original vision. The familiar beige-brick exterior with square punched windows, the mirrored-glass observation silo on the top of the building, and the bulky, concrete virtual-activities wing with its Endless Tunnel all represent drastic modifications to the original design. With so little of the original intact, Cowles-Dayton argued successfully before the State Historic Preservation Office (SHPO) last May that it should deny historic designation, a decision that is now facing multiple appeals within the state's court system. It was during the SHPO hearing that Cowles-Dayton famously said, "Frankly, tearing the whole thing down is the only humane thing to do."

It was this callous statement, says SOGGY's Rubenstein, that energized the ad-hoc preservation cause she now leads. "Tearing down the Guthrie and replacing it with sanitized hologram fakes does not qualify as preservation. No matter how many optical-nerve stimulators you strap to my head, nothing beats bricks and mortar for a quality architectural experience." Rubenstein, who says she's spoken frequently with Nouvel in recent days (now the oldest living man in France), remains inspired by the optimism of early-21st-century culture and architecture—a time when architects were chiefly concerned with making interesting forms and keeping the water out, and not with the number of terabytes per square foot. "We're real people fighting for real buildings with real history," says Rubenstein. "That's the message we'll be taking to the Minnesota Supreme Court."

AMN
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Making a Statement

Therefore, AIA Minnesota will join with other Minnesota organizations to support reductions in greenhouse gas emissions by endorsing the Climate Stewardship Act.

AIA Minnesota will advocate for greenhouse-gas-reducing design practices and government policies that:

- Require and encourage energy-efficient private residential and commercial buildings while providing for good indoor air and environmental quality;
- Require and encourage state-bonded buildings to perform 30% better than the Energy Code and meet the B3 Sustainable Guidelines;
- Require and encourage clean, renewable power sources such as wind, solar and bio-mass and/or discourage the continued use and/or construction of fossil-fuel-burning power plants;
- Encourage and support full implementation of the Minnesota Renewable Energy Objectives (REO) and passage of the federal Renewable Electricity Standard (RES);
- Require and encourage low-impact community design by encouraging municipal and regional planning that embraces the energy-efficient transportation of humans, materials and products and provides for carbon fixing through planted open space;
- Require and encourage material selections that improve energy efficiency and support ecologically sound forest stewardship practices;
- Require and encourage the immediate reduction of greenhouse gas emissions to levels 60% to 80% below 1990 levels as recommended by the U.N. Intergovernmental Panel on Climate Change (IPCC).

AIA Minnesota Committee on the Environment: AMN

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manufacturing processes. So will the abalone inspire new processes? It's already happening: Using rapid prototyping and three-dimensional printers, researcher Paul Calvert of the University of Arizona Materials Laboratory is mimicking the process to make actual objects.

Green Through and Through

It goes without saying that biomimicry is a decidedly green endeavor. John Carmody, director of the University of Minnesota's Center for Sustainable Building Research, notes the synchronous relationship between sustainability and biomimicry: "The underlying ideas of sustainability and biomimicry are the same. Nature already knows how to do what we are trying to figure out—that is, how to live sustainably on the planet."

The inherent connection between the two is further underscored by Benyas' "canon of nature's laws":

Nature runs on sunlight; Nature uses only the energy it needs; Nature fits form to function; Nature recycles everything; Nature rewards cooperation; Nature banks on diversity; Nature demands local expertise; Nature curbs excesses from within; and Nature taps the power of limits.

Outlined in this manner, nature is indeed a model, measure, and mentor for sustainable design.

Carmody sums up the excitement surrounding biomimicry: "Biomimicry has a psychological resonance," he observes. "It shifts your mindset from an anthropocentric worldview—the view that the world is ours for the taking, that we can solve all problems with technology alone—to a wider view in which we are surrounded by nature's encyclopedic library of solutions on how to survive on the planet." He then adds: "We just need to 'quiet our cleverness' and let the ideas flow in."
Communication and collaboration are critical to the success of every design project. Improve yours with a seamless flow of data that lets you design, manage and distribute information to all partners to ensure that projects are completed on-time and on-budget.

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DIRECTORY OF CONSULTING ENGINEERING FIRMS

With this issue, Architecture Minnesota presents the 15th 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
PE Professional Engineer
PG Professional Geologist
AIA American Institute of Architects (registered)
ACCP American Institute of Certified Planners
CCM Certified Construction Manager
CID Certified Interior Designer
CIIH Certified Industrial Hygienist
ASLA American Society of Landscape Architects
PLS Professional Land Surveyor (registered)
RA Registered Architect
RCDD Registered Communications Distribution Designer
RLS Registered Land Surveyor
LS Land Surveyor (registered)
SE Structural Engineer (Certified)
LEED Leadership in Energy and Environmental Design
AP Accredited Professional

ALBERTSON ENGINEERING INC.
2198 Goodrich Avenue
St. Paul, MN 55105
Tel: (651) 699-5082
Fax: (651) 699-5084
Email: shane@albertson-engineering.com
www.albertson-engineering.com
Established 1998
Firm Principal
J. Shane Albertson, PE, LEED
Firm Personnel by Discipline
Mechanical Engineers 1
Technical 2
Total in Firm 2
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.
Shakopee Public Works, Shakopee, MN
Shakopee Aquatics Center, Shakopee, MN
Enterprise Rent-A-Car Offices, Eagan, MN
St. Cloud State University Public Safety Center and Ramp, St. Cloud, MN
Metro Transit Park and Ride Ramps, Minnetonka and Bloomington, MN, West Oak Condominiums, St. Louis Park, 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
Established 1971
Other MN Offices: Chanhassen, Crosby, Duluth, International Falls, Mankato, Marshall, Rochester
Other Offices: La Crosse, Wausau and Menomonie, WI, Rapid City, Beresford and Pierre, SD, Fort Meyers and Palatka, FL
Contact: Bob Struve, PE, Dir. of Bus. Dev.
Firm Principals
Terry E. Swor, PE
Richard Stehly, PE
Daniel Larson, PE
Mike Schmidt, PE
Jeff Voyen, PE
Robert Kaiser
Tom Venema, PE
continued next column

ARMSTRONG, TORSETH, SKOLD & RYDEEN, INC.
8501 Golden Valley Road, Suite 300
Minneapolis, MN 55427
Tel: (763) 545-3731
Fax: (763) 525-3289
Email: information@atstr.com
www.atstr.com
Established 1944
Contact: Paul W. Erickson, AIA
(763) 545-3731
Firm Principals
Paul W. Erickson, AIA
Jim T. Lange, PE
Gaylen D. Melby, PE
Terry L. Stofferahn, PE
Bob J. Gunderson, ASLA
Firm Personnel by Discipline
Civil Engineers 10
Structural Engineers 19
Other Professional 1
Technical 8
Administrative 4
Total in Firm 42
Our nationally-recognized and award-winning firm provides innovative civil, structural and restoration engineering design solutions.
Mill City Museum, Minneapolis, MN;
Bet Shalom Synagogue, Minnetonka, MN;
Lakeville High School South, Lakeville, MN;
Ivy Tower Condominiums, Minneapolis, MN;
Landscape Arboretum, Chanhassen, MN;
Shakopee High School, Shakopee, MN

ATSER 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, ventilation upgrade projects using positive displacement induction units; Osseo Area Schools, Osseo Junior High School and North View Junior High School, upgrade pool ventilation systems; Farmington School District, Farmington High School, re-commissioning HVAC systems; North Branch School District, North Branch Primary, re-commissioning HVAC Systems; Prior Lake-Savage Area Schools, facility study; Metro Transit, fire alarm upgrades consisting of a distributed AutoCad-based monitoring at 11 metropolitan locations.

BKBM ENGINEERS, INC.
5930 Brooklyn Boulevard
Minneapolis, MN 55429-2518
Tel: (763) 843-0420
Fax: (763) 843-0421
Email: rlmere@bkbm.com
www.bkbm.com
Established 1967
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
Firm Personnel by Discipline
Civil Engineers 10
Structural Engineers 19
Other Professional 1
Technical 8
Administrative 4
Total in Firm 42
continued next column
continued next column
BKV Group offers mechanical, electrical, structural engineering utilizing technology integral with environmental issues to bring clients into a productive and efficient environment they can control and enjoy. With over 25 years of governmental, corporate, academic and mixed-use residential experience, BKV Group has engineered new construction, additions and renovations.

Plymouth Public Safety Building and City Hall, Plymouth, MN; Rondo Community Outreach Library/University Dale Headquarters, St. Paul, MN; National Guard Composite Maintenance Complex, Minneapolis, MN; Silver Lake Village Redevelopment, St. Anthony, MN; Mainstreet Bank, Minneapolis, MN

BRAUN INTERTEC CORPORATION

1101 Hampshire Avenue South
Minneapolis, MN 55438
Tel: (952) 995-2000
Fax: (952) 995-2020
www.braunintertec.com

Established 1957
Other Offices: St. Paul, St. Cloud, Lakeville, Rochester, Hibbing and Albertville, MN; Fargo and Bismarck, ND; La Crosse, WI
Contact: Kay Bergstrom (952) 995-2076

Continued next column

CLARK ENGINEERING CORP.

621 Lilac Drive North
Minneapolis, MN 55422
Tel: (763) 549-9196
Fax: (763) 541-0056
Email: kmcelmury@clark-eng.com
www.clark-eng.com
Established 1938
Other Offices: Aberdeen and Sioux Falls, SD

Cain Ouse ASSOCIATES, INC.

3191 East Highway 96
White Bear Lake, MN 55110
Tel: (651) 426-9549
Fax: (651) 426-5049
Email: jac@cainouse.com
www.cainouse.com
Established 1983
Contact: Jay J. Cain, PE (651) 426-9549

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

Firm Personnel by Discipline
Mechanical Engineers 4
Electrical Engineers 2
Technical 2
Administrative 2
Total in Firm 12

Mechanical and electrical engineering for nearly all types of facilities and infra-structure. Common project types include churches, schools, public works, health care, entertainment, retail, and all levels of housing. Technical specialties include interior and exterior lighting, ground source heat pumps and public works specialties.

Continued next column

Shalom Home East, St. Paul, MN; City Public Works Facility, Bloomington, MN; New High School, River Falls, WI; St. Anthony Mills Apartments, Minneapolis, MN; Ethan Allen Home Interiors, Woodbury, MN; St. John's Lutheran Church, Lakeville, MN

Continued next column
**DARG BOLGREAN MENK, INC.**

7575 Golden Valley Road, Suite 210
Golden Valley, MN 55427
Tel: (763) 544-8455
Fax: (763) 544-8914
Email: harry@dargmenk.com
www.dargmenk.com
Established 1966
Contact: Harry D. Menk, PE (763) 544-8914 Ex. 16

**Firm Principals**
Gene Bolgren, PE
Harry D. Menk, PE

**Firm Personnel by Discipline**

<table>
<thead>
<tr>
<th>Structural Engineers</th>
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<tbody>
<tr>
<td>Technical</td>
<td>2</td>
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<tr>
<td>Administrative</td>
<td>1</td>
</tr>
<tr>
<td>Total in Firm</td>
<td>7</td>
</tr>
</tbody>
</table>

Provides structural engineering services on commercial/retail, office/warehouse, academic, industrial, governmental, medical/health, housing, religious, parking and specialty structures. With expertise in steel, concrete, masonry, and wood, DMB has engineered new construction, additions and renovations on over 5,000 projects in 23 states.

Fairbault: Public Works Facility, Fairbault, MN; Rexmax/Results Office Building, Plymouth, MN; Riverside Golf Clubhouse, Bozeman, MT; Zumbro Valley Office and Treatment Campus, Rochester, MN; Waconia Fire Station, Waconia, MN; St. Therese Senior Housing, Brooklyn Park, MN.

---

**DARLEJS ASSOCIATES INC.**

1624 North Riverfront Drive
Mankato, MN 56001
Tel: (507) 435-6790
Fax: (507) 388-9225
Email: mdoelejs@dolejsinc.com
Established 1977

**Firm Principals**
Joseph Dolejs, PE
Christopher J. Dolejs, PE
Michael Dolejs, PE

**Firm Personnel by Discipline**

<table>
<thead>
<tr>
<th>Mechanical Engineers</th>
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<td>Administrative</td>
<td>2</td>
</tr>
<tr>
<td>Total in Firm</td>
<td>15</td>
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</tbody>
</table>

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, Fairbault, MN; Howard Lake High School, Howard Lake, MN; St. Augusta Fire Hall, St. Augusta, MN; Willowbrook Cooperative Housing, Mankato, MN; Southeast Technical College Addition and Remodel, Winona, MN; Heraeus Company Corporate Office Building, White Bear Lake, MN.

---

**DUNHAM ASSOCIATES, INC.**

50 South Sixth Street, Suite 1100
Minneapolis, MN 55402-1540
Tel: (612) 465-7550
Fax: (612) 465-7551
Email: info@dunhameng.com
www.dunhameng.com
Established 1960

**Firm Principals**
Kathleen Kolbeck, PE, LEED AP
Dale Holland, PE, LEED AP
Jay Rohkohl, PE, LEED AP
Steve Gentilli, PE, LEED AP
Ron Feldhaus, PE, LEED AP

**Firm Personnel by Discipline**

<table>
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<tr>
<th>Mechanical Engineers</th>
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<td>Electrical Engineers</td>
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<td>Registered Communications, Distribution Designer (RCDD)</td>
<td>2</td>
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<tr>
<td>Administrative</td>
<td>12</td>
</tr>
<tr>
<td>Total in Firm</td>
<td>75</td>
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</table>

Dunham is committed to delivering the best mechanical and electrical engineering service for each of our clients. We serve clients in the aviation, commercial, education, healthcare, hospitality and retail industries. Dunham also offers specialized expertise in commissioning, telecommunications and CFD modeling for HVAC analysis. Demonstrating our commitment to sustainable engineering design, over half of our technical staff is LEED accredited.

Great River Energy Headquarters, Maple Grove, MN; Oceanaire Seafood Room, Multiple Locations; Fairview Ridge Hospital, Millenium Phase II, Burnsville, MN; Hinckley Hotel and Casino, Hinckley, MN; University Center Rochester Health Sciences Renovation, Rochester, MN; Warren E. Burger Federal Building and Courthouse Commissioning, St. Paul, MN.

---

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; Mounds View Public Schools Mechanical and Electrical Upgrades, Mounds View, MN.

---

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; Mounds View Public Schools Mechanical and Electrical Upgrades, Mounds View, MN.
**ELLERBE BECKET, INC.**

800 LaSalle Avenue  
Minneapolis, MN 55402  
Tel: (612) 376-2000  
Fax: (612) 376-2221  
Email: info@ellerbebecket.com  
www.ellerbebecket.com

Established 1909  
Other Offices: Dallas, TX; Kansas City, MO;  
San Francisco, CA; Washington, D.C.;  
Dubai, United Arab Emirates; Doha, Qatar  
Contact: Steve Wernersbach, PE  
(612) 376-2221

**Firm Principals**  
Jon Buggy, AIA  
Steve Wernersbach, PE  
David Landsverk, PE  
Greg Cardinal, PE  
Dan Dickenson, PE, LEED AP  
Jon Iverson, PE

**Firm Personnel by Discipline**

<table>
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<tr>
<td>Structural Engineers</td>
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<tr>
<td>Mechanical Engineers</td>
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<tr>
<td>Electrical Engineers</td>
<td>24</td>
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<td>Architects</td>
<td>145</td>
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<tr>
<td>Other Professional</td>
<td>55</td>
</tr>
<tr>
<td>Technical</td>
<td>28</td>
</tr>
<tr>
<td>Administrative</td>
<td>70</td>
</tr>
<tr>
<td>Total in Firm</td>
<td>378</td>
</tr>
</tbody>
</table>

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 firm offers expertise in a wide range of facility types, including hospitals and clinics, mission critical facilities, laboratories, corporate workplace, learning environments and heating/cooling plants.

Department of Veterans Affairs Orlando, New Bed Tower, Orlando, FL; NRG Energy, Inc., Multiple Projects, Minneapolis, MN; Regions Hospital Expansion, 2009, St. Paul, MN; Dow Chemical Company, Building 1790 Renovation, Midland, MI; Emmanuel St. Joseph Hospital, Multiple Projects, Mankato, MN; Sioux Valley Hospital, Central Plant Expansion, Sioux Falls, SD

---

**ENGINEERING DESIGN INITIATIVE**

420 North 5th Street, Suite 565  
Minneapolis, MN 55401  
Tel: (612) 343-5965  
Fax: (612) 343-5982  
Email: jhruby@edlimited.com  
www.edlimited.com

Established 2002  
Contact: Jay Hruby, PE (612) 343-5965

**Firm Principals**

Jay Hruby, PE  
Larry Svitak, PE

**Firm Personnel by Discipline**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Mechanical Engineers</td>
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<tr>
<td>Electrical Engineers</td>
<td>3</td>
</tr>
<tr>
<td>Technical</td>
<td>6</td>
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<tr>
<td>Administrative</td>
<td>1</td>
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<tr>
<td>Total in Firm</td>
<td>14</td>
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</tbody>
</table>

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; Roberts County Corrections/Facility, MN; St. Cloud Public Library, St. Cloud, MN; SPPS Central High School Technology Upgrade, St. Paul, MN; City of Minneapolis Waters Works Maintenance Facility, Fridley, MN; Blue Earth County Law Enforcement Center, Mankato, MN

---

**ERICKSEN ROED & ASSOCIATES, INC.**

2550 University Avenue West, Suite 201-S  
St. Paul, MN 55114  
Tel: (651) 251-7570  
Fax: (651) 251-7571  
Email: info@ericksenroed.com  
www.ericksenroed.com

Established February, 1985  
Other Office: Eau Claire, WI

**Firm Principals**

Alfred “Bud” Erickson, PE  
James D. Roed, PE  
William T. Buller, PE, SE  
Michael A. DeSutter, PE  
Robert A. Curtis, PE  
Robert J. Quinn, PE

**Firm Personnel by Discipline**

<table>
<thead>
<tr>
<th>Discipline</th>
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<tbody>
<tr>
<td>Structural Engineers</td>
<td>32</td>
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<tr>
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<tr>
<td>Administrative</td>
<td>3</td>
</tr>
<tr>
<td>Total in Firm</td>
<td>60</td>
</tr>
</tbody>
</table>

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.

Department of Human Services Building and Parking Ramp, St. Paul, MN; Guthrie Theater and Parking Ramp, Minneapolis, MN; Cobalt Residential Towers, Lund’s Foods and Retail, Minneapolis, MN; University of Minnesota Molecular Cellular Biology, Minneapolis, MN; Target North Campus, Brooklyn Park, MN and Target Stores, Nationwide
FUTRELL FIRE CONSULT & DESIGN, INC.

8860 Jefferson Highway
Osseo, MN 55369-1500
Tel: (763) 425-1001
Fax: (763) 425-2234
Email: scottff@ffcdi.com
www.ffcdi.com
Established 1989

Firm Principals
Scott A. Futrell, PE (WI)
Rich Peheson, PPI, PE (MN, SD, AR, OK)

Firm Personnel by Discipline
Professional Engineers 2
Technical 3
Administrative 2
Total in Firm 7

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.

GAUSMAN & MOORE ASSOCIATES, INC.

1700 West Highway 36
700 Rosedale Towers
Roseville, MN 55113
Tel: (651) 639-9606
Fax: (651) 639-9619
Email: gmmhla@gausman.com
www.gausman.com
Established 1935

Other Offices: Duluth, MN; Portland, OR; Los Angeles, CA

Firm Principals
James W. Ciefer, PE
James A. Kelley, PE, LEED AP
Dean Hersey, PE
Robert B. Fuller, PE
James D. Manning, PE
Edward L. Studer, PE
Dave T. Blume, PE

Firm Personnel by Discipline
Mechanical Engineers 11
Electrical Engineers 10
Fire Protection Engineers 1
Other Professionals 1
Technical 41
Administrative 12
Total in Firm 76

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.

University of Minnesota Duluth Labowitz 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, Duluth, MN; U.S. Army Reserve Training Centers and Maintenance Facilities, Nationwide; Retail; Nationwide

HAMMEL, GREEN AND ABRAMSON, 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 Offices: Rochester, MN; Milwaukee, WI; Sacramento, Los Angeles and San Francisco, CA
Contact: Julie Luers, Dir. of Mktng, (612) 758-4673

Firm Principals
Chuck Cappelletti, PE, LEED AP
Jeff Harris, PE, LEED AP
Leigh Harrison, PE, LEED AP
Kenny Horns, PE, LEED AP
Doug Maust, PE, LEED AP
Van Shagolov, PE

Firm Personnel by Discipline
Civil Engineering 5
Structural Engineering 39
Mechanical Engineering 46
Electrical Engineering 22
Other Licensed Engineers 8
Architects 214
Other Professional 31
Technical 41
Administrative 87
Total in Firm 487

HGA has engineering expertise in the design of a broad range of facility types. In addition to traditional HVAC, structural and electrical systems, HGA has specialists in 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.

Insure Health System, Maple Grove, MN; General Mills, Golden Valley, MN; Honeywell, Minneapolis, MN; Motorola, Schaumburg, IL; 3M, St. Paul, MN; University of Minnesota, Minneapolis/St. Paul, MN

INSPEC, INC.

5801 Duluth Street
Minneapolis, MN 55422
Tel: (612) 546-3434
Fax: (612) 546-8669
E-mail: fkings@inspec.com
www.inspec.com
Established 1973

Other Offices: Milwaukee, WI; Chicago, IL
Contact: Fred King (612) 546-3434

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

Firm Personnel by Discipline
Civil Engineers 7
Structural Engineers 2
Architects 3
Technical 48
Administrative 23
Total in Firm 89

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.

Fairview Health System, Maple Grove, MN; General Mills, Golden Valley, MN; Honeywell, Minneapolis, MN; Motorola, Schaumburg, IL; 3M, St. Paul, MN; University of Minnesota, Minnepolis/St. Paul, MN

continued next column
KARES-FAULCONBRIDGE, INC.
670 West County Road B
St. Paul, MN 55173
Tel: (651) 771-0880
Fax: (651) 771-0878
Email: kfikfiengines.com
Established 1996
Firm Principals
William J. Karges, Jr., PE
James A. Faulconbridge, PE
Firm Personnel by Discipline
Mechanical Engineers 24
Electrical Engineers 6
Chemical Engineers 2
Commissioning 10
Administrative 12
Designers 50
Total in Firm 104
Karges-Faulconbridge, Inc. (KFI) is a unique engineering firm of engineers, designers, professional estimators, and commissioning specialists registered in 50 states, the District of Columbia and Puerto Rico. Located in St. Paul, KFI’s office building was the first building in Minnesota to obtain the LEED-EB Gold certification. KFI provides engineering and construction management services for industrial, institutional, healthcare, and commercial organizations. 50 million gallon per year - Greenfield Ethanol Plant, Heartland Corn Products, Winthrop, MN: Forest Elementary, Robbinsdale Schools, Robbinsdale, MN: Best Buy Stores, Nationwide: Nassef Specialty Clinic, United Hospital, St. Paul, MN: Commissioning 29 Buildings, Osseo Schools, Osseo, MN
KRECH, O'BRIEN, MUELLER & ASSOCIATES, INC.
6115 Cahill Avenue
Inver Grove Heights, MN 55076
Tel: (651) 451-4605
Fax: (651) 451-0971
Email: jkrech@komainc.com
www.komainc.com
Established 1987
Firm Principals
James H. Krech, PE
Michael J. Lisowski, PE
Daniel O. Brien, AIA
Brady R. Mueller, AIA
Cindy Doughtett Nagel, CID
KRECH O'JARD & 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: David Krech, PE (218) 727-3282
Firm Principals
David Krech, PE
Rich Ojard, PE
Marvin Anderson, PE
Jeff Heller, PE
Russell Betts, AIA
Firm Personnel by Discipline
Civil Engineers 22
Structural Engineers 15
Mechanical Engineers 4
Registered Land Surveyors 2
Architects 4
Technical 32
Administrative 9
Total in Firm 70
Krech O'Jard & Associates, P.A. specializes in structural, civil, mechanical and industrial engineering. We are registered structurally in all 50 states, five Canadian provinces and Puerto Rico. Whether your project is big or small, our engineers will design and develop options that ensure success.
LANDEK FORM ENGINEERING COMPANY
800C Butler Square
100 North Sixth Street
Minneapolis, MN 55403
Tel: (612) 252-9070
Fax: (612) 252-9070
Email: info@landform.net
www.landform.net
Established 1994
Firm Principals
Darren B. Lazan, RLA
Other Office: Phoenix, AZ
Contact: Darren B. Lazan, RLA
(612) 252-9070
Firm Personnel by Discipline
Civil Engineers 14
Structural Engineers 67
Mechanical Engineers 8
Electrical Engineers 5
Other Professional 11
Technical 32
Administrative 15
Total in Firm 172
Landform provides civil engineering, planning and urban design, landscape architecture and land surveying services. Our broad range of local and national clients includes developers, architects, corporate/commercial groups, builders, cities, and other governmental entities. Specialties include mixed-use, retail, office, hospitality, residential, medical campuses and public/institutional.
Mound Harbor Renaissance, Mound, MN; Methodist Hospital Heart and Vascular Center, St. Louis Park, MN; ADC World Headquarters, Eden Prairie, MN; Heritage Square at Legacy Village, Maplewood, MN; Providence, Empire Township, MN; Hardwood Creek, Lino Lakes, MN
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 1975
Firm Principals
Lee Granquist, PE
Jack Pastore, SE, AIA
Kesh Ramduler, PE
Firm Personnel by Discipline
Civil Engineers 14
Structural Engineers 67
Mechanical Engineers 8
Electrical Engineers 5
Other Professional 11
Technical 32
Administrative 15
Total in Firm 172
Headquartered in White Bear Lake, Minnesota, our multi-disciplinary firm specializes in structural, civil, mechanical and industrial engineering. We are registered structurally in all 50 states, five Canadian provinces and Puerto Rico. Whether your project is big or small, our engineers will design and develop options that ensure success.
 Guthrie Theater, Minneapolis, MN; Minneapolis Central Library, Minneapolis, MN; Sauk Rapids Fire Station, Sauk Rapids, MN; Central Minnesota Federal Credit Union, Melrose, MN; 2006 Athletic Facilities Construction at Wyoming High School, Cottonwood, MN; Howard Lake-Waverly-Winsted New High School, Howard Lake, MN
LKB 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
Contact: Karla Sampson (651) 633-1223

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

Firm Personnel by Discipline
Mechanical Engineers 16
Electrical Engineers 3
Technical 23
Administrative 7
Total in Firm 49

LKB Engineers, Inc. (LKB) 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 master planning, design phases, construction documentation, construction administration and commissioning.

University of Minnesota TCF Bank Stadium, Minneapolis, MN; Shubert Theatre Renovation, Minneapolis, MN; Fairview Southdale Per-natal, Children and Family Services Remodel, Minneapolis, MN; Middelbury College Starr Axinn Center, Middelbury, VT; Federal Reserve Cleveland Commissioning, Cleveland, OH; Inver Hills Community College, Fine Arts Addition, St. Paul, MN

LOUCKS ASSOCIATES

7200 Hemlock Lane, Ste. 300
Minneapolis, MN 55369
Tel: (763) 424-5505
Fax: (763) 424-5822
E-mail: home@loucksassociates.com
www.loucksassociates.com
Established 1976

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

Firm Personnel by Discipline
Civil Engineers 9
Other Professionals 8
Technical 35
Administrative 4
Total in Firm 56

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.

Highland Catholic Church, St. Paul, MN; Allianz Corp. Facility, Golden Valley, MN; Protein Design Lab (PDL), Brooklyn Park, MN; Boston Scientific, Maple Grove, MN; CVS Pharmacy; North Quarry/Silley Mixed Use, St. Paul, MN; Minnesota State Fair, St. Paul, MN; Staples Hospital, Staples, MN; Maple Grove Hospital, Maple Grove, MN

MATTSON MACDONALD YOUNG, INC.

901 North 3rd Street, Suite 100
Minneapolis, MN 55401
Tel: (612) 827-7825
Fax: (612) 827-0805
Email: davem@mattsonmacdonald.com
www.mattsonmacdonald.com
Established 1983

Firm Principals
David H. Macdonald, PE
Stephanie J. Young, PE

Firm Personnel by Discipline
Structural Engineers 8
Technical 3
Administrative 2
Total in Firm 13

continued next column
MCCONKEY JOHNSON
SOLTERRMAN, INC.
241 Cleveland Avenue South, Suite B2
St. Paul, MN 55105
Tel: (651) 698-5626
Fax: (651) 698-5628
Email: mjseg@qwest.net
www.mcconkeyjohnsonsoltermann.com
Established 1978
Contact: Richard W. Johnson. PE
(651) 698-5626

Firm Principals
Richard W. Johnson, PE
Christian Soltermann, PE

Firm Personnel by Discipline

Structural Engineers 3
Technical 2
Administrative 1
Total in Firm 6

Domain civil 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 14 states.

Beltrami County Government Center and Judicial Court, Bemidji, MN: Lone Oak Center, Eden Prairie, MN; Triple Play Sports Complex, Prior Lake, MN; Choice Financial Group, Fargo, ND; Eden Prairie Fire Station No. 4, Eden Prairie, MN; Carlson Real Estate, Plymouth, MN.

MICHAUD COLEY ERICKSON
333 South Seventh Street, Suite 1200
Minneapolis, MN 55402
Tel: (612) 339-4941
Fax: (612) 339-8354
Email: wdollahan@michaudecoley.com
www.michaudecoley.com
Established 1994
Contact: Wanda Dorginger-Dollahan
(612) 673-6964

Firm Principals
Dean A. Rafferty, PE
Douglas C. Cooley, PE
Marty T. Talber, Jr.
Joseph A. Tennyson

Firm Personnel by Discipline

Mechanical Engineers 57
Electrical Engineers 45
Fire Protection Engineer 1
Administrative 12
Total in Firm 115

MCE designs HVAC, plumbing, fire protection, electrical, illumination, security, 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 and IAQ analysis.

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 Oakmede 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

Firm Personnel by Discipline

Structural Engineers 1
Administrative 5
Total in Firm 15

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

OLSSON ASSOCIATES
6600 France Avenue South, Ste. 230
Edina, MN 55435
Tel: (952) 941-0477
Fax: (952) 941-0644
Email: communications@oaconsulting.com
www.oaconsulting.com
Established 1955

Other Offices: Lincoln, Omaha, Grand Island, South Sioux City, Holdrege, Hastings and Scottsbluff, NE; Phoenix and Tucson, AZ; Denver, CO; Kansas City and Springfield, MO; Overland Park, KS; Sioux City, IA.

Contact: Brandon Anderson, PE
(952) 927-3805

Firm Principals
Roger Severin, PE
Patty McManus, MS
Jack Lynch, RLA
Brandon Anderson, PE
Tim Gross, PE
James G. Sokolowski, PE

Firm Personnel by Discipline

Civil Engineers 137
Structural Engineers 6
Mechanical Engineers 10
Electrical Engineers 13
Other Engineers 8
Landscape Architects 5
Other Professional 45
Technical 168
Administrative 45
Total in Firm 608

Since 1956, Olsson Associates has been providing our clients with complete and comprehensive design and consulting engineering services. With expertise in such disciplines as transportation, structural, water/wastewater, land development, landscape architecture, mechanical/electrical, power electrical, surveying, environmental sciences, and water resources, Olsson offers clients a full complement of technical resources.

Lee’s Summit West High School, Lee’s Summit, MO; Mystic Meadows, Farmington, MN; Antelope Valley, Lincoln, NE; Temple Sports Complex, Tempe, AZ; Wal-Mart Super Centers, Various Locations throughout MN, NE, CO and ND; El Paso County GIS Stormwater Master Plan, El Paso County, CO.

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
Other Office: Gulfport, MS

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

Firm Personnel by Discipline

Structural Engineers 12
Technical 18
Administrative 3
Total in Firm 33

Provides structural design for all types of projects utilizing steel, concrete, masonry, and timber systems, along with pre-cast and post-tensioned concrete and space frame systems. Specialty structural designs include multi-story floating buildings, along with marine design, barge modifications, and mooring dolphins and, since 2001, providing anti-terrorism designed structures for military.

Hoigaards, St. Louis Park, MN; Mankato Skyway, Mankato, MN; Grammar Club of Edina, Edina, MN; Holy Cross Village, South Bend, IN; Grand Biloxi Casino Hotel and Spa, Biloxi, MS; Island View Casino Resort, Gulfport, MS.
Paid Advertising  /  2007 Directory of Consulting Engineering Firms

RLK INCORPORATED

6110 Blue Circle Drive, Suite 100
Minnetonka, MN 55343
Tel: (952) 933-0972
Fax: (952) 933-1153
Email: jdietrich@rlkinc.com
www.rlkin.com
Established 1959
Other MN Offices: Ham Lake, Duluth, Hibbing, Oakdale
Contact: John Dietrich (952) 933-0972

Firm Principals
Vern Swing, PE
Joseph Samuel, PE
Mark Scholle, PE
Charlie Melcher, PE
John Dietrich, ASLA
John Jam尼克, PE

Firm Personnel by Discipline
Civil Engineers 36
Landscape Architects 7
Planner 2
Other Professionals 68
Total in Firm 114

RLK, Inc. is a professional consulting firm which partners with architects, property owners and developers to provide land development services. RLK’s core services are civil and transportation engineering, master planning, landscape architecture, municipal engineering and land survey services. RLK has experience in managing the plan approval process, obtaining site entitlements, and in producing site documents from concept through completion.

Dean Lake Mixed-use Development, Shakopee, MN; Cedar Point Commons, Richfield, MN; Great River Centre, Otsego, MN; Cabela’s, Rogers, MN; Village Creek, Andover Station, Andover, MN; Brooklyn Park, MN; Knollwood Super Target, St. Louis Park, MN

SCHOELL & MADSON, INC.

15050 23rd Avenue North
Plymouth, MN 55447
Tel: (763) 746-1600
Fax: (763) 746-1699
Email: mail@shoellmadson.com
www.shoellmadson.com
Established 1956
Other MN Office: Elk River
Contact: Dana Swindler, CEO
(763) 746-1606

Firm Principals
Dana Swindler
Scott Harri, PE
Dan Nickols, PLS
Tom Goodrum, Planner
Jay Hill, PE, PLS
Paul Schroeder, RLA

Firm Personnel by Discipline
Civil Engineers 15
Landscape Architects 5
Registered Land Surveyors 3
Other Professional 15
Technical 10
Administrative 5
Total in Firm 53

Schoell Madison offers planning, landscape architecture, civil engineering, land surveying, wetlands and environmental services to the land development market. We serve both private and government and specialize in entitlements and site design.

Target Medina, Medina, MN; Mid-Town Exchange, Minneapolis, MN; Candler Mountain, Lakeville, MN; Stone’s Throw, Hassen Township, MN; Shakopee Public Utilities Service Center, Shakopee, MN; River Point, Elk River, MN

SEBESTA BLOMBERG

2381 Rosegate
Roseville, MN 55113
Tel: (651) 634-0775
Fax: (651) 634-7400
www.sebesta.com
Established 1994
Other Offices: Boston, MA; Chicago, IL; Ames, IA; Rochester, MN; Rosslyn, VA; Dallas, TX; Detroit, MI; Shanghai, PR China
Contact: Rick Sieversen

Firm Principals
James J. Sebesta, PE
Paul J. Blomberg, PE
John A. Carlson, PE
Dean R. Sharpe, PE
Oleksa P. Breslauer, PE
Tony R. Litton, PE

Sebesta Blomberg is a specialty engineering and management-consulting firm providing services to institutional, industrial, health care, energy and government markets nationwide. Services include: utility infrastructure modernization and optimization, building systems design and analysis, commissioning, LEED® facilitation, sustainable process engineering, power generation, transmission and distribution, facilities management support, and construction services.

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, Stable and Eisenberg, Rochester, MN; Dallas-Fort Worth International Airport, Dallas, TX; Bail State University, Central Plant Engineering, Muncie, IN

SHORT ELLIOTT HENDRICKSON INC. (SEH)

Butler Square Building, Ste. 710C, 100 N. 6th Street, Minneapolis, MN 55403
Tel: (612) 758-6700
Fax: (612) 758-6701
www.sehin.com
Established 1927
Other MN Offices: St. Paul, Minnetonka, St. Cloud, Brainerd, Cannon Falls, Duluth, Virginia, Grand Rapids, Gaylord, Glencoe, Rochester and Worthington
Other Offices: Chippewa Falls, Rice Lake, New Richmond, Wausau, Madison, Appleton, Sheboygan and Milwaukee, WI; Chicago, IL; Lake County and Gary, IN; Sioux Falls, SD; Cheyenne, WY; Boulder, Denver, Grand Junction, Fort Collins and Pueblo, CO; Cedar Rapids, IA; Houghton and Nauv, Mi; Omaha, NE
Contact: Michael Kraemer, CEO/Pres.
(651) 490-2101

Firm Principals
Michael Kraemer, PE
Nancy Schultz, AIA
Dan Boxrud, PE
Glenn Schreiner, PE
Steve Gausman, AIA
Dave Pillatzke, PE

Firm Personnel by Discipline
Civil Engineers 207
Structural Engineers 9
Mechanical Engineer 1
Electrical Engineers 8
Other Engineers 58
Architects 23
Other Professional 85
Technical 246
Administrative 128
Total in Firm 755

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.

U.S. Fish and Wildlife Interpretive Center, Oak Harbor, OH; Mound Public Safety Facility, Mound, MN; Airport Control Tower, St. Cloud, MN; Fortune Bay Golf Resort Club House, Vermilion, MN; Arrival/Departure Building, Redwood Falls, MN; Government, Forestry and Maintenance Facility for Washburn County, Shell Lake, WI

January/February 2007  ARCHITECTURE MINNESOTA 69
STEEN ENGINEERING, INC.

5430 Douglas Drive North
Crysal, MN 55427
Tel: (763) 585-6742
Fax: (763) 585-6757
Email: steen@steeneng.com
Established 1993

Firm Principals
Mark R. Brengman, PE
Steven M. Youngs, PE
Eugene A. Sriefel

Firm Personnel by Discipline
Mechanical Engineers 16
Electrical Engineers 9
Administrative 3
Total in Firm 28

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.

Westin Edina Gallery, Edina, MN: Minnehaha Academy, South Campus, Minneapolis, MN; Grand Lodge Hotel and Water Park of America, Bloomington, MN; Rochester Toyota, Rochester, MN; North Branch Senior Housing, North Branch, MN; State Administration Office Building, St. Paul, MN

Structural Design Associates, Inc.

10900 Noble Avenue North
Champlin, MN 55316
Tel: (763) 560-5300
Fax: (763) 560-5400
Email: sda@sdaeng.com
www.sdaeng.com
Established 1989
Other MN Office: Brainerd

Firm Principal
Gregory J. Duer, PE

Firm Personnel by Discipline
Structural Engineers 6
Technical 3
Administrative 1
Total in Firm 10

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 Andersons Windows, Bayport, MN; Redwood Falls Hospital Addition, Redwood Falls, MN; Brentwood Hills Apartment, Inver Grove Heights, MN; Rosedale Retail and Theater Addition, Roseville, MN

ULTIEG ENGINEERS

5201 East River Road, Suite 308
Minneapolis, MN 55421-1027
Tel: (763) 571-2500
Fax: (763) 571-1168
Email: info@ultieig.com
www.ultieig.com
Established 1944

Other Offices: Detroit Lakes, MN; Fargo and Bismarck, ND; Sioux Falls, SD

Firm Principals
Dan Sargeant, PE
Mike Magelky, PE
Walt Gregory, RLS
Loren Winters, PE
Mike Berger, PE

Firm Personnel by Discipline
Civil Engineers 52
Structural Engineers 26
Mechanical Engineers 7
Electrical Engineers 34
Fire Protection Engineer 1
Sanitary 5
Hydraulic 1
Architects 1
Other Professional 100
Technical 10
Administrative 41
Total in Firm 333

TKDA

444 Cedar Street, Suite 1500
St. Paul, MN 55101-2140
Tel: (651) 292-4400
Fax: (651) 292-0083
Email: info@tkda.com
www.tkda.com
Established 1910

Other Offices: Grand Rapids, MN; Chicago, IL; Kansas City, KS
Contact: Becky Nazario (651) 292-4412

Firm Principals
William Deiter, PE
Thomas Stoneburner, PE
John (Jack) Griffin, PE
Kevin Cullen, PE
Christopher Rand, PE
John Ahern, PE

Firm Personnel by Discipline
Civil Engineers 80
Structural Engineers 7
Mechanical Engineers 10
Electrical Engineers 8
Architects 9
Other Professional 20
Technical 66
Administrative 15
Total in Firm 215

TKDA's Facilities Division specializes in the sports and recreation, industrial, government and education markets. Services include: electrical, mechanical, structural and civil/site engineering, and architecture and landscape architecture. TKDA also provides engineering, architecture, and planning services to the municipal, aviation, rail, and surface transportation sectors.

FLINT HILLS RESOURCES, ADMINISTRATION BUILDING, INVER GROVE HEIGHTS, MN; GUSTAVUS ADOLPHUS COLLEGE, FOOTBALL STADIUM, ST. PETER, MN; CITY OF VICTORIA FIRE STATION NO. 1 AND WATER TREATMENT PLANT, VICTORIA, MN; CITY OF NORTH ST. PAUL, CITY HALL, POLICE AND FIRE STATION, NORTH ST. PAUL, MN; ANDERSEN CORPORATION, STEAM/ENERGY 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@ultieig.com
www.ultieig.com
Established 1944

Other Offices: Detroit Lakes, MN; Fargo and Bismarck, ND; Sioux Falls, SD

Firm Principals
Dan Sargeant, PE
Mike Magelky, PE
Walt Gregory, RLS
Loren Winters, PE
Mike Berger, PE

Firm Personnel by Discipline
Civil Engineers 52
Structural Engineers 26
Mechanical Engineers 7
Electrical Engineers 34
Fire Protection Engineer 1
Sanitary 5
Hydraulic 1
Architects 1
Other Professional 100
Technical 10
Administrative 41
Total in Firm 333

Commercial electrical engineering for electric, data, emergency power, lighting and security systems; mechanical engineering for HVAC, automation/temperature control and plumbing; fire protection engineering; structural engineering; site design for commercial and private developments; water resources; municipal engineering; survey services including legal; topographic; ROW acquisition; ALTA; and underground utilities.

New Horizon Day Care Centers, Minneapolis Metro Area, MN; MacLean Hall Renovation, Minnesota State University at Moorhead, MN; St. Joseph’s Hospital, Brainerd, MN; VA Medical Center Renovation, Fargo, ND; Concordia College Heating Plant Expansion, Moorhead, MN; Senior Housing Buildings, Minneapolis Metro Area, MN

VAN SICKLE, ALLEN & ASSOCIATES

2955 Xenium Lane North, Suite 10
Plymouth, MN 55441
Tel: (763) 559-9100
Fax: (763) 559-6023
Email: ssstangeland@vansickleallen.com
www.vansickleallen.com
Established 1978
Other Offices: Roseville, MN; Hutchinson, KS
Contact: Scott Stangeland, PE
(763) 577-9132

Firm Principals
Scott Stangeland, PE
Keith Jacobson, PE
Kelsey Brown, PE
Mark Mieleke, PE
Jeff Schrock, PE
Gary Nagel, PE

Firm Personnel by Discipline
Civil Engineers 4
Structural Engineers 26
Architect 1
Technical 34
Administrative 4
Total in Firm 69

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; Red Pine Crossing Mixed-use Development, Eagan, MN; Minnesota Dental, Minneapolis, MN; Target, Nationwide; Pueblo of Isleta Hotel, Albuquerque, NM; Shaller Family Sholan, East Campus, St. Paul, MN; Argonne Commons, Lakeville, MN

2007 Directory of Consulting Engineering Firms / Paid Advertising
Westwood is a Minnesota-based, full-service engineering consulting firm, specializing in land development, and providing planning, landscape architecture, surveying, civil engineering and traffic services to private and public agencies. Westwood was established in 1972, and now operates four Minnesota offices, with the headquarters in Eden Prairie and branch offices in Arden Hills, St. Cloud and Brainerd, MN.

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
Contact: Lowell Wenzel (952) 888-6516

Firm Principals
Lowell E. Wenzel, PE
Patrick A. Cole, PE
Jeff A. Segar, PE

Firm Personnel by Discipline
Structural Engineers 4
Technical 7
Administrative 1
Total in Firm 6

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.

Leech Lake Tribal College, Cass Lake, MN;
Unweave the Weave, St. Paul, MN; Dayton Cemstone Plant, Dayton, MN; Phoenix on the River, Minneapolis, MN; The Penfield, St. Paul, MN; 5000 France, Edina, MN;

WESTWOOD PROFESSIONAL SERVICES, INC.
7699 Anagram Drive
Eden Prairie, MN 55344
Tel: (952) 937-5150
Fax: (952) 937-5822
Email: wsp@westwoodps.com
Established 1972
Other Offices: St. Cloud and Brainerd, MN

Firm Principals
Dennis Marhula, PE
Dwight Jelle, PE
Ron Peterson
Paul Greenhagen, LS
Richard Wiebe
Bruce Griva, LS

Firm Personnel by Discipline
Civil Engineers 23
Structural Engineers 3
Mechanical Engineers 4
Electrical Engineers 1
Environmental Scientists, Geologists
Land Surveyors, Transportation Engineers 15
Architects 14
Construction Manager 1
Technical 61
Administrative 18
Total in Firm 167

continued next column
Reflections at Bloomington Central Station

Location: Bloomington, Minnesota
Client: McGough Development
Architect: Graham Architects, Inc.
Collaborating design architect: architects Alliance

ESG project architects:
- David Graham, AIA
- Art Bartels, AIA
- Aaron Roseth, Assoc. AIA
- John Tadewald
- Jackie Millea, Assoc. AIA

Project lead designers:
- David Graham, AIA
- Aaron Roseth, Assoc. AIA
- Peter Clewes and Adrian DiCastri (architects Alliance)

ESG project managers:
- Art Bartels, AIA
- Aaron Roseth, Assoc. AIA

Developers:
- McGough Development

Structural engineer:
- Peter Michaud, Cooley, Erickson

Electrical engineer:
- Michael Millea, Johnson Inc.

Civil engineer:
- URS Inc.

Energy modeling: The Weidt Group

Lighting designer: ESG

Interior design: ESG

Construction manager:
- McGough Construction

Landscape architect: oslund. and. assoc.

Stone: Architectural Cast Stone

Cabinetwork: O'Keefe

Flooring systems/materials:
- STS Flooring & Twin City Tile

Window systems: Harmon Glass (curtain wall); WJ. Higgins (glass consultants)

Architectural metal panels: Harmon

Concrete work: McGough Construction

Millwork: O'Keefe

Photographer: George Heinrich

Gallo Residence

Location: Minneapolis, Minnesota
Client: Jeff and Salena Gallo
Architect: Shelter Architecture
Design principal: John Dwyer, AIA
Structural engineer: Jackie Millea, Assoc. AIA
Project team:
- Jackie Millea, Assoc. AIA
- Kurt Gough, Assoc. AIA
- Colin Oglesby, Assoc. AIA
- Tom Westbrook, Assoc. AIA
- Jessica Barnd, Sarah Caruthers
- John Dwyer, AIA

General contractor: Aaron Krause

Structural engineer: Ulteig Engineers

Interior design: Shelter Architecture

Window systems: Brin Northwestern

Concrete work: Forecast Concrete

Digital renderings: Shelter Architecture

Whole Foods Co-op page 28

Location: Duluth, Minnesota
Client: Whole Foods Co-op
Architect and engineer: LHB, Inc.

Principal-in-charge: Sue Anderson

Project architect: Mark Poirier, AIA

Project lead designers:
- Mark Poirier, AIA
- Jill Isola Johnson

Project manager: Mark Poirier, AIA

Project team:
- David Williams
- James Brew, AIA
- Cheryl Rouse

Structural engineer:
- Alan Vorderbruggen

Mechanical engineer:
- Stewart Cran

Electrical engineer:
- Linnea Weyandt

Lighting designer:
- Emphasis Lighting Group, Inc.

Interior design:
- Jill Isola Johnson

Construction manager:
- Arno Kahn of Builders Commonwealth

Landscape architect:
- Mark Anderson (LHB)

Landscape project team:
- Philip Barden
- Heidi Bringman

Recycled wood: Duluth Timber

Flooring materials:
- Johnson Carpet and Tile

Millwork: Builders Commonwealth

Photographer: Jeff Frey & Associates Photography, Inc.

Quality Bicycle Products Expansion and Remodel page 30

Location: Bloomington, Minnesota
Client: Quality Bicycle Products
Architect and engineer: LHB, Inc.

Principal-in-charge: Rick Carter, AIA

Project architect: K.C. Lim, AIA

Project lead designer: Doug Friend

Project manager: Rachelle Schoessler Lynn

Structural engineer: Joel Rector

Mechanical engineer: David Williams

Electrical engineer: Linnea Weyandt

Civil engineer: Jim Tiggelaar

Lighting designer:
- Emphasis Lighting Group, Inc.

Interior design:
- Michelle McKinney (LHB)

Construction manager:
- Kraus-Anderson Construction

Landscape architect:
- Bruce Chalupsy (LHB)

Building Demolition:
- Veit & Company, Inc.

Earthwork: Belair Excavating

Utilities: Nova Frost

Paving: Bituminous Roadways

Site concrete: C.R. Fischer and Sons

Porous Pavers: Glacial Ridge

Landscaping: Arteka

Concrete/masonry:
- Northland Concrete

Precast concrete: Fabcon

Structural steel fabricator:
- Central Minnesota Fabricating

Structural steel erector: KMH Erectors

Miscellaneous metals:
- National Steel Fabricators

Rough carpentry:
- Northside Construction

Insulated metal panel:
- Innovative Building Concepts

Roofing: Dalbec Roofing

Joint sealants: Right-Way Caulking

Doors, frames, hardware:
- Contract Hardware

Glazing: curtain wall, aluminum storefronts and windows, sunscreen:
- Empire House, Inc.

Drywall and framing: Mulcahy, Inc.

Ceramic tile: Grazzini Brothers

Acoustical ceiling: Sonus Interiors

Paint and wall coverings:
- Swanson and Youngdale

Access floor: Sound Ceilings, Inc.

Toilet accessories: Bartley Sales

Interior signage: Bartley Sales

Loading dock equipment:
- Star Equipment

Fire protection:
- National Automatic Sprinkler Co.

Passenger elevators:
- Minnesota Elevator

Mechanical: Doody Mechanical

Electrical: Bloomington Electric

Renewable energy:
- Innovation Power Systems Solar

Energy modeling: The Weidt Group

Photographers:
- Peter Bastianelli-Kerze (exterior)
- Marty Wood (interior)
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As I drove the hundreds of back roads of Otter Tail County, I felt the need to document some of what remains before all traces disappear. To me, this landscape and these buildings possess a profound beauty, not merely for their spare, simple designs and weathered boards, but as monuments to the pioneering men and women who made long journeys to reach this remote part of America.

— Adapted from photographer Maxwell MacKenzie's introduction to Abandonings