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What's Inside:

- NFL Owners & Architects
- CE Article: Geothermal Heat Pump Technology
- Firm Management: Beyond Intuition
- 2014 ALA Design Award Winners

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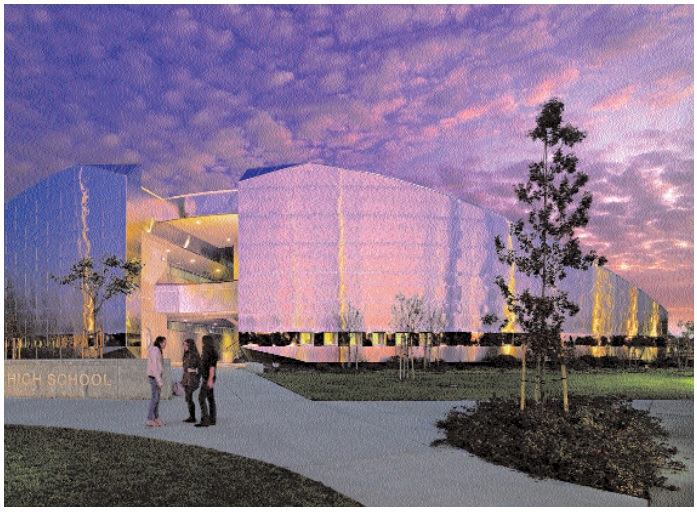

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ALA THE PRESIDENT'S LETTER

As we quickly approach the close to another busy personal and professional year, on behalf of all ALA board members and the staff I would like to wish all of our members and staff a Happy and Healthy Holiday Season and a Prosperous New Year!

This past year ALA staff has produced many highly successful programs and events along with numerous educational and networking seminars. On behalf of all of ALA's members I want to thank Joanne, Lisa, Liz and Rob for all of the hard work that goes into making our events a success. It is no small task! The ALA would not be what it is today if not for the hard work of Joanne and our dedicated staff.

Thank you also to all of our Affiliate Members for your continued support! No association can survive without affiliate member support and the ALA is no different. I hope that as you work on projects throughout 2015, you will think of our affiliate members and support them with your business whenever possible.

On November 14th, ALA held its Annual Design Awards Banquet at the Metropolis in Arlington Heights. This annual event has turned into a must-attend event. It was a terrific evening of socializing and an opportunity to view all of the unique and creative designs that were entered. Geoffrey Baer was our Emcee so it was sure to be an interesting and informative evening. There were over 100 people in attendance with 113 entries by firms from 13 states resulting in 35 awards. The winning projects are featured in this issue of Licensed Architect so be sure to take a few minutes and review what your peers have been working on.

Lastly, mark your calendar for the Annual Meeting and Holiday Gathering on December 9th at Pete Millers in Wheeling. Yes, it's an annual meeting so we have to take care of a little business but if you have any questions for the Board this is the perfect opportunity to ask them. Then, there will be plenty of time for some light appetizers, cocktails and socializing.

Please note that membership renewals are due December 31st. We value your membership and look forward to seeing you at upcoming events in 2015.

Happy Holidays!
Jeffrey Budgell

Jeffrey N. Budgell, FALA, LEED AP
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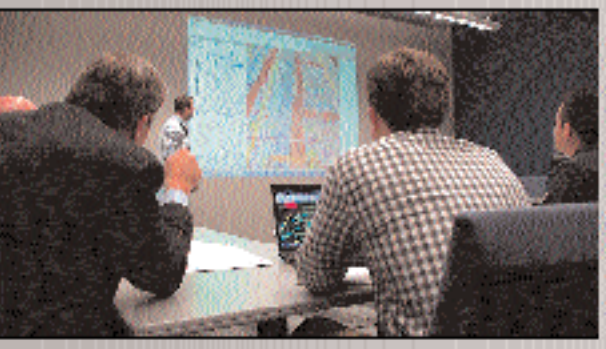

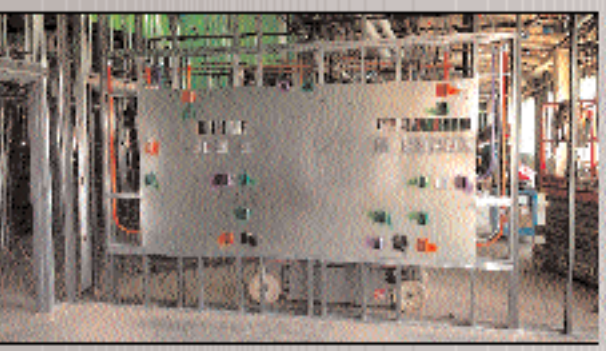

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The Timeline of the Building Code

by Kelly P. Reynolds
ALA Code Consultant

Where did the model building and fire codes come from?

How did we get to a single code?

Well, here is a short history lesson.

1896 - The National Fire Protection Association (NFPA) is founded. In 1912 it published *Exit Drills in Factories, Schools, Department Stores and Theaters*. In 1927 it became known as the *Life Safety Code* (NFPA No. 101).

1915 - Nine states and Canada formed the Building Officials and Code Administrators (BOCA). The first edition of the *BOCA Basic Building Code* was published in 1950.

1923 - The National Board of Fire Underwriters (NBFU) was created for insurance companies to develop rates based on fire risks and losses. It published the *National Building Code* under the imprint of the *American Insurance Association*. In 1976 publication was halted due to the national acceptance of the three regional models codes (BOCA, ICBO, SBCCI).

1927 - The International Council of Building Officials (ICBO) published its first *Uniform Building* **Code** in 1927. Most of its influence was in the Western states.

1940 - The Southern Building Code Congress (SBCCI) was formed so serve communities predominately in the Southern states. They publish the *Standard Building Code*.

1994 - The International Code Council (ICC) was established to develop a single set of comprehensive and coordinated national model construction codes. The three model organizations (BOCA, ICBO, SBCCI) became one with the *2000 International Building Code*. It is hoped that the best code requirements of all three legacy codes will appear in the new single code. It is updated on a three-year cycle.

2003 - Because **NFPA** was not part of the new **ICC** coalition it published its own building code, *NFPA 5000 Building Construction and Safety Code*. The code has not been adopted by many communities. The **I-Codes** reference most of the **NFPA** standards

ALA members can call me if you have any code questions: 1-**800-950-2633** or e-mail **codexperts@aol.com**.

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The Expanding Scope of Liability for Condominium Projects

by Shawn E. Goodman,
Sabo & Zahn, Attorneys at Law

As previously noted in this space, the economic loss doctrine generally means that "a professional design firm has no liability, for purely economic damages, to those with whom it has no contract."[1] Economic damages are distinguished from other damages, e.g., personal injury or physical damage to other property. When it comes to those other types of damages, it has long been the case that the design professional can be liable even to those with whom it did not enter into a contract.

Plaintiffs' lawyers have begun trying to chip away at the economic loss doctrine by doing an end run around it. The cases in which this has been happening by and large arise in one specific factual context: condominium projects.

This past summer, the California Supreme Court held that the architect in a condo case owed a "duty of care" to *future* homeowners when it came to design.[2] The architect had won in the trial court where the ruling was that, because an architect can make recommendations but not final decisions on a project, it has no duty of care to future owners. This decision was overturned by the appellate court, from which the defendant took an appeal to the California Supreme Court.

The project involved in Beacon was a 595-unit condominium project in San Francisco, near AT&T Park. The plaintiff, Beacon Residential Community Association (Beacon Ass'n), sued various parties, two of which were Skidmore, Owings & Merrill (SOM) and HKS, Inc. (HKS), the design professionals responsible for architectural and engineering services on the project. The Beacon Ass'n alleged negligent architectural design work led to a variety of defects which caused moisture intrusion, fire separation, structural cracks and solar heat gain which made units uninhabitable at times due to high temperatures. HKS and SOM were named by the plaintiff condominium association despite the absence of any contractual relationship between the parties. The plaintiff's complaint alleged that the defendants were paid in excess of $5 million for work which included "providing original design services at the outset" and "an active role throughout the construction process, coordinating efforts of the design and construction teams, conducting weekly site visits and inspections."

In extending the architect's duty of care beyond the architect's client, the California Supreme Court noted that the defendants knew when they were performing their work that the units would be used as residences, and emphasized the importance of providing safe and habitable housing to purchasers who are not in a position to take precautions against design defects. As for public policy, the court reasoned that imposing a duty of care on design professionals which extends to home buyers would support the interest of those purchasers in homes free of defects.

In California, the expanded scope of liability was deemed to arise from the common law, or law made by judges. In other states, liability has been expanded by legislatures. A law passed in Colorado, for example, loosened up the standards and made it easier for homeowners to sue over property defects. One of the ways it did so was by requiring only a bare majority of a homeowner association board, as opposed to a majority of the homeowners themselves, to authorize litigation.[3] That means in some cases as few as three board members are able to "green light" the filing of lawsuits arising out of allegedly defective design or construction. The result, according to the Denver Post, has been a "collapse in the number of new multi-family dwellings in recent years."[4] This collapse came about after "the insurance market . . . dried up to cover the construction of new condominium developments."[5]

Recently, a municipality in Colorado, Lakewood, passed an ordinance aimed at softening some of the impact of the construction-defects state statute.[6] Among other measures, it includes a right to repair and also requires association boards to get the consent of a majority of owners before filing suit. This ordinance has been very controversial and undoubtedly will be tested in court. However, the city government in Lakewood maintains that its ordinance is necessary in order to spur the construction of more owner-occupied, multi-family housing.

Closer to home here in Illinois, an effort is under way similar to that which succeeded in California. Illinois law has long recognized an implied warranty of habitability in residential construction, i.e., the right enjoyed by a home buyer to "a house that is reasonably fit for use as a residence."[7] That doctrine, however, has always been limited to builders and vendors.

The case of Minton v. Richards, 452 N.E.2d 835, 855 (1st Dist. 1983) was the first to allow a homeowner to directly sue a subcontractor, despite the absence of a contract between the owner and the subcontractor: "where the innocent purchaser has no recourse to the builder-vendor and has sustained loss due to the faulty and latent defect in their new home caused by the subcontractor, the warranty of habitability applies to such subcontractor." Now, some condo associations are arguing that Minton should be extended so as to allow for suits against design professionals also. The issue is before the Illinois Appellate Court, First District, right now.[8] Some of the same arguments made in California are being made by the plaintiffs in this Illinois case. Prominent among these is that developers often are not financially viable after the project is completed, and owners should not be left without a remedy. Instead, they should be allowed to pursue relief for design errors from architects, the only remaining source of compensation.

While the implied warranty of habitability applies to residential work in general, and not just condominiums, it is no coincidence that the three consolidated appeals before the Illinois

(continued on page 41)

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Financial Management: Beyond Intuition

Part One: The Basics

by Rena M. Klein, FAIA

Do you **KNOW** if your firm is profitable?

As a financial management tool, intuition has its limits. While most small firm owners have a good sense of what's happening financially at their firms, operational indicators such as cash flow shortages or mounting receivables don't tell the whole story. Strategic decisions, such as when to hire or move from home to an outside office, require understanding of financial trends within your firm and ability to create financial forecasts, even in an unpredictable economic environment.

Financial management involves tracking key financial indicators pertinent to firm financial health and using the information to forecast likely future performance. Without some reasonable expectations of future revenue and expenses, it is difficult to plan and make basic business decisions. Understanding financial indicators helps you see what has just happened and what might realistically be expected to happen in the future.

Time Sheet Discipline

Steve L. Wintner, author of Financial Management for Design Professionals (2006), uses the term, "time sheet discipline" to emphasize the importance and, to some extent, the challenge of tracking time in professional service firms. After all, time spent working on projects is all that we have to sell as design professionals. Of course, we are selling our knowledge, creativity, and experience as well, which ultimately determine how valuable we are to our clients. But tracking time actually spent on projects, and on non-project activity, is how we can measure our tangible performance in relation to the market value of our services.

Time tracking begins with having a system to record time and a way to collate the records into useful information. Both have been automated through the use of desktop software and mobile apps, and there are plenty of cloud-based low-cost solutions available on the web. It merely takes a commitment to keep accurate records of your time and a discipline to carry out that commitment throughout your firm.

Tracking hours is important in many ways to the operation of a firm. Figure 1 shows all the aspects of firm management that are touched by time tracking. These include payroll, invoicing, project tracking in relation to project budgets, and collection of data for key financial indicators and for future proposals and expense budgets.

As indicated in Figure 1, it is important that the time recorded is separated into direct hours and indirect hours. Direct hours are defined as hours spent working on a project under contract; indirect hours are all others, including time spent on marketing, interviewing with potential clients, and doing all other types of firm management work. As we know, not all indirect hours will turn out to be billable, but they should be recorded as direct hours nevertheless, to provide an accurate record of what it actually took to do projects.

Key Financial Indicators

Key financial indicators are a subset of key performance indicators (KPIs) that can be tracked for many different aspects of a firm's operations. For example, KPIs for marketing might include the "hit-rate," a metric that tracks the number of jobs won relative to number of proposals sent out. For financial performance, there are a few metrics that are critical to quickly understanding the financial health of the firm. When viewed over time, these indicators can reveal the overall effectiveness of the firm's project acquisition and delivery processes.

Most of the financial indicators discussed here are ratios that measure performance in

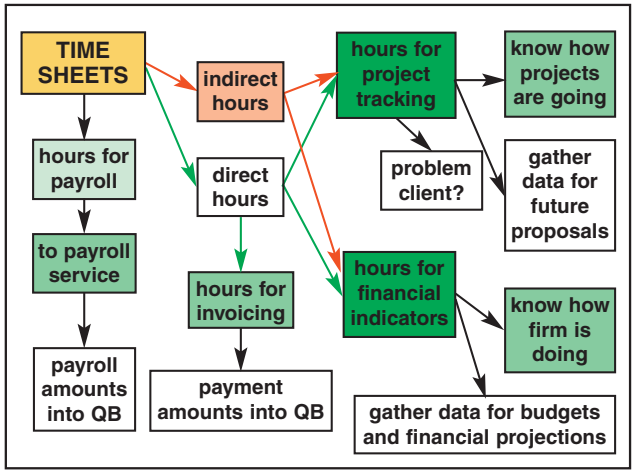


Figure 1: The importance of "Time Sheet Discipline"

relation to the cost of direct labor (salary, wages, or draws). This is the cost of the time put into working on projects. Mathematically this means that the metrics are ratios with direct labor expense as the denominator. Here are three important ratios to watch:

- **Overhead Ratio:** total indirect expense ÷ direct labor expense

Total indirect expense (aka: overhead) = indirect labor + payroll burden + general and administrative expenses. Payroll burden is the total of payroll related expenses, such as payroll taxes, health care, and retirement benefits. General and administrative expenses are all other expenses, such as rent and supplies.

Overhead rate answers the question: for every dollar spent on direct labor, how many dollars do I need to earn to cover the firm's overhead? Industry benchmark for overhead rate is $1.50 – $1.80, but it can vary significantly depending on firm location.

- **Break-Even Ratio:** [total indirect expense ÷ direct labor expense] + [direct labor expense ÷ direct labor expense] or simply, overhead rate + 1.

Break-even rate answers the question: for every dollar spent on direct labor, how many dollars do I need to earn to break-even – that is, cover both overhead and direct labor expense? Industry benchmark for break-even rate is $2.50 – $2.80.

- **Multiplier Achieved:** net operating revenue ÷ direct labor expense. Net operating revenue (NOR) is gross revenue (revenue from all sources) minus direct expenses, such as outside consultants and other reimbursable expenses. Direct expenses are expenses that would not exist if there were not projects. NOR is the amount of money available to actually run the firm and do the work of delivering projects.

Multiplier achieved answers the question: for every dollar spent on direct labor, how many dollars did I earn in net revenue? Industry benchmark for multiplier achieved is greater than $3.00.

Once you have determined these ratios, it is possible to quickly determine whether the firm is making a profit. You can do this for any time period and as often as you like, as long as time sheets are up to date and direct labor expense is separated from indirect labor expense.

- **Profit Margin:** multiplier achieved minus break-even rate if the multiplier achieved is greater than the break-even rate, the firm is making a profit. If not, the opposite is true. It is a simple as that.

Example:
Break-even ratio: 2.80
Multiplier achieved: 3.50
Profit Margin: .70

If you multiply the profit margin times the direct labor expense, it will give you an estimate of the dollar amount of the profit (or loss) for the period of time you are examining.

Example:
Profit margin: .70
Direct labor expense: $400,000
Profit forecast: $400,000 times .70 = $280,000

You can use these ratios to help you forecast financial performance looking forward. For example, if you know that your overhead is staying stable and that your staff is not changing, you can use the ratios from the previous year to predict likely near-term outcomes.

And, if you know, for example, that your direct labor expense is likely to be $400,000, you can use your overhead ratio to determine likely overhead expense for the coming year: $400,000 times 1.8 = $720,000.

Then, the total revenue that you would need to break-even would be overhead expense plus direct labor: $400,000 + $720,000 = $1,120,000.

This can also be figured by multiplying the break-even ratio by the direct labor expense: $400,000 times 2.8 = $1,120,000.

To accomplish a 20% profit over what is needed to break-even, divide net operating revenue forecast by the complement of the profit goal. The complement of 20% is .80. Therefore the amount of net operating revenue needed to break-even plus 20% profit is: $1,120,000 ÷ .80 = $1,400,000.

By doing these simple calculations, you can get a sense of what is needed in terms of project acquisition in the coming year to support your firm and be profitable.

- **Net Operating Revenue per Staff Member:** net operating revenue ÷ number of staff (Full Time Equivalency) This will provide a general notion of how much net operating revenue would be needed to add another staff member.

Trends Over Time

Tracking NOR, direct labor, indirect expenses, and profit/loss over time can give you an indication of the effectiveness of your production processes. It's not hard to generate a chart of your firms past performance, looking simply at revenue, expenses, and profit/loss, such as the one shown in Figure 2.

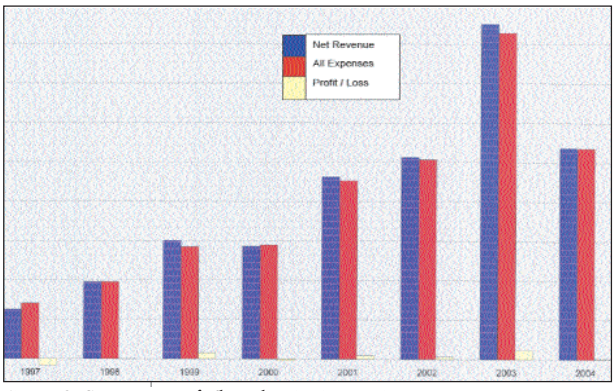


Figure 2: Stagnant profit/loss despite increasing net revenue

What you want to see, as an indication of firm financial health is the expenses staying fairly stable and profit/loss going up in parallel with revenue. However, if you see a pattern like the one in Figure 2, where profitability doesn't improve no matter how much work is completed, it is an indication that productivity is poor and work processes are likely inefficient. In this situation, best practice would be to look for bottlenecks in the production processes, poor communication, and unnecessary time spent "reinventing the wheel."

Financial management can provide a way to understand whether big picture professional goals are being accomplished, including those involving profitability and satisfactory compensation for both owners and staff. While profit is not the only "bottom line" that you may consider meaningful, it adds to the sense of satisfaction and success for most.

Look for Part 2 of this article in the next issue of Licensed Architect Magazine. Profit planning, revenue forecasting and annual budgets will be the topics covered. If you want to make a profit at your firm, and understand what the future might hold, this is information you need to know.

About the Author
Rena M. Klein, FAIA is the author of The Architect's Guide to Small Firm Management (Wiley, 2010) and principal of RM Klein Consulting, a firm that specializes in helping small firm owners run their firms better.

Audible and Visible Alarms PRIMER

by Kimberly Paarlberg, RA
Senior Staff Architect, ICC

Alarms are an important component of building evacuation systems. Depending upon occupancy, fire alarm notification components prescribed in Section 907 of the 2015 International Building Code® (IBC®) include visible and audible notification devices, smoke alarms and emergency voice/alarm communication systems. Audible alarms must be provided to serve all occupiable areas where a fire alarm system is required by the code. Visible alarms must be provided in areas where the ambient noise level is such that audible alarms may not be heard (Section 907.5.2.1.2).

The maximum sound pressure for audible alarm notifications is 110 dBA. This has been reduced from 120 dBA in the 2006 IBC. Many hearing aids have a safety feature causing them to shut off with a sound pressure of 120 dBA.

Visible alarms are required in all public-use and all common-use areas to alert people with hearing impairments (Section 907.5.2.3.1). Public-use areas are defined as "interior or exterior rooms or spaces that are made available to the general public" and common-use areas as "interior or exterior circulation paths, rooms, spaces or elements that are not for public use and are made available for the shared use of two or more people" (Chapter 2).

This means visible alarms must be provided in all occupied spaces where audible alarms are required, except mechanical rooms and private offices. Further, systems must be designed so that if an employee in a private office wants a visible alarm in his or her work space, the request can be accommodated with a minimum of disruption.

The alarm system must be designed to accommodate possible expansion for employees – i.e. 20 percent of the capacity for circuits serving employee work areas (Section 907.5.2.3.1).

Exemptions

Due to concern that flashing lights may create a distraction or tripping hazard, visible alarms are not required in exits, including exit passageways and interior or exterior exit stairs or ramps (Section 907.5.2.3 Exception 2).

There are other situations in which the loud noise and flashing light typical of alarm notification devices may not be desirable. For example, alarms in operating areas and some patient areas of hospitals, such as intensive or critical care units, could be hazardous. The activation of the alarm could startle a doctor during a delicate operation or panic patients incapable of self-evacuation. While audible and visible alarms are technically required throughout, alternative means consistent with standard hospital practice, such as central notification points occupied by staff trained to assist with evacuation, are permitted where approved by the building official (Section 907.2.6 Exception 2, 907.5.2.1

(Continued on page 35)

2014 Design Award Program

On September 12th, five well-respected architects studied every entry and selected the winning projects for the 2014 ALA Design Award Program. Out of 113 entries, 13 projects were recognized with an ***Award of Merit,*** 17 projects were awarded a ***Silver Medal,*** and 5 projects a ***Gold Medal,*** with the top honor being the **Don Erickson *Presidential Award.***

Projects were entered in eight categories: Residential I, Residential II, Commercial/Industrial, Interior Architecture, Institutional, Religious, Renovation and Unbuilt Design. Each entry was judged on its own merit based on: Program Solution, Site and Space Planning, Overall Design Solution and Construction System and Details.

LeRoy B. Herbst III, FALA of *L.B. Herbst & Associates* served as jury chairperson. Rich Barnes, ALA of *Barnes Architects, Ltd.* and Matthew Kramer, ALA of *Matthew Kramer Architects* were assistant chairpersons.

ALA would like to thank our Design Award Program Sponsor:
• Andersen Windows
And our Banquet Sponsors:
• Moen International and WaterFurnace

ALA wishes to thank the following judges for their hours of volunteer time and their dedication to the program and profession:

Pamela J. Hutter, ALA, AIA, CSI

Pamela J. Hutter, ALA, AIA, CSI, Principal of Hutter Architects, is a Chicago area native who was born into a milieu of designing and building. After graduating from the University of Illinois, Urbana, her career included working for a national design-build construction company as a field superintendent where she traveled the country as a builder of commercial and industrial projects. Her passion has always been for the historic, the sustainable, and a design that is contextual. She brings a disciplined process to her projects that typically involves adaptive re-use and includes as many nurturing single-family homes as industrial projects.

Walker C. Johnson, FAIA

Walker Johnson is a founding principal at Johnson Lasky Architects in Chicago, IL. With more than 40 years of specialized experience in historic preservation, Walker has served three terms on the Illinois Historic Sites Advisory Council to the State Historic Preservation Office and is an active member on the Board of Landmarks Illinois. Firm projects include Memorial Stadium and Illini Union at the University of Illinois Urbana/Champaign, the Naper Settlement in Naperville, IL and St. Johns Church, Quincy, IL. A licensed architect in five states, Walker earned his Bachelor of Architecture from the University of Illinois and B.S in History at University of Wisconsin.

John Moorhead, LEED AP BD+C

John Moorhead has over twenty years of experience in architecture and currently serves as Senior Project Architect and Healthcare Practice Chair at Perkins+Will. John played a key role in shaping the new hospital tower at Rush University Medical Center, one of the largest LEED Gold certified hospitals in the world. John obtained a Bachelor of Architecture from the Illinois Institute of Technology with high honors as the Henry Adams Medal recipient. He is a registered architect in the state of Illinois and a LEED Accredited Professional with a specialty in building design and construction.

Michael J. Sobczak, ALA, AIA, NCARB, ASID, IIDA

A graduate of the University of Wisconsin-Milwaukee with both bachelor and master degrees in architecture, Michael joined Plunkett Raysich Architects, LLP in 1991. He currently serves as a Partner of the firm and is responsible for overseeing the design aspects of each project. With nearly 25 years of architectural and interior design experience, Michael's project experience spans a variety of types, from corporate headquarters and municipal institutions to educational facilities and residential developments. His designs have earned numerous prestigious industry awards including accolades from the Association of Licensed Architects (ALA), American Institute of Architects (AIA), the American Society of Interior Designers (ASID) and the International Interior Design Association (IIDA).

John Weigand, AIA

John Weigand is Professor and Chair in the Department of Architecture + Interior Design at Miami University (Ohio). He earned architectural degrees at Miami and at the University of Illinois and worked professionally in Chicago from 1980 to 1991 prior to teaching. At Miami, Weigand developed the BFA in Interior Design and directed the BFA program. He has participated in numerous initiatives addressing collaborative design education and practice. He is author of The Nature of Design, an interdisciplinary text on design fundamentals, which received the AIGA Award of Merit in 2004. Weigand was listed among the "DesignIntelligence 25 Most Admired Educators of 2012."

Photo: Paul Mullins Studio

Don Erickson Presidential Award

University High School, Fresno, CA
Category: Institutional
Firm: Dyson Siegrist Janzen Architects, Inc., Arthur Dyson, ALA, IAA, AIA, RIBA, FARA
Contractor: Zumwalt Construction

This bold, new Charter School provides a 21st Century learning and teaching environment developed with evidence-based design principles to enhance retention, comprehension, attitude, pride and safety. Shapes, materials, colors, textures, scale and pattern all play a major role visually and psychologically on student performance.

Photo: James Steinkamp

Gold Award

Adjustable Forms, Inc., Lombard, IL
Category: Commercial
Firm: DLR Group, Steve Cavanaugh, ALA, Design Leader; Nathan Casteel, Project Designer
Contractor: Adjustable Forms Inc.

The project serves as headquarters for Chicago's leading-edge cast-in-place concrete contractor, and is aesthetically representative of the client's practiced skill. Whitney provided interior design services for the project. AFI is registered with the USGBC and is tracking Gold Certification.

Photo: Sullivan, Goulette & Wilson Ltd.; Arnold Klein

Gold Award

CH Distillery, Chicago, IL
Category: Interior Architecture
Firm: Sullivan, Goulette & Wilson, Ltd.
Contractor: Crescent Rock, Inc.

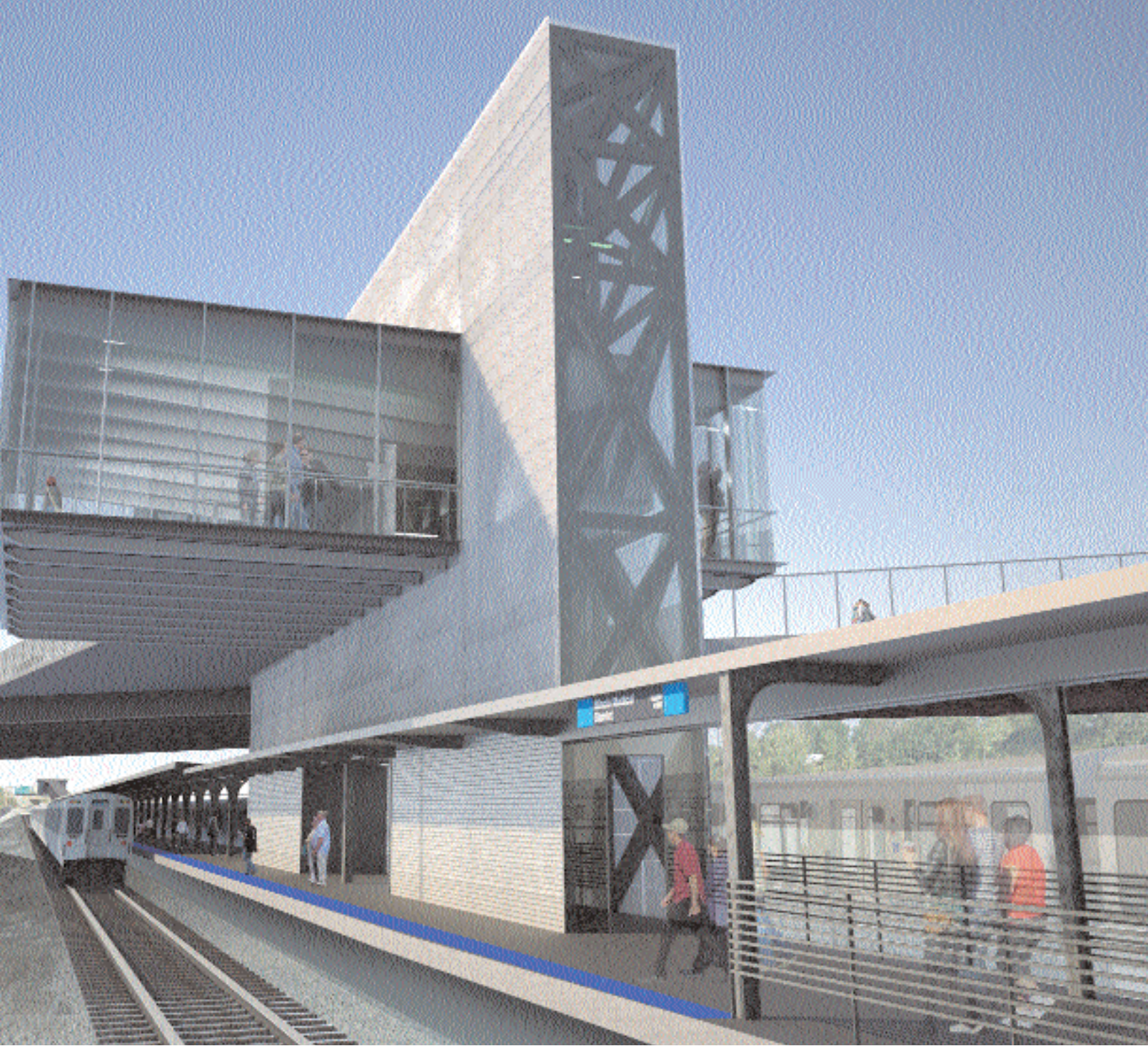
CH Distillery houses both a sophisticated facility for producing craft spirits, and a finely-detailed cocktail bar for showcasing them. The design was composed around the raw beauty of the highly-polished stainless steel stills.

Photo: Douglas Kozel

Gold Award

Madison Investment Advisors, Madison, WI
Category: Commercial
Firm: KEE Architecture, Inc., Douglas Kozel
Contractor: J. H. Findorff

This building is an annex of 11,000 square feet for a financial services company. It has a compact, energy conserving form and gets its more articulated shapes from the effort to acquire and manage daylight and views. Environmental measures were incorporated gracefully into a unified whole while providing an outstanding work environment.



Gold Award

Rapid Transit Station, Chicago, IL
Category: Unbuilt
Firm: Muller&Muller, Ltd., David Steele, Terry Sullivan, Sean Schrader, Kaitlin Streyle, Sandi Larn Harder
Contractor: Arup

The form of this proposed transit station grows from its severely constrained highway median location. Modular structural components, used for ease of construction, form a dramatic cantilevered station house, which takes advantage of ample air rights above the tracks.

Gold Award

Textile Center, Chicago, IL
Category: Unbuilt
Firm: UrbanWorks, Ltd.

The Textile Center reimagines an abandoned rail line and underutilized warehouses in the Pilsen neighborhood as a new garment and fashion district. Merging the existing manufacturing and residential components of the area, the proposal includes a glassy, multi-block-long new structure with fashion studios and open-air runways.

Silver Award

1242 Fourier Drive, Madison, WI
Category: Commercial
Firm: KEE Architecture, Inc.,
Douglas Kozel
Contractor: Newcomb Construction Co.

Using tilt-up construction, this 28,500 square foot office building housing the Internal Revenue Service was created at a cost just under $100 per square foot. In its straightforward conveyance of both the materials and the manner of its construction, this building succeeds in creating a humanizing experience of space, light, and materiality appropriate to the building's use. The project has been certified LEED-CI Gold.

Photo: C&N Photography

Silver Award

Alexander Graham Bell
Elementary School Addition, Chicago, IL
Category: Institutional
Firm: SMNG-A Ltd.
Contractor: Wight Construction Services

This addition to the existing Bell Elementary School is of simple volumetric expression intended to provide programmatic flexibility and visually contrast with the existing 98 year old legacy building with modern and energy efficient materials. The building is designed to achieve LEED Silver.

Photo: Tom Rossiter Photography

Silver Award

Allen College: Winter Hall,
Waterloo, IA
Category: Institutional
Firm: INVISION Architecture, Brad Leeper, Brian Sanderman and Tim Turnis
Contractor: Larson Construction

The addition bridges two existing buildings to bring the campus together. The large atrium is used for student gathering and also serves as the pre-function space for the conference center. The light, transparent facade expresses an updated modern aesthetic.

Photo: Cameron Campbell

Silver Award

Andrew G. Truxal Library,
Arnold, MD
Category: Institutional
Firm: EwingCole, John Chase
Contractor: Hess Construction and Engineering Services

The Andrew Truxal Library was one of the three original buildings constructed in 1968 for a newly founded community college on the eastern shore of Maryland. Arranged in a "Jeffersonian" composition about a central raised quadrangle, the Library re-establishes its campus prominence.

Photo: Halkin/Mason Photography, LLC

Silver Award

AP Lofts, Des Moines, IA
Category: Residential 2
Firm: INVISION Architecture, Mark Nevenhoven,AIA and Tom Feldmann
Contractor:
Nelson Construction Services

The building was initially constructed in 1911 to store perishable produce. The design rehabilitated the warehouse into 70 apartments using a restricted palette of newly constructed elements that provide a counterpoint to the rich patina of the historic shell.

Photo: Cameron Campbell

Silver Award

De Pere Residence, De Pere, WI
Category: Residential 1
Firm: RGS Architecture, Robert G. Sinclair & Paul De Leeuw
Contractor: Ryba Built, Inc.

The organization of the home is defined by two rectangular volumes sliding past one another to create a linear-organized program. Each space is sized specifically for its function, scale of furnishings, intricacy of detailing, and connection between interior and exterior.

Photo: Launch Photography

Silver Award

Fawcett House Restoration, Los Banos, CA
Category: Renovation
Firm: Arthur Dyson ALA, IAA, AIA, RIBA, FARA
Contractor:
BMY Construction

A complete restoration of an iconic Frank Lloyd Wright 1958 rural residence based on original drawings and extensive investigative data. The building now stands as one of Frank Lloyd Wright's most complete and accurately restored properties for research and enjoyment.

Photo: David Swann

Silver Award

Fieldstone House, Richfield, WI
Category: Residential 1
Firm: Bruns Architecture, Stephen Bruns
Contractor: Design 2 Construct

Paying homage to the geologic history of the region, Fieldstone House is balanced about a glacially scraped stone wall with a history all its own. Extending north to south, the fieldstone wall organizes circulation and provides an inherent connection and orientation to its site.

Photo: Tricia Shay Photography

Silver Award

Lakeside Retreat, Linn, WI
Category: Residential 1
Firm: Myefski Architects/
Hickman Design Associates
Contractor:
Fischer Fine Home Builders Inc.

Located on the shores of Lake Geneva, the architectural character of this lakeside retreat draws on an East Coast design aesthetic. Special attention was given to instilling intimate qualities and moments within the home's spacious rooms.

Photo: Werner Straube Photography

Silver Award

Riverfront Plaza, Waterloo, IA
Category: Commercial
Firm: INVISION Architecture,
Mike Broshar; Roland Ganter
Contractor: Prairie Construction

The project creates a gathering place for civic events and re-establishes a connection with the community. The amphitheater is visually striking with a fabric roof on steel columns, so as not to be touched by floodwaters.

Photo: Cameron Campbell

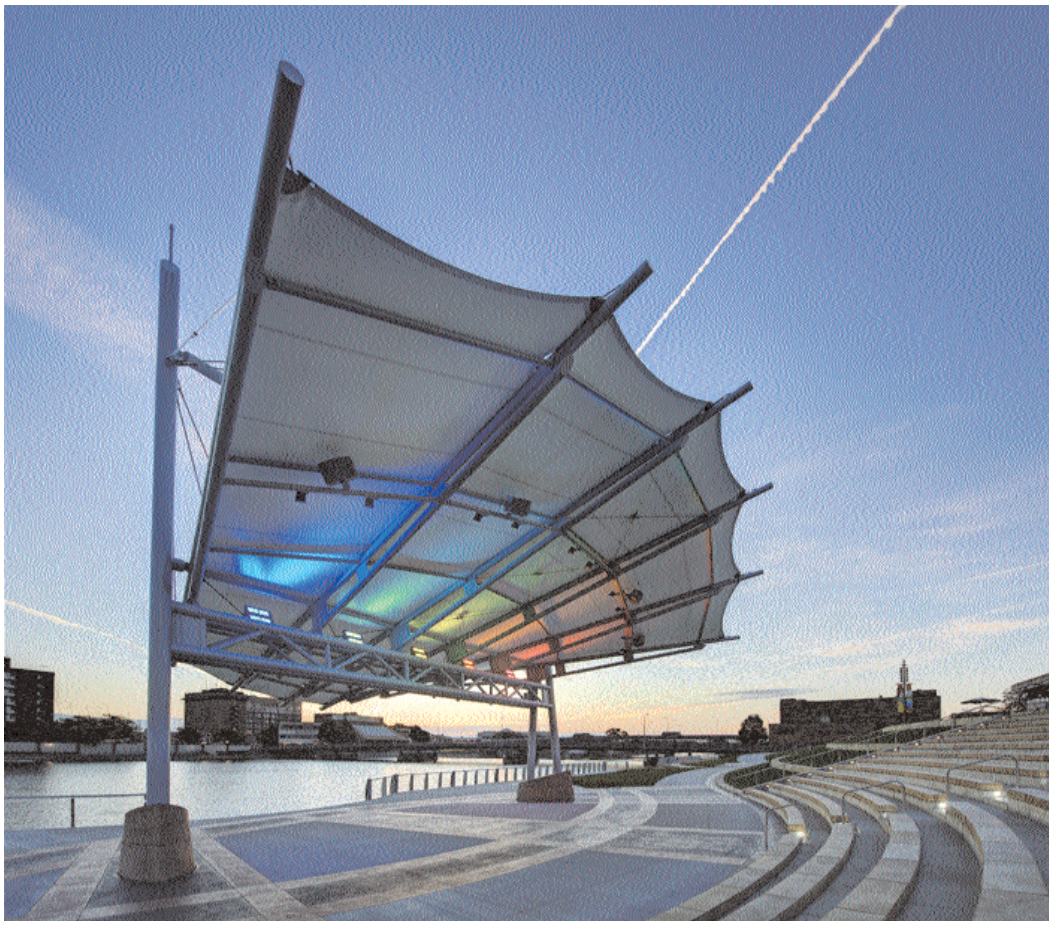


Photo: Steve Hall, Hedrich Blessing

Silver Award

Sarah E. Goode STEM Academy, Chicago, IL
Category: Institutional
Firm: STR Partners + Nia Collective
Contractor: FH Paschen

Placed in a large urban site with native plantings, this LEED Platinum high school is organized in three bars - Mind, Body, Soul - equating to academics, athletics, and arts. A materials palette of dark textured bricks, metal, and colored glass creates a mature yet fun learning environment.

Silver Award

Sky-Line Club Renovation,
Chicago, IL
Category: Renovation
Firm: New World Design Ltd.,
Jeffrey Roberts & Erick Stenzel
Contractor: ALPS Construction, Inc.

The Sky-Line Club is one of Chicago's oldest rooftop clubs. New World Design's renovation removed decades of remodels and restored the club to its historic condition while adding accessibility and essential modern amenities. Renovations to the terrace enable the reintroduction of the club's long-lost terrace dining.

Photo: Bill Zbaren

Silver Award

Smokers' Shelter,
Des Moines, IA
Category: Residential 2
Firm: ASK Studio, Brent Schipper, AIA, LEED AP
Contractor: Jack Daugherty - Koester Construction

The project is a shelter space located away from an apartment entry for residents to smoke. The shelter was imagined as a yard sculpture and its purpose was not to be readily apparent. The space was required to "hide" smokers during the day, but allow persons to be seen after dark and by security cameras for safety.

Photo: Cameron Campbell

Silver Award

St. Catherine University Interior Design Studio - International Market Square,
Minneapolis, MN
Category: Interior Architecture
Firm: DLR Group,
Design Leader, Steve Cavanaugh, ALA;
Kat Yurko and Staci Yurko, Project Designers
Contractor: RJM Construction

This project provides unique and flexible collaborative learning labs for a diverse array of curricula, from interior design to business administration. Intimate learning enclaves can be converted into large, interconnected exhibition spaces quickly and easily.

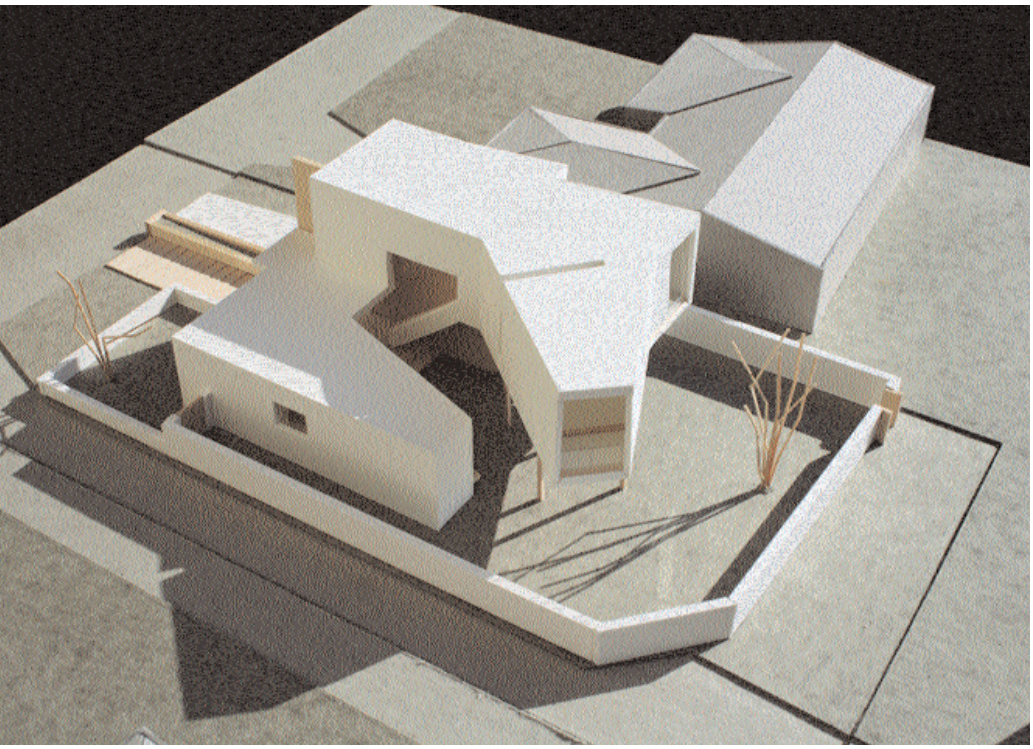
Photo: Don Wong

Silver Award

Technology by Design, Elk Grove, IL
Category: Interior Architecture
Firm: NELSON,
Jason Rosenblatt
Contractor: Clarion Construction, Inc.

NELSON's goal was to transform a suburban industrial warehouse into a hip, energetic workspace. The light-filled loft environment's color palette uses red accents contrasting a neutral background and was inspired by Infinite Peripherals' retail bar code laser scanning devices.

Photo: Padgett and Co.



Silver Award

The Guberman-Kennedy Residence,
Venice, FL
Category: Unbuilt
Firm: Halflants + Pichette: Studio for Modern Architecture
Contractor:
Halflants + Pichette Construction

The small 50-foot-wide site is one house removed from the Gulf of Mexico. A larger residence directly to the west obstructs the view to the Gulf. With careful edits, the design takes advantage of two view corridors through the setbacks of neighboring lots.

Merit Award

Anna Maria Residence, Anna Maria, FL
Category: Unbuilt
Firm: Halflants + Pichette:
Studio for Modern Architecture
Contractor: Halflants + Pichette Construction

From the raised living space, the house first descends to an elevated pool to again step down another half flight of stairs to a wood deck three feet above grade. The house expands to shaded exterior spaces visually connected to the interior. Two double height volumes placed at opposite corners of the plan tie the levels together and add spatial interest to the circulation.

Merit Award

Campus Master Plan - Salvation Army College for Office Training,
Chicago, IL
Category: Unbuilt
Firm: Harding Partners, Paul A. Harding

The Campus Master Plan provided an opportunity to design building, landscape and infrastructure improvements at the Salvation Army's College for Officer Training in Chicago. Using innovative sustainable design strategies, the result expresses the overall mission of the College and reduces operational expenses.

Photo: Ron Blunt Photography

Merit Award

Dale & Frances Hughes Cancer Center,
East Stroudsburg, PA
Category: Institutional
Firm: EwingCole, Saul Jabbawy
Contractor: Turner Construction
Developer: Pocono Medical Center

The L-shaped building was designed to wrap around two sides of a garden, serving as the focal point for the building as the captured wilderness. The public areas including lobby and the waiting areas envelop the garden and share its seasonal change.

Merit Award

Dental Education Building Addition,
Iowa City, IA
Category: Institutional
Firm: INVISION Architecture,
Tom Feldmann, Associate AIA
Contractor: Larson Construction

The addition includes a new entry lobby, clinical area, faculty practice, state-of-the-art classrooms and conference space. The project enhances patient experience by offering greater privacy and simplified wayfinding while allowing natural light to flow throughout the space.

Photo: Cameron Campbell

Merit Award

Illinois National Guard Readiness Center, Urbana, IL
Category: Renovation
Firm: Bailey Edward Design,
Robin Edward Whitehurst, AIA, LEED AP
Contractor: Felmley Dickerson

Bailey Edward preserved the National Register of Historic places - eligible Urbana Readiness Center, while preparing the building for modern warfare. The restoration of the existing building and innovative 3-story structure built within the existing drill hall achieved LEED Gold certification.

Photo: Charlie Mayer Photography

Merit Award

J. Parker Rooftop Bar and Deck at the Hotel Lincoln, Chicago, IL
Category: Renovation
Firm: Hirsch Associates LLC &
Linne-Mathes, Inc.
Contractor: Linne-Mathes, Inc.
Developer: Centrum Partners, LLC &
Angel Gordon & Co.

To turn the Hotel Lincoln's ordinary rooftop into J. Parker, a collaboration between architect, interior designer and landscape architect was required to solve difficult issues in a way that made this rooftop hot-spot accessible and truly worthy of its incredible views.

Photo: Erik Kleinberg and Anthony May

Photo: Ron Blunt Photography

Merit Award

Kent Campus Phase 2 Pavilion Expansion, Dover, DE
Category: Institutional
Firm: EwingCole, Saul Jabbawy
Contractor: Whiting -Turner Contracting Co.
Developer: Bayhealth Medical Center

The client's desire for a unified campus image - blended the existing brick structures and Dover's colonial architecture with a hybrid material language, and the introduced garden walls constructed with brick capture planted spaces around the building and form a textured base that unifies the entire campus.

Merit Award

Killeen Police Headquarters, Killeen, TX
Category: Institutional
Firm: Dewberry Architects
Contractor: Lee Lewis Construction, Inc.

This new 81,000SF LEED Gold Police Headquarters represents a sustainable, inviting, and modern civic building design that has instilled a new sense of pride for the city and police force. This facility now brings together seven previously fragmented and remote police operations under one roof.

Photo: Frank Ooms Photography

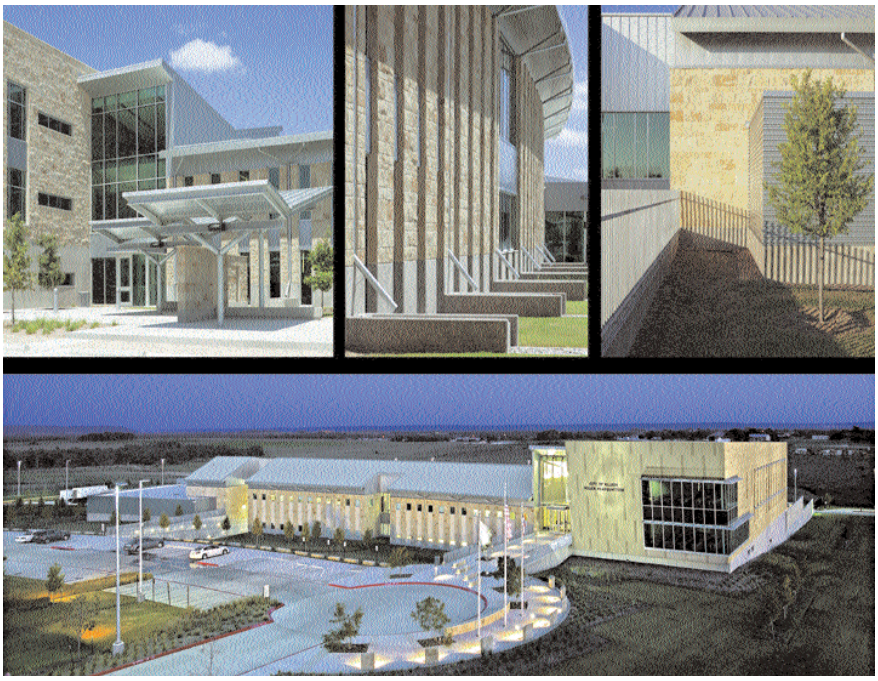


Photo: Dave Burk ©Hedrich Blessing

Merit Award

Mercy Health - West Hospital, Cincinatti, OH
Category: Institutional
Firm: Architecture Field Office, AECOM with Mic Johnson, lead designer; Champlain Architecture, Architect of Record
Contractor: Turner Construction Company

Health is one of the most important issues of our time. Mercy Health-West Hospital sets a new standard for healthcare architecture – transcending necessary functional considerations, and merging natural light, landscape and culture to make a building that uniquely serves the health of its community.

Merit Award

Neff Welcome Center, Lisle, IL
Category: Institutional
Firm: DLR Group, Design Leader, Steve Cavanaugh, ALA; Nathan Casteel, Project Designer
Contractor: International Contractors, Inc.

The project serves student orientation and special events for the University. It is a renovation and addition to an existing historic farmhouse, originally built in 1852. The stone on the addition was sourced from the same quarry as the original.

Photo: James Steinkamp

Photo: Monika E. Benitez

Merit Award

St. Paul's Catholic Church, Chicago, IL
Category: Renovation
Firm: Jaeger Nickola Kuhlman & Associates, David C. Kuhlman, ALA
Contractor: Zera Construction

This project converted an unexcavated crawl space below the historic church into a gathering space for the parish, and a new elevator was seamlessly integrated with the church's interior under the choir loft with custom wood doors and ornamental brickwork.

Merit Award

The Breck School, Minneapolis, MN
Category: Institutional
Firm: Holabird & Root, James Baird
Contractor: McGough

Founded in 1886, this institution is an independent, college-preparatory, PreK-12 school located in Minneapolis, Minnesota. The school commissioned Holabird & Root to perform master planning, a redesign of the overall site, renovation and expansion of existing buildings, and construction of new spaces, including playing fields and green spaces. This school is now LEED Silver Certified.

Photo: Gilbertson Photography

Merit Award

Vanguard Lofts, Sarasota, FL
Category: Unbuilt
Firm: Halflants + Pichette Architects in collaboration with Kevin Bryon
Contractor: Crowley Services, Inc.

The three-story townhouses above garden units are designed with double-height living space, an office mezzanine, and a roof terrace overlooking the city of Sarasota. All living spaces extend to exterior spaces with terraces and yards. The mixture of materials and volumes breaks down the scale while clearly articulating and identifying the various units.

NFL Owners & Architects

by Robert G. Stanton, CPCU, ARM, RPLU, Willis A&E

What do NFL owners and Architects have in common? Answer: sometimes they both have to be saved from themselves. Several years ago the NFL imposed rookie salary limits because owners kept paying huge salaries to unproven talents. Since they couldn't stop themselves the league did it for them. With Architects it's taking projects they really shouldn't be taking on for any number of reasons. However, Architects don't have the benefit of an overseeing guardian angel to save them from bad projects, and must look within for a solution. What we believe would best serve the Architect is Acceptance/ Rejection Protocols.

Acceptance/Rejection Protocols evaluate a project on a risk/reward basis. It entails taking different areas of your practice and creating a risk matrix. The matrix would have two different axis. One would be the severity axis which would have the following categories: Catastrophic, Moderate, Minor. The other axis would have the following: Certain, Moderate, Rare. Taking these two sets of values, corrective actions should be assigned to each. For example: If something is Catastrophic and Certain, the action plan may be to discontinue the operation or reject the project. A grid would set parameters for what are absorbable risks and what is a true threat to the firm. Let's take the contract negotiation aspect of the Architect's practice.

Let's take several frequently used phrases or requirements in the contract and see how this matrix would work. It should be understood that we are making general assumptions on these classifications. Your firm may be structured differently, and some of the issues noted above may not fit in the same categories as noted above. The whole point of this would be to analyze the contract in the context of these types of parameters to determine if the project would be acceptable. It should be noted there are extenuating circumstances which could affect the matrix as well. An architect called me and had his client on the line. The client indicated that he refused to waive consequential damages because, "I want to have the ability to drive him out of business if he costs me money." It was the only time I have recommended to an Architect not to take a project. Note that the below matrix is a very basic model. The model can be expanded to include ratings like frequent or unlikely for likelihood, or significant and insignificant in severity.

This same matrix can be used to address issues like Client or Project Selection, QA/QC and site observation duties.

Is this exercise necessary on all projects? It would be nice to say, "Oh yeah, sure," but the reality is this could be a time consuming activity, and you might not have the time. Also, you may have recurring assignments or repeat customers with whom you have a viable working relationship, and to add this could bog down the process. On the other side of the coin, if you are working for a large city like Chicago, New York, etc., you are probably getting a bad contract where a great many of the issues in red are a part of the working relationship, and have been addressed in the course and scope of your history with your client.

However, the matrix does have value in things like addressing new clients, or if major financial or personnel changes have occurred with existing clients. The market appears to be recovering as more contracts and claims are coming in the door. Therefore, as firms get busy again there must be a concerted effort to make sure no one is taking on needless risk just to get business in the door. Remember, avoidance of risk is still a viable risk management tool, and a severe claim can do more damage to a firm than the fees earned on the project. Don't rely on someone else to save you from yourself. Take the time to analyze projects in an objective, logical fashion, and you will avoid getting the dreaded letter which starts with "This law firm represents the interests of your client…"

	RARE <20%	MODERATE 20%-70%	CERTAIN 70%+
CATASTROPHIC Significant action needed or reject project.	Owner not responsible for own negligence	Setoff/Standard of care/ liquidated damages/ refuses to negotiate onerous contract	Defense obligation/ ISO forms for GL policy/no LOL
MODERATE Significant action needed, but project may be acceptable	Continue to work while claim pending/	Time of the Essence/ /Pay when paid/ Liens/ Contractual Liability for PL policy/ endeavor to protect owner against defects	Ownership/ Paid when-if paid/ two-way term./ applicable laws
MINOR Adjustments can be made within the firm to address	Deductible levels	Record keeping/ assignment of contract/Arbitration	Any and all language/ notification of potential issues

(continued from page 14)

Exception 1, 907.5.2.3, Exception 4).

In addition to visible and audible alarms, specific code provisions require a public address system be part of the alarm notification system in large assembly buildings, schools, special amusement buildings, high-rise buildings, underground buildings and covered mall buildings (Sections 907.2.1.1, 907.2.3, 907.2.12.3, 907.2.13, 907.2.19, 907.2.20, respectively). This would allow for the delivery of verbal instructions in the event of unsafe crowd responses or potential confusion regarding egress paths. Captioning of this communication is required in stadiums, arenas and grandstands (Section 907.2.1.2). This aids persons with hearing impairments and the general population that cannot hear the announcement due to distortion or noise levels.

In mercantile facilities, a voice announcement may be used to notify occupants (Section 907.2.7.1). Because the original alarm signal must be sent to a constantly attended location, this option is typically used only when the store is open for business, with the audible and visible alarm notification system used during non- business hours. Per the fire evacuation plan provisions given in Section 404 of the 2015 International Fire Code®, the staff of facilities that employ this option must be trained to search the store to make sure occupants are aware of the emergency and the need for evacuation.

Institutional and Residential Facilities

Institutional and residential facilities may require visible and audible alarms under the IBC (Sections 907.5.2.3.2 and 907.5.2.3.3). Smoke alarms also are required in Groups I-1 assisted living facilities and in Group R residential occupancies (Section 907.2.11). While audible alarms must be capable of being heard throughout the building, visible alarms are not typically required within individual patient rooms, guestrooms or apartments (i.e. sleeping units and dwelling units).

Visible alarms must be installed in a minimum number of units in Group I-1 assisted living facilities and in Group R-1 hotels (Section 907.5.2.3.2). The units may or may not be the Accessible units; the number of units in which visible alarms are required is about double the number of Accessible units required (Section 1107). Units with visible alarms should be available upon request for persons with hearing impairments.

Group R-2 residential buildings—such as apartments, dormitories and congregate residences—are another special consideration (Section 907.5.2.3.3). When a building is required to have a general evacuation alarm, public areas such as lobbies, hallways and community dining rooms are required to have visible and audible alarms. The general alarm notification must be audible within the residential units. Visible alarm notification appliances are not required within each unit, but visible notification can be easily made available when requested for persons with hearing impairments, via alarms within their units.

> "All persons and situations must be considered when specifying a fire alarm system. With few exceptions, audible alarms are required throughout a building, and visible notification is required in all public-use areas and all common-use areas."

Single- or multiple-station smoke alarms are required within each sleeping room, immediately outside of all sleeping rooms, and on each floor level in a suite or dwelling unit (Section 907.2.11.2). When multiple smoke alarms are installed in a unit, they must be interconnected (Section 907.2.11.5). In Group R-2 facilities, when a building evacuation alarm system is installed, a wire from the general system must be provided to one of the smoke detectors in the unit (Section 907.5.2.3.3 and ICC/ANSI A117.1, *Standard on Accessible and Usable Buildings and Facilities*, Section 1006.4).

When a person with a hearing impairment wants visible notification in their apartment, it is easy to switch out the typical audible smoke detectors for smoke detectors that have visible and audible alarms (Note: Alarm devices must be listed for the purpose they are to serve). Through the existing wiring, the general building evacuation alarm will be connected to the smoke detectors. Note that while hearing-impaired residents will not know whether notification is due to a general alarm or an alarm within their units, they can at least be notified of a possible emergency situation. Also note it is neither intended nor desirable that smoke alarms within a unit set off the general building alarm evacuation system due to the possibility of frequent false alarms.

Conclusion

All persons and situations must be considered when specifying a fire alarm system. With few exceptions, audible alarms are required throughout a building, and visible notification is required in all public-use areas and all common-use areas. Private areas also must be designed to allow for the installation of visible alarms when a person with a hearing impairment requests that accommodation. In limited situations where alternative systems are permitted (e.g. hospitals), staff must be continually available to provide appropriate assistance

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Geothermal Heat Pump Technology: The Green Standard for Energy-Smart Heating, Cooling and Hot Water

Provided by WaterFurnace International, Inc.

By Scott Niesen

Learning Objectives:

After reading this article, you will:

1. Understand how geothermal heat pump (GHP) technology works.
2. Know how GHP operating costs compare with those of other HVAC types.
3. Know why GHPs are frequently used in LEED® Platinum design.
4. Understand some of the installation and design considerations for various GHP configurations.

Introduction

Geothermal heat pump (GHP) technology appeals to both sides of the brain. Analytically, as a proven heating and cooling method with a Coefficient of Performance (COP) of up to 5.3, it is very cost effective. Emotionally, it creates a comfortable, home environment and has minimal impact on the planet. Often considered as part of a US Green Building Council Leadership in Energy & Environmental Design (LEED®) design, GHPs tap into the clean, renewable solar energy stored in the ground to offer building and home owners savings of up to 70 percent. When designed properly, this versatile technology can be adapted to almost any environment and can be scaled to a new or existing single family home, or an entire college campus. According to the U.S. Department of Energy (DOE) and Environmental Protection Agency (EPA), GHPs typically provide heating efficiencies 50 to 70 percent higher than traditional air source heat pumps and cooling efficiencies 20 to 40 percent higher than typical central air conditioners. This makes them one of the most efficient residential heating and cooling systems available.

More than 1.5 million residential, commercial and government buildings across the United States already make use of this fast growing technology. Elsewhere, the prevalence is even higher: Switzerland alone—four-thirds the size of Maryland with a population the size of Virginia's—boasts around 70,000 installations. Each year, approximately 85,000 GHPs are installed in the U.S. Given the proven track record, increasing popularity and multifaceted consumer appeal of GHPs, architects have a number of factors to consider when implementing this technology.

How Geothermal Heat Pumps Work

Regardless of location, ground temperatures are much more moderate than the air—generally around 50-55 degrees Fahrenheit. By circulating an antifreeze solution through closed loops of buried pipes, GHPs allow the earth to normalize system temperatures, cooling the liquid in summer or heating it in winter. Apart from the minimal energy expended to circulate the solution, this heating or cooling effect is "free" and contributes to significant energy savings compared with other types of heating, ventilation and cooling (HVAC) systems.

At the same time, the system's heat exchanger unit operates a refrigerator-like vapor-compression cycle that transfers heat between the liquid in the ground loop and a closed loop of refrigerant (Figure 1). This process uses energy to move heat against the spontaneous heat-flow gradient, concentrating it where it is needed: heat is transferred to the ground loop for dissipation in summer, or to a building's conventional forced air or hot water system in winter. In this way, 50 degree ground temperature can be converted to 110-120 degrees for use in a building. In either season, warm water may be shunted to assist the building's water heating system as well, for further energy efficiency.

The Cost of Heating with a Geothermal Heat Pump, Compared to Fossil Fuels

GHPs are some of the most energy-efficient heating and cooling systems available and can reduce a building's energy consumption and operating costs well into the future.

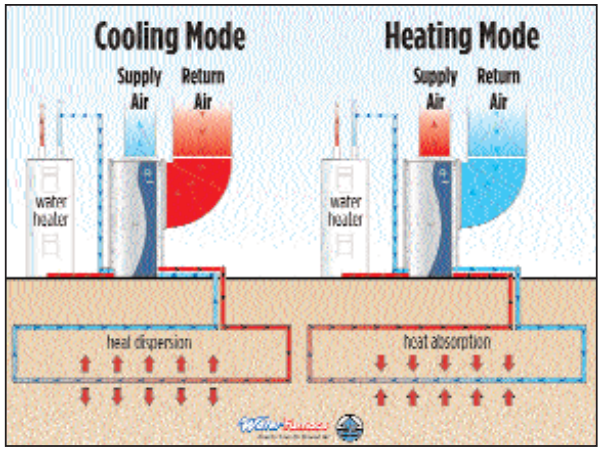


Figure 1. Geothermal heat pump schematic. Note relationship between temperature moderating ground loop, concentrating heat exchanger, and house circulation. In the cooling season, the direction of flow through the heat exchange cycle is reversed.

These pumps achieve very high COPs, ranging up to 5.3 for some of the most sophisticated systems. A heat pump's COP is the ratio of heating or cooling provided for a given amount of electrical energy consumed. A higher COP means greater efficiency and lower operating expenditures.

To understand the cost of running a GHP, it's useful to start by comparing the costs of various energy types. Heat pumps do require an external energy source to run. The most common source is electricity. For instance, if a homeowner were paying $.0122/kiloWatt hour for electric heat, in order to equal that operating cost, the price of 65 percent efficient fuel oil would have to be, at the most, $3.25/gallon.

Now consider a geothermal system running on electric resistant heat and operating at a COP of 3.5. This COP means that 3.5 times the amount of energy being used is being produced as heat. In this case, the equivalent fuel oil price would be no more than $.93/gallon, and natural gas would cost no more than $.97/therm. Clearly, prices this low are extremely unlikely in the current market. Table 1 shows cost equivalents for an even more efficient geothermal system with a COP of 5.2. To equal this system's operating cost, oil and gas prices would have to drop to $.63 and $.65, respectively.

Maintenance and Long-term Return on Investment

Aside from its fundamental low operating cost, an added consideration is that the cost of heating and cooling with GHP technology is relatively stable and predictable. In contrast, the cost of running systems using fossil fuels is more likely to fluctuate with inflation and volatile fuel prices (Figure 2).

Furthermore, because the components—fan, compressor and pump—are located indoors or underground, protected from the elements, geothermal systems last a long time and require only minimal maintenance. Lower temperature gradients and fewer moving parts enhance longevity. Regular cleaning of the air filter and occasional cleaning of the indoor drain pan are all that is necessary. Most of the piping is underground and requires no maintenance. Whereas a conventional heat pump or gas furnace might have an average lifespan of 10 to 15 years, a geothermal unit lasts, on average, 24 years. If installed properly, the buried high-density polyethylene ground loop may last for generations.

Comparing Energy Costs

Table 1

COMPARE ENERGY COSTS - GEOTHERMAL HEAT PUMPS TO FOSSIL FUELS

Geothermal Heat Pump (GHP) with COP of 5.2 price/kWh	Fuel Oil 65% efficient price/gallon	LP 95% efficient price/gallon	Natural Gas 95% efficient price/therm	Cost per Million BTU
$0.122	$0.63	$0.60	$0.65	$6.87

Example: If you are comparing a geothermal heat pump with a COP of 5.2, at $0.122/kWh (12.2 cents/kWh), to a 95% efficient Nat Gas system, you would have to buy Nat Gas at $0.65/therm., or less, to have as low an operating cost as the geothermal heat pump.

Homeowners and building owners can take advantage of federal, state and/or local tax credits and utility rebates when in-stalling a GHP system. A one-time tax credit of 30 percent of the total investment for homeowners who install residential ground loop or ground water GHPs is available through December 31, 2016. A credit of 10 percent of the total investment is also available (no maximum) for a commercial system installation. Lastly, a geothermal heating and cooling system increases resale value, even for those who do not plan to stay in a home or building for long.

Geothermal Heating and Cooling Systems Improve Indoor Air Quality and Comfort Levels

With reports from the EPA that indoor air can have 2-5 times higher concentrations of harmful pollutants than outdoor air, the general public is now more conscious of indoor air quality than ever before. Geothermal systems can improve the indoor atmosphere in a number of ways. Circulating units may feature two-speed compressors that allow them to run longer, eliminating short blasts of hot or cold air and improving comfort through more stable temperatures. With these longer, steadier run times, air quality also improves, because the geothermal system has more time to dehumidify the air and filter out harmful toxins.

Furthermore, during operation, a geothermal system releases none of the products associated with combustion, such as carbon monoxide fumes, which, if present, would disseminate throughout the building. This absence of harmful gas production becomes more and more relevant as building envelopes become tighter and tighter.

Unlike many conventional air conditioners or heat pumps, geothermal heating is quiet, with some models featuring variable-speed fan motors and acoustical enclosures for the compressors. All of the equipment is designed to fit indoors, with no noisy,

(continued on page 38)

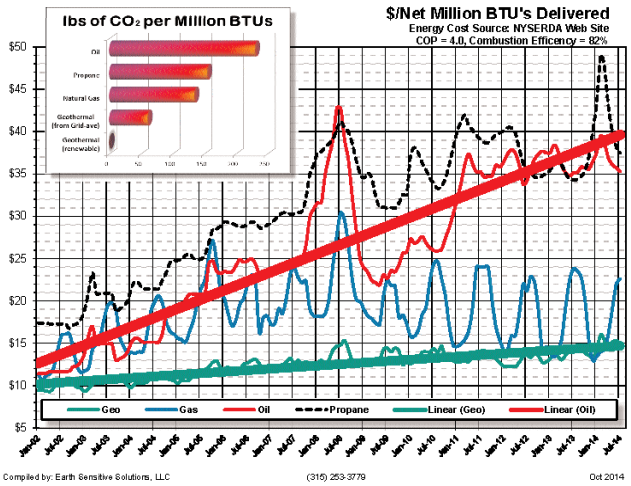


Figure 2: Trends in Energy Costs. The cost of geothermal heating and cooling is relatively stable compared to the operating costs of fossil-fuel based systems.

(continued from page 37)

unsightly outdoor units to clutter the exterior of the building or disturb neighbors. All of these benefits can contribute to higher resale values as well.

Variable Speed Compressors Advance Geothermal Technology

Compressors in conventional heat pumps typically run at a fixed speed all the time. But about 90 percent of the time, a fixed-speed compressor cycles on and off or uses some other energy-wasting technique to throttle back capacity. With a two-speed compressor, the system shifts to a lower speed to save energy when only a small change in temperature is required.

To boost energy efficiency even more, a variable speed compressor can minimize energy consumption by varying compressor capacity to match cooling or heating needs exactly. Today's variable speed GHPs provide

efficiencies up to 5.3 COP in heating and an Energy Efficiency Rating (EER) above 41 for cooling, which is more than twice as efficient as an air source heat pump or air conditioner, and a third more efficient than current dual capacity geothermal units.

To illustrate how a variable speed compressor is more efficient than a normal compressor, consider a car that has only two choices: 30 mph and 70 mph. It would be hard to maintain a speed of 55 mph and the car wouldn't be very fuel-efficient because it takes more gas to get up to speed than it does to maintain it. Similarly, a variable speed compressor uses low capacities and just a small amount of energy to constantly maintain building temperatures.

Leading-Edge Performance Moves Efficiency to the Forefront

To change speed, a variable speed compressor in a GHP uses an external variable frequency drive (VFD) — also known as an inverter — to slow or speed up the alternating current (AC) electric motor that drives the rotating elements inside the scroll compressor. A VFD is critical to operating a variable speed compressor, because it reshapes the frequency of the current supplied to the AC motor to change speed, torque and overall performance. Therefore, a considerable amount of intelligence is built into the inverter used by the variable speed compressor.

Variable speed systems only need to run at full speed 10 percent of the time. By reducing compressor speed, horsepower is also reduced — and energy consumption — in direct proportion. To take full advantage of a variable speed compressor's potential, the entire system also has to become more intelligent. A variable speed blower motor and variable speed circulator pump enable the entire system to scale along with the compressor.

Why Geothermal Energy is Fundamental to Green Building Design

GHP technology is recognized as the most efficient, greenest heating and cooling method by opinion leaders in government and private sectors. U.S. DOE sources state that GHPs could cut HVAC energy demand by 50 percent and overall energy demand by 35 percent. Dramatically reducing a building's carbon footprint, geothermal ground loops contribute to heating and cooling without burning fossil fuel or emitting any carbon dioxide, carbon monoxide or other harmful greenhouse gases linked to global warming, acid rain and other environmental hazards.

Geothermal systems also help utilities achieve significant reduction in peak demand loads and therefore reduce the total utilization of natural resources such as coal, natural gas, or oil used to generate electricity. For example, a geothermal system in a 2,500-square-foot home saves the electric utility company more than nine tons of coal per year. This reduction in overall electricity demand carries the added benefit of reducing the nation's dependence on foreign oil.

Finally, designing with geothermal energy, depending upon the system, can earn a project a substantial number of points toward LEED certification. Points may be earned not only in the Energy and Atmosphere category, but also in the Indoor Environment Quality, Innovation and Design, and Water Efficiency categories. LEED Platinum buildings, such as the Annapolis, Maryland, Phillip Merrill Center—the Chesapeake Bay Foundation headquarters—almost invariably take advantage of this readily available energy source.

Site Considerations: Lay of the Land and Soil Type

Shallow ground temperatures are relatively constant throughout the U.S., ranging from 45˚F to 75˚F. Geothermal systems are in use throughout the country. However, the specific geology and size of the site will determine which type of ground loop is most appropriate and which construction methods are best.

The most commonly used ground loop configurations are: horizontal, vertical and pond/lake closed loop systems.

Horizontal closed loop systems are generally the most cost effective. Piping, which is sometimes coiled, is buried in trenches 4 to 6 feet deep. The length and number of trenches depend upon the lot size and the energy load being serviced.

Vertical closed loop systems are typically used for larger commercial buildings and schools, or for homes with insufficient land—usually 1/4 - 3/4 acre—or pre-existing obstacles, such as utilities or landscaping, that preclude installation of a horizontal loop system. Up to five vertical loops 100 to 400 feet deep can be installed in an area no bigger than 10 feet by 20 feet.

Where a sizable body of water is available, a pond/lake system can be a cost-effective alternative. In this type of system, a closed loop of piping runs from the building, underground and into the water, at least 8 feet deep to avoid freezing. A 1/2-acre, 8-foot-deep pond less than 200 feet away is usually sufficient for the average home. Coils of piping are placed on the bottom of the pond to exchange heat energy with the water.

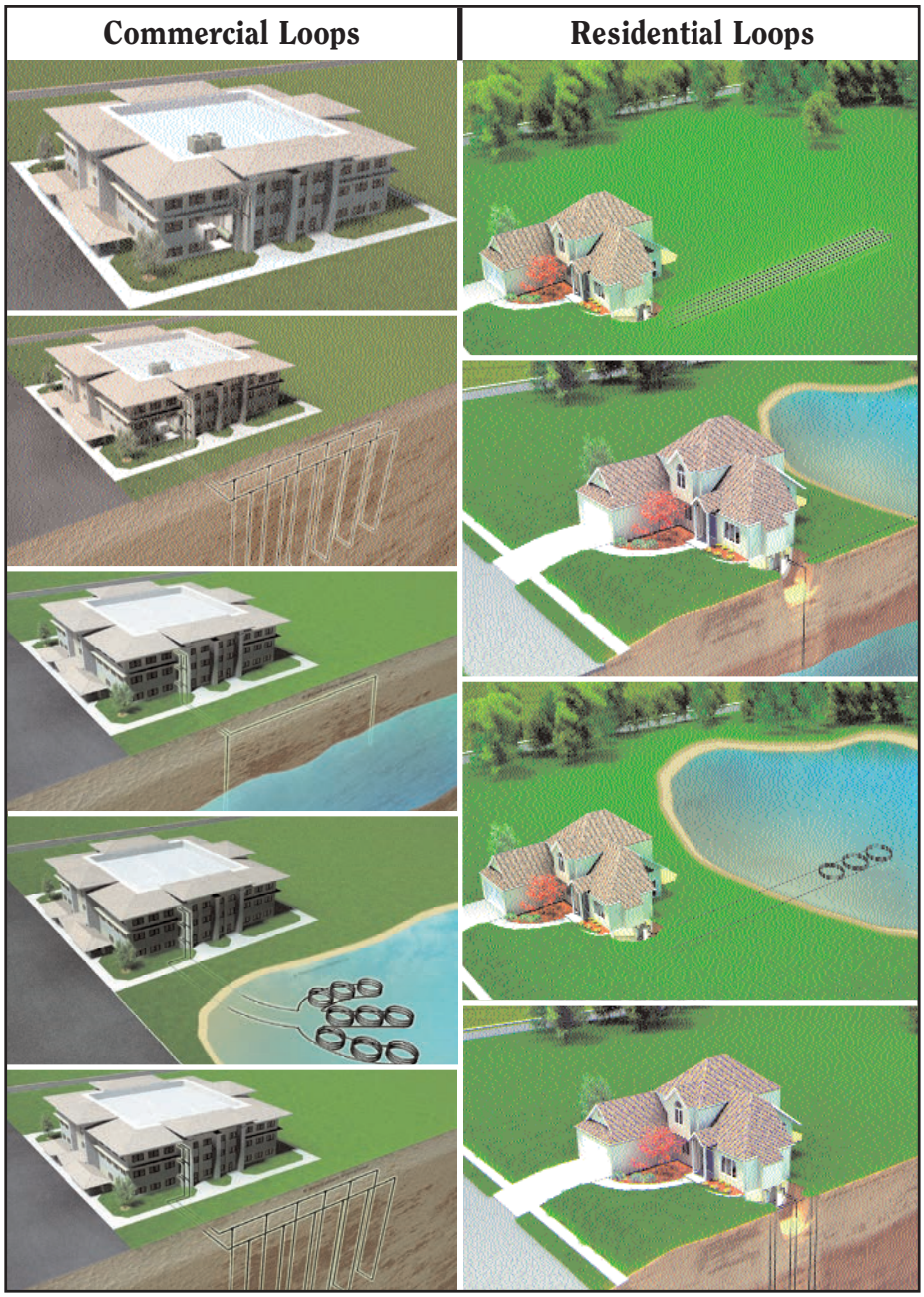
In addition to project and lot size, local geology must be considered in ground loop design. Soil and rock composition can affect heat transfer rates and must be taken into account. For example, soil with good heat transfer properties, such as moist sand, requires less piping than soil with poor heat transfer properties, such as clay. The depth of the soil also matters—extensive hard rock or soil too shallow to trench may necessitate the use of vertical rather than horizontal loops.

System and Installer Considerations

Not all geothermal systems are created equal. The first things to compare among systems are the COP rating for heating and the EER for cooling, for the application at hand. GHP COP ratings range from around 3.5 to 5 or greater. This number is directly related to how much more heat is generated than energy expended and will affect a building owner's satisfaction with the system's energy efficiency.

Select a supplier and certified installer with proven track records. Some suppliers vet their installers; others don't. This is important, because as demand for this technology rises, more and more contractors may want to become installers, but they may not have the experience or know-how to do the job correctly. Specialized technical knowledge and equipment are needed to properly install ground loops. Check installer references for systems that are several years old and functioning well.

Partnering with a well-established supplier and contractor is not only important for installation, but also for design. Based on the architectural specifications, the HVAC installer will determine the energy load. For geothermal systems, getting this calculation right is critical. The efficiency of the system depends upon it being sized correctly. A system that is either too large or too small for the energy load will forfeit efficiency. The size of the ground loop depends not only on the energy load, but also on the soil type and climate. Some suppliers provide their certified installers with geothermal design and energy software that combines standard ASHRAE loads input with climate tables and other location-specific information. This kind of support and related training help take the guesswork out of sizing. Selecting suppliers and contractors with the tools and experience to get the details right is crucial for optimal performance of geothermal heating and cooling systems.



The geothermal industry is working to classify GHPs as a renewable energy source in the 40 or so states that have Renewable Portfolio Standards. Illinois, New Hampshire, Maryland and Massachusetts have all taken the bold step of classifying thermal energy, meaning GHPs, into their definitions of renewable energy. Other states may soon follow suit. This means both contractors and utilities promoting renewable energy can derive similar benefits from geothermal that previously were restricted to technologies like wind and solar energy.

Summary

A correctly sized GHP system reduces a structures carbon footprint by drawing on a free, renewable supply of solar energy to achieve efficiency ratings up to five times higher than those of ordinary heating and cooling systems. A GHP can reduce utility bills up to 70 percent. Use of geothermal technology offers even distribution of heating and cooling, improved indoor air quality, low maintenance costs and an average life span of 24 years. An architectural design featuring a geothermal HVAC and hot water system can garner numerous points toward LEED certification. Proper design and installation must allow for a variety of factors. Satisfactory results depend upon the selection of reliable equipment suppliers and experienced contractors.

Association of Licensed Architects
Continuing Education

Geothermal Heat Pump Technology: The Green Standard for Energy-Smart Heating, Cooling and Hot Water

by Scott Niesen, WaterFurnace International

Learning Objectives:

1. Understand how geothermal heat pump (GHP) technology works.
2. Know how GHP operating costs compare with those of other HVAC types.
3. Know why GHPs are frequently used in LEED® Platinum design.
4. Understand some of the installation and design considerations for various GHP configurations.

Program Title:

Geothermal Heat Pump Technology: The Green Standard for Energy-Smart Heating, Cooling and Hot Water

ALA/CEP Credit: This article qualifies for 1.0 HSW LU of State Required Learning Units and may qualify for other LU requirements. (Valid through December 2016)

Instructions:

- Read the article using the learning objectives provided.
- Answer the questions.
- Fill in your contact information.
- Sign the certification.
- Submit questions with answers, contact information and payment to ALA by mail or fax to receive credit.

QUIZ QUESTIONS

1. The number of existing geothermal heat pump (GHP) installations in the United States is:
   a. 70,000 b. 300,000
   c. 1.5 million d. 3 million

2. A GHP can operate successfully:
   a. in any environment when properly designed
   b. only where average temperatures do not exceed 75˚F
   c. only where topsoil is at least 4 feet deep
   d. with its ground loop submerged in a 6-foot-deep pond

3. GHP systems:
   a. require an external energy source to concentrate heat
   b. require an external energy source to exchange heat with the ground
   c. do not require an external energy source for circulation in the building's air duct or forced hot water system
   d. do not require any external energy source

4. In a geothermal system,
   a. heat is transferred directly from the ground loop to a building's air duct or forced hot water system
   b. a refrigerator-like device is used for cooling only
   c. the refrigerator-like device used for cooling can operate in the reverse direction when heating is required
   d. hot water heating can only occur during the cooling season

5. A coefficient of performance (COP) of 4.0 means that:
   a. four times the amount of energy being utilized is being produced as heat
   b. one fourth of the energy being used is being produced as heat
   c. the system takes 4 times as much energy to heat as it does to cool
   d. the heat exchanger gradient is 4 degrees

6. Geothermal systems help improve the indoor environment by:
   a. allowing the system more time to dehumidify the air
   b. allowing the system more time to filter out toxins
   c. eliminating short blasts of hot or cold air, thus stabilizing temperatures
   d. all of the above

7. Today's variable speed GHPs provide:
   a. efficiencies up to 4.2 COP in heating and an Energy Efficiency Rating (EER) above 35 for cooling
   b. efficiencies up to 5.3 COP in heating and an Energy Efficiency Rating (EER) above 41 for cooling
   c. efficiencies up to 4.8 COP in heating and an Energy Efficiency Rating (EER) above 38 for cooling
   d. none of the above

8. Vertical closed loop systems:
   a. are relatively easy to install
   b. require at least 1/2 acre of open land
   c. are often used for large buildings
   d. are composed of pipes buried 4-6 feet below ground level

9. Ground loop design is dependent upon:
   a. energy load b. lot size
   c. soil type d. all of the above

10. GHP technology can garner LEED points in which category?
    a. Energy and Atmosphere (EA)
    b. Indoor Environment Quality (EQ)
    c. Water Efficiency (WE)
    d. All of the above

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(continued from page 10)

appellate court all were brought on behalf of plaintiff condominium associations.[9] Condominium projects are the battleground where these disputes are arising because the cases are being filed by condominium association attorneys on behalf of condominium associations.

It remains to be seen how the Illinois court will rule. However, architects who work on residential projects, and condo projects in particular, would be wise to take into account what is going on in courts, state legislatures, and city governments across the country, in the context of the design process in general and client relationships in specific. Architects should carefully consider the implications of each aspect of their designs, and think of their work holistically, not just with regards to how the various elements will impact the client, but also an eventual, unknown owner. These considerations will need to be communicated to developers and builders, especially when they request changes for the purpose of cost savings. Changes, for cost reasons or otherwise, can have a ripple effect moving outward, and impact an eventual end purchaser who *might* be empowered to hold responsible parties with whom that purchaser never contracted and to whom that purchaser never paid a dime. In addition to communicating all of these considerations, they should be carefully documented as well. While taking these steps will not necessarily insulate a designer from a claim, it could provide key evidence needed to put distance between that designer and any alleged defects which later come to the surface and serve as the basis for a lawsuit.

Architects working on condo projects should also consider purchasing additional insurance coverage, to the extent possible. Based on the Colorado experience, that might become less possible, depending on the jurisdiction. Finally, the additional exposure posed by condominium projects should be factored in when proposing and negotiating fees. If these projects are becoming more expensive for architects, then there is good cause for passing along some of that additional expense to the architects' clients ■

[1] Shawn E. Goodman, Design Professional Liability for Negligent Misrepresentation, Licensed Architect, Fall 2011, at 8.

[2] Beacon Residential Cmty. Ass'n v. Skidmore, 327 P.3d 850 (Cal. 2014)

[3] Colo. Rev. Stat. § 38.33.3-302(1)(d) (2005).

[4] Editorial, Colorado State Law Hampers Building of Condos, Denver Post, Sept. 28, 2014.

[5] Molly Foley-Healy, Editorial, Don't Sacrifice Colorado Homeowners, Denver Post, Oct. 11, 2014.

[6] Lakewood, Colo., Ordinances ch. 14.26 (2014).

[7] Petersen v. Hubschman Constr., 389 N.E.2d 1154 (Ill. 1979).

[8] The American Institute of Architects, American Council of Engineering Companies of Illinois, Illinois Society of Professional Engineers, Illinois Professional Land Surveyors Association and Structural Engineers Association of Illinois have together filed an *amicus*, or "friend-of-the court" brief siding with the defendant architects.

[9] Our firm represents the defendant architect in one of the three consolidated appeals.

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2014 ALA Golf Outing

Friday, August 15, 2014

TAMARACK GOLF CLUB
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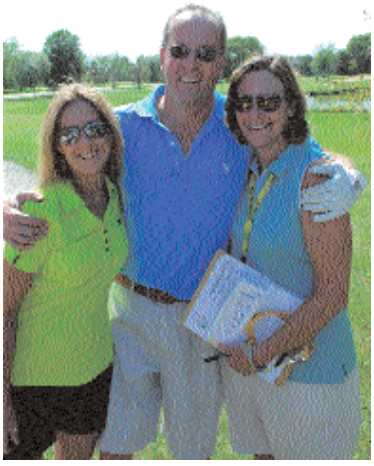

The ALA Golf Outing was held on Friday, August 15 at the Tamarack Golf Club in Naperville. The weather was ideal for 65 golfers geared up to challenge the links in a scramble format. Throughout the course, all enjoyed additional games along the course from launching a golf ball 350 yards and new this year, don't drink and drive goggles. Thank you to our Eagle sponsor, Allegion and Moen Incorporated who provided hearty appetizers at the lively "19th Hole" reception.

Following a buffet dinner, winners from the course were announced as well as those lucky ticket holders who won prizes from the infamous ALA Raffle. Check out some of the amazing prizes below as well as our sponsors and winners.

A huge thank you goes to **Pat Harris and Kim Aldana from Harris Architects** for their continued support in bringing this fun event to our members.

THANK YOU TO OUR SPONSORS:

19th Hole Sponsor - **Moen Incorporated**

Eagle Sponsor - **Allegion**

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GOLF PRIZES & WINNERS:

Closest to the Pin - $50.00 Gift Certificate – PGA SuperStore
Byung Park, *Hirsch Associates*

Longest Drive Men's - $50.00 Gift Certificate – Home Depot
Kasey Kluxdal, *Harris Architects*

Longest Drive Women's - $50.00 Gift Certificate – Mario Triccoci
Deanna Hendray, *Harris Architects*

Lowest Scoring Foursome - $100.00 Gift Certificate Each - Best Buy
Jerry Krusinski, Ryan Lehman, Andy Johnson, Brian Heinrich;
Krusinski Construction Company

Highest Scoring Foursome - Plumbers Putter Traveling Trophy
Richard DuPrey, Koz Koscielniak and Darryl Mayo

Putting Contest Winners
1st Prize $100.00 – Scott Hezner, *Hezner Corp.* – Hole in One!
2nd Prize $75.00 – Nick Edwards – *Harris Architects*
3rd Prize $50.00 – Koz Koscielniak, "*Kozitecture*"

Ball Launch Winner
Robbie Drell, *B. Weinstein Associates* - 3 Days 3 Nights in Vegas

Don't Drink & Drive Winner
John White, *Harris Architects* - $100 of Golf

Scratch Card Winner
Tom McCabe – *SPACECO, Inc.* - 3 Days 2 Nights VEGAS

Top Raffle Winners:
Lenovo 10" 8G Tablet ..... John White, *Harris Architects*
Sharp 39" HD TV ..... Kasey Kluxdal, *Harris Architects*
Kindle Fire HD ..... Nick Norman, *Hirsch Associates*
GoPro Camera ..... Tom Resnick, *SPACECO, Inc.*







16th ANNUAL

ALA MIDWEST ARCHITECTURE CONFERENCE + PRODUCT SHOW | 2014

ALA hosted its 16th Annual Architecture Conference and Product Show on September 30th at the Drury Lane Conference Center.

Approximately 350 attendees enjoyed the day visiting exhibitors at the product show, networking, and attending educational seminars. Our new schedule allowed for architects to earn up to 8.25 learning units throughout the day. A modified day was also offered with the ability to earn 3.25 learning units. Architects could choose from over 25 seminars covering a wide range of topics. In addition, over 30 students from area colleges and universities joined us to hear Harry M. Falconer, Jr., IDP Director from NCARB, speak on the changes and steps necessary to achieve licensure and how to get the most out of your career in architecture.

Our keynote speaker, Gordon Gill of Adrian Smith + Gordon Gill Architecture (AS+GG), spoke about "The Beauty of Utility". His inspirational and enlightening presentation illustrated projects worldwide ranging from super-tall buildings to urban planning. Mr. Gill shared his outstanding insights into the highly complex world of design rationale and the commitment of AS+GG to creating intelligent, high-performing buildings with forward looking designs.

Throughout the day, over eighty companies and manufacturers were on hand to showcase new products in the building and architectural fields. We had many new exhibitors this year and look forward to a continued partnership with all exhibitors to exchange new developments and information throughout the industry.

Our show would not be complete without the loyal sponsorship of several companies as well as the generous contributions of raffle items. Be sure to see our list of sponsors and exhibitors on these pages.

Next year's show will be on Tuesday, October 6, 2015 at Drury Lane. We look forward to seeing you there!

Thank You to our 2014 Conference Sponsors:

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PCI – Precast/Prestressed Concrete Institute of WI/IL

Keynote Sponsor:
USI Insurance Services/A-E ProNet

Lanyards:
M.G. Welbel & Associates



Thank You to our 2014 Exhibitors

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Aetna Plywood
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Allegion
Ambiance Lighting Systems
Amerimix
Ameristar Fence Products
Andersen Windows, Inc.
Arc Imaging Resources
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cfi Foam
Chicago Plastering Institute
Chicago Regional Council of Carpenters
Chicagoland Roofing Council
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Save the Date for next year's Conference:

Tuesday, October 6, 2015

at Drury Lane Conference Center, Oakbrook Terrace, IL

Attention Exhibitors!

Call Rob at 847-382-0630 to reserve your booth for 2015.

Congratulations to our Raffle Winners and Thank You to the Donating Companies

WINNER'S FULL NAME	COMPLIMENTS OF	RAFFLE ITEMS
Mark Majercik	cfiFoam	$50 Starbucks Gift Card
Joseph Carroll	Financial Security Group	$50 Amazon Gift Card
Dennis Kimme	Henry Company	$50 AMEX Gift Card
Corey Zussman	Indiana Limestone Company	Dr. Dre - Beats Headphones
James Pavlecic	International Beams	Ematic - Pro 8 GB Tablet - 8" - Wireless LAN - 1.60 GHz
Joseph Meye	J.N. Lucas & Associates Inc.	Two Bears vs Lions tickets, Sunday, 12/21 at Noon on 45 yard line
Timothy Colleran	Konica Minolta Business Solutions, USA Inc.	$50 VISA Gift Card
Wayne Babiak	M.G. Welbel	$50 AMEX Gift Card
Karl Grant	Moen	Moen Motion Sensor Kitchen Faucet with SRS surface
George Sarfatty	Morin, A Kingspan Group Company	$100 Amazon Gift Card
Lew Wilson	Northfield, an OLDCASTLE Company	$50 Gift Card Townhouse Books & Cafe, St. Charles, IL
Robert Benz	Pilkington North America	$50 VISA Gift Card
Michael Coan	Professional Underwriters Agency, Inc./ NSM	$100 AMEX Gift Card
James Rundle	Shaw Industries	2 Boxes of Carpet Tile to create your own area rug
Robert Mills	Simpson Strong-Tie	$50 Best Buy Gift Card
David Schaefer	SPEC MIX	$50 Home Depot gift card
Tim Trompeter	SPEC MIX	$50 Home Depot gift card
John Peacock	TOTO USA, Inc.	$50 VISA Gift Card

CHAPTER NEWS

ALA ILLINOIS

October Program:

Doug Gamble of the Capital Development Board drew a large audience for his presentation on the Illinois Accessibility Code in Bloomington/Normal.

Thank you to our sponsor, **Lifts of Illinois**. In attendance were Jeremy Hilton, Jay Braker and Jane Hilton.

November Program:

Joanne Sullivan, Executive Director of ALA with **Jean Leathers** of Practice Clarity. Jean conducted an interactive workshop focusing on strategies for business growth and client relationships.

ALA WISCONSIN

On the sunny afternoon of Tuesday, August 26, ALA-Wisconsin held its Annual Cookout and program at the South Shore Yacht Club along Milwaukee's lakefront. The program titled "Milwaukee Breakwater Lighthouse Restoration Project" featured a PowerPoint presentation by John Curran of TWP Architecture, Ltd. and a wonderful introduction by Dr. Randall Melchert on how to spend your money to contribute to the future benefit of the public good!

Dr. Randall Melchert has both his heart and his eyes focused on preserving this landmark beacon of the Milwaukee harbor for generations to come. He is an Optometrist practicing in Brookfield, Wisconsin and the founder of "Optima Enrichment", a non-profit organization that has purchased the existing lighthouse facility from the United States Coast Guard. Optima Enrichment intends to invest $2.2 million to renovate and refurbish the lighthouse to provide public access that will enhance the many future developments planned along the lakefront area for historic, educational and community enrichment.

ALA Wisconsin members enjoy the annual cookout and program at the South Shore Yacht Club in Milwaukee.

The Milwaukee Breakwater Lighthouse is a true landmark with a rich history in the Milwaukee Harbor. It is almost 90 years old and has been empty for nearly 50 years. Now, through the efforts of Dr. Melchert and his organization, it is slated to be reborn for the Milwaukee community to enjoy.

However, before any work can commence on this facility, numerous challenges are being concurrently addressed by John Curran and his staff TWP Architecture. Simple issues such as a water tight building shell, a dependable power supply, and the ability to anchor a boat alongside the structure to allow supplies and workers access to the facility are under consideration. Additional issues will be highlighted and creatively resolved as this project ventures ahead.

Please keep an eye on our ALA-Wisconsin section as we will update you with the pitfalls and progress of this ambitious project.

(P.S. I apologize to Dr. Melchert for my optometric related quips. I am really looking forward to this project!)

Koz

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