



Spring 2009
Vol. 5, No. 1

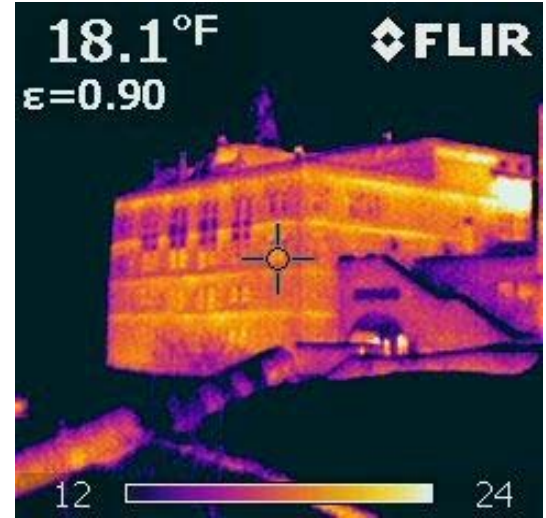
STRUCTURE & SITE

Updates & Information from Klepper, Hahn & Hyatt

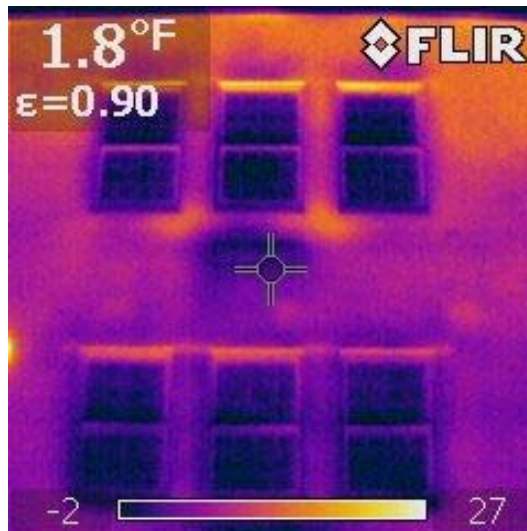
Thermal Imaging Facilitates Building Diagnostics

Klepper, Hahn & Hyatt has added a fascinating new tool to its array for building envelope diagnostics.

With the recent acquisition of a Flir b60 infrared thermal camera, KHH can perform an overview of a building and identify areas of energy loss through its building envelope.



The image above, taken with the Flir b60 infrared thermal camera, shows the steel relieving angles. In the school building image at the left, the heat loss through the steel lintel plates over the windows is evident.



This “thermal footprint” of a building can pinpoint areas of thermal steel bridging at studs, masonry support elements, and roof edge angles, plus insulation defects, air barrier leakage, and sometimes points of moisture intrusion.

The use of thermal imaging often can lead to fairly economical remedies to tighten the building and reduce energy usage. This can also be used as part of closeout procedures for new building construction, to identify areas that require remedial work prior to project completion.

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KHH Offers LEED Charrette Facilitation

Are you thinking of “going green” on your project? Before you go too far down the road with your design, consider holding an initial LEED Charrette.

This process involves the entire design team meeting with the stakeholders of the project. The program typically begins with an overview of LEED, and a discussion about what the

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LEED Charrette from page 1

process would mean for the project. This inclusive discussion solicits the stakeholders' sustainability values, thereby assuring that the clients of the project have their needs better served.

Usually, the charrette includes a review of the LEED checklist appropriate for the type of project, with a preliminary tally of likely credits, to develop an idea of the potential challenges and opportunities for the project. At the conclusion of the charrette, the attendees will have an understanding of the process, and have enough information to decide whether or not to pursue LEED certification.

An initial LEED charrette should be scheduled for four to six hours, depending on the project and the level of understanding of the participants.

- James A. D'Aloisio, P.E., is a USGBC LEED Accredited Professional and has been involved in a variety of sustainability and LEED initiatives. He is a trained Dynamic Governance facilitator, and has facilitated several LEED charrettes. He is on the National Board of the U.S. Green Building Council, and on the Advisory Board and Program Committee of the New York Upstate Chapter of the USGBC.

Boys' and Girls' Club Project Incorporates ICF Walls

The New Clinton Street Facility of the Boys' and Girls' Club of Binghamton, New York, employs a newer type of wall structure that will yield a number of current and future benefits for the owners of the building.

Klepper, Hahn & Hyatt were the structural engineers for the project, which was designed by Keystone Associates, LLC, of Binghamton. The new 36,000-square-foot building had a total construction value of \$3.9 million.

Insulating concrete forms (ICFs) were used for the exterior structural walls, instead of the more typical steel framing. ICFs are modules of rigid insulation that lock together to create forms for cast-in-place concrete walls, and remain in place afterwards to serve as thermal insulation. The units are lightweight and result in energy-efficient, durable construction. They provide backing for interior and exterior finishes.

There are a number of additional advantages to using these forms in construction. ICF walls are designed as reinforced concrete which can easily accommodate wind and seismic loads. Because they use non-biodegradable materials, they are not subject to rot. They are energy efficient, resulting in greater utility cost savings. Their insulating qualities provide

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This photo taken during construction shows the ICF walls of the new Boys' and Girls' Club in Binghamton.



ICF Walls from page 2

a higher degree of comfort for the inhabitants of the building, and they are excellent for noise abatement. In fact, one school district client of KHH is employing ICFs in an addition, both for their energy-saving capabilities and for classroom acoustics.

Three aspects of ICF construction combine for thermal benefits:

- Two layers of continuous insulation
- Inherent air barrier properties
- High thermal mass

ICF construction saves money in winter, since no additional insulation is needed for curing. A surprising benefit for this project was how easy it was to keep the interior warm during winter as soon as the building was enclosed.

After curing, standard construction materials are used to complete the roof, floors and interior walls.

Contractors may have a learning curve when first using ICFs, but the curve is “quick,” according to KHH engineers.

It’s Time: School Building Condition Surveys

Every five years, public schools in New York State are required to engage one or more building design professionals to conduct a Building Condition Survey to assess the need for maintenance, repairs, rehabilitation, reconstruction, construction, and other improvements related to the structural integrity and overall safety of their buildings. The survey will be required again in 2010.

A Visual Structural Review (VSR) by a senior structural engineer can be included in the BCS. The cost is aidable as part of the program, up to 24 cents per square foot of building. We believe it is an inexpensive way to identify potentially hazardous conditions, and provide an increased level of confidence in the structural performance of a building.

Think of your local school district. Do you know if any of these conditions exist?

- Weather-deteriorated parapets with loose bricks or stones
- Stage rigging that has been improperly installed or loaded
- Damaged or inadequate roof framing in snowdrift areas

- Crawlspace with unobserved moisture deterioration
- Scouring of earth under foundations or slabs on grade
- Structural deterioration above or around natatoriums
- Bouncy or sagging framed floors
- Roof joist damage, distress, or deterioration

In many cases, a VSR can put to rest fears about visible distress such as cracks and bulges that may indicate a condition of structural concern - or they may be innocuous. A senior structural engineer can usually identify the probable cause(s) of distress, which frequently does not warrant remedial structural work. However, when the observed condition is a symptom of a structural inadequacy or active mechanism of deterioration, it can be addressed.

A VSR program can also include reviews of structures other than student-occupied school buildings. These include: grandstands, playground equipment, athletic equipment, concession stands, maintenance buildings, light poles, canopies, and pavilions. Whether on

For more information about our School Building Visual Structural Review Services, please call us at 315-446-9201.



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school grounds or not, structures that have been exposed to the elements are more likely to experience environmental deterioration, and should therefore be visually reviewed on a regular basis.

For pennies per square foot, a school district can increase their peace of mind, knowing that they have done what they could to minimize the risk of a catastrophic building failure. We consider this to be a cost-effective investment.



KHH Earns Two ACI-CNY Awards

Klepper, Hahn & Hyatt won two Design and Installation Awards this spring from the American Concrete Institute - Central New York Chapter.



*Spear House
Colgate University campus*

The Spear House Masonry Facade Restoration on the Colgate University campus in Hamilton, New York, won a Gold Award for Excellence in Masonry Design and Installation. The project owner is Colgate University, and the general contractor and mason contractor was Viau Construction.

The East Hills Senior Living Center in Binghamton, New York, won an Award of Merit for Excellence in Concrete Design and Installation. The project owner is East Hills Senior Living Center, LLC; the project architect was Bearsch Compeau Knudson of Binghamton; the general contractor was Fahs Construction Group; and KHH was the project engineer.

Spear House is a solid stone masonry, bearing wall structure with wood-framed roof structure. The exterior walls consist of rubble stone masonry with traditional lime putty mortar. This restoration project focused on investigating the causes of problems that had become evident in the facade, and finding the best way to correct those issues to preserve the building and ensure its longevity.

The restoration involved work in all building elevations. This included removing and rebuilding the stone parapets on the east and west sides. These high stone parapets were visibly leaning toward the roof, evidence that their support was deteriorating. There were a number of visible wall cracks and open joints on all elevations, plus cracked stone sills, lintels, and water tables.

KHH chose natural hydraulic lime as the repointing mortar. It was selected because it has greater strength and durability than lime putty mortar, while also providing a high

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*East Hills Senior Living Center
Community Center*



ACI Awards from page 4

moisture transmission rate, similar to the original lime mortar. This type of mortar has worked well in the Colgate University group of historic buildings.



The East Hills Living Center consists of 32 townhouse-style, one- and two-bedroom units within seven residential buildings, plus an eighth building that serves as a Community Center. While the single-story buildings have conventional wood-framed construction, the design and materials for the concrete slabs and foundations employed some sustainable features.

Spear House work on south facade, top; plus views of restored parapet, facade and flashing, left and right.

The edges of the interior concrete slabs incorporate an unusual detail. The top of the rigid insulation, which is vertically up against the inside face of the foundation walls, has a 45-degree bevel with the top extending up to the slab finish elevation. This detail is a practical

way to provide effective insulation at the slab edge for a foundation wall that is insulated on the inside face. If this detail were not used, the buildings would have a large amount of heat loss through the tops of the foundation walls during heating seasons for the entire service life of the buildings.

All of the concrete used in the construction of these buildings had 20 percent of its Portland cement content reduced by the use of fly ash.



This includes the footings, foundation walls, and interior and exterior slabs on grade. The main reason to use fly ash for sustainability purposes is that the reduction of the amount of Portland cement used results in a reduction in the amount of carbon dioxide emitted into the atmosphere.

On the strength of this entry, the ACI-CNY is considering adding a sustainability category to its awards next year.

Beveled top of slab edge insulation prior to slab pour



Save the Date! KHH Presentation: Structures, Building Envelopes, and the Planet

Mark Tuesday, September 15 on your calendar. James A. D'Aloisio, P.E., SECB, LEED AP, will give a 90-minute presentation on how to incorporate sustainable strategies into building structures, and how structural engineering choices can make a big difference in building energy performance.

The presentation will be held from 8:00 a.m. to 9:30 a.m. in the Conference Center at Klepper, Hahn & Hyatt's offices, 5710 Commons Park Drive in East Syracuse. Credits will be given: 1.5 P.E. CEUs with accreditation provided by KHH, and 1.5 AIA CEUs with accreditation provided by the U.S. Green Building Council NY Upstate Chapter.

The cost will be \$50 per attendee, or \$100 for three persons attending from the same company.

The course outline will include:

Introduction - A quick overview of some of the positive, and some of the negative, aspects of structural building materials and systems.

Part ONE - Envelop the Steel! - A brief explanation of the problem of thermal steel bridging in building envelopes, followed by a simple way to determine the reduced insulation R-value for building envelope systems that have steel bridging - by turning R-values on their heads. We'll see examples of bad steel bridging details, infrared images showing the heat loss through thermal bridges, and some ideas for reducing or eliminating the problem of thermal bridges, as well as providing for air barrier continuity.

Part TWO - The Bottom of the Envelope - A quick tour through the concepts and details

of continuing the thermal insulation and air barrier envelope down the foundations, at the edge of the concrete floor slab, and underneath the floor, with a review of some nonconventional details and ideas like frost-protected shallow foundations.



James A. D'Aloisio, P.E.

Part THREE - Sticks, SIPs, and ICF's - Performance limitations to be aware of in stick (wood or metal stud) construction, and ways to mitigate the potential problems, followed by an introduction to Structural Insulated Panel (SIP) and Insulated Concrete Form (ICF) construction.

A brief question-and-answer period will conclude the presentation. Mr. D'Aloisio has given this presentation for a number of audiences, including the State University Construction Fund and the NYS Office of General Services.

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Don Gresko Rejoins KHH

Donald M. Gresko, P.E., has returned to the firm after a three-year engineering sojourn in Maui. Mr. Gresko is a Senior Project Engineer working in areas including multi-family housing university projects, educational, medical, municipal and federal facilities. He has recently been elected as a new Director for the Central New York Chapter of the American Concrete Institute.



If you wish to reserve a space for this presentation, you may do so now by sending an e-mail to Carolina Rivas at cr@khhpc.com. She will follow up with you as the date approaches.



NEW AND NOTEWORTHY

James D'Aloisio Joins National USGBC Board

James A. D'Aloisio, P.E., SECB, LEED AP, has been elected to the national Board of Directors of the U.S. Green Building Council. Mr. D'Aloisio is a member of the Advisory Board and the Program Committee of the

New York State Upstate Chapter of the USGBC, in which he has been active since its inception. He is filling a one-year vacancy on the national board.



Kelly M. Covert, P.E.

Three Staff Members Earn LEED Accreditation

Three members of the firm have earned their LEED Accredited Professional (LEED AP) designation from the U.S. Green Building Council.

Craig L. Arnold, P.E., LEED AP, is a Project Engineer. He is currently working on educational and institutional projects. He lives in Chittenango.



Kelly M. Covert, P.E., SECB, LEED AP, is an Associate of the firm. He oversees a variety of projects, with a special focus on medical facilities. Mr. Covert lives in Baldwinsville.

Kyle Oberdorf, E.I.T., LEED AP, is a Structural Engineering Designer. He is involved in the structural design of hospitals, schools, and residences. He lives in Liverpool.

Douglas Arena Joins BES Group

Douglas Arena, R.A., has joined the firm as a Building Envelope Professional. Mr. Arena relocated from New York City, where he was a project manager and lead designer for Robert Marino Architects. He earned his Bachelor of Architecture from the University of Arizona College of Architecture and Landscape Architecture. Mr. Arena has eight

years of professional experience, including projects in New York, Maine, Alabama, California and China. He resides in Dewitt.



Douglas K. Arena, R.A.



Kyle J. Oberdorf, E.I.T.

Jack Nesbitt Earns Certifications

Jack Nesbitt, a Special Inspector with the KHH Inspection Services group, has earned his Structural Steel and Bolting certification from the International Code Council. Mr. Nesbitt is now certified as a Special Inspector

in five areas by the ICC. In addition, he has attained Level III in Transportation Engineering Technology Highway Construction through the National Institute for Certification in Engineering Technologies (NICET).



Klepper, Hahn & Hyatt

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