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NABIE THE Examiner

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The National Academy of Building Inspection Engineers is a chartered affinity group of the National Society of Professional Engineers (NSPE)

A Message from the President

Peter A. Schkeeper, P.E., F.NSPE

This year has seen violent weather affecting much of our country and directly affecting some of our members. As was reported in our last issue, past president David Carlysle, P.E. lives in the center of the tornado ravaged area of Alabama. Our prayers and best wishes go out to all affected by the wrath of Mother Nature. As building inspection engineers, we help people to understand building vulnerabilities and solve many building problems, but major floods, hurricanes, tornados, and earthquakes can destroy the best of building designs and wreck havoc on lives. Severe weather protection has been an area of regular interest by NABIE members and I am sure this past year will strengthen our resolve to be even better prepared to serve our clients to protect the safety, health, and welfare of the public.

At this year's conference we received strong interest by members to assist with updating and improving the NABIE Standards of Practice. The consensus has been to replace our limited prescriptive standard with a performance standard that applies to all types of buildings and building uses. Under leadership of Russell Strahan, PE your standards committee consists of Gary Caruso, PE, Martin Capages Jr. PhD, PE, SECB; Michael Grabman, PE; Robert Roop, PE; and John C. Cronin, Jr., PE, CBIE, SECB. This is a diverse group which has been working diligently holding weekly meetings. As some of you know, Russell has had

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Certification Program Accredited

The Building Inspection Engineers Certification Institute's certification (BIECI) program has achieved accreditation by the Council of Scientific and Engineering Specialty Boards (CESB). CESB was formed in 1990, with its mission being to set standards for certification programs in engineering and related fields and to accredit programs complying with those standards. In addition to CESB, the National Commission for Certifying Agencies (NCAA) and the American National Standards Institute (ANSI) also accredit credentialing programs similar to the BIECI certification program.

Certification of scientific, medical, and engineering specialties started in 1911 with licensed physician ophthalmologists seeking a way to distinguish their special training. Medical certification programs grew in number over the next 40 years, becoming an accepted trend in medicine by the early 1950s. Environmental engineers developed a specialty certification in 1955, with many other programs following in engineering and allied health professions. There are more than 1,000 occupational certification programs in operation today.

The BIECI certification program has been found in general compliance with the standards set forth by CESB. Certification under this program bestows the title of Board-Certified Building Inspection Engineer on those meeting the qualifications. This credential is worth your consideration if you have not already obtained it, as it is now available through an accredited program.

Visit the BIECI web site at www.bieci.org for further information.

INSIDE THIS ISSUE

Administrative News

NABIE continues an ambitious effort this year to find ways to enact cost savings while maintaining or enhancing features for members. Part of that effort focuses on volunteerism, committees, and NABIE officer commitments to spearhead various goals. In connection with that effort, NABIE will shortly be mailing out member certificates. These generally were issued in the early part of each year, coincident with dues payment. Beginning this year, NABIE will issue a permanent certificate to each member, hence the reason for a delayed release of them.

The permanent certificate will remain valid as long as two goals are met annually by the member:

1. Dues are paid up and current.
2. No change in membership status has taken place.

Proof of current dues payment will be achieved by the issuance of annual wallet card, which this year will accompany the permanent certificate. Beginning in 2012, once dues are paid, you will receive only a wallet card.

In the event your membership status changes, your current certificate will become invalid. The most likely reason for this will be an UPGRADE in your membership level, resulting in the issuance of a new certificate reflecting your revised status. Any membership upgrades must be initiated by you in a manner similar to when you initially joined NABIE. Refer to web site for information on different levels of membership.

This is an ideal time to see if you qualify for a higher level of membership in NABIE, based on increased experience.

Another change commencing shortly will be electronic distribution of the newsletter. This issue has come to you in the usual print format. We expect to conduct a pilot issuance of the same newsletter electronically during the summer. With that pilot effort completed and any necessary fine tuning or changes necessary made we expect to go to electronic distribution only by year's end. Print issues will no longer be available once full electronic distribution is enacted. This will achieve a considerable cost savings to the organization as print and mailing costs are among the larger expenses for us. You will, however, be able to print a copy of the newsletter from the electronic distribution method, just as you can now print it from the PDF file of each issue on the web site.

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NABIE Conference Heads to San Antonio in 2012

For the first time in its history, NABIE will travel far west of the Mississippi River for its annual national meeting. Come next February, NABIE will be meeting at the famous Emily Morgan Hotel in San Antonio, Texas. San Antonio is a history filled destination, with our meeting hotel located directly across the street from The Alamo (pictured above).

While more information will follow later in the year, our web site contains some preliminary news about the destination. We expect a link to be available shortly that will permit members to register for rooms at the hotel.

A particularly unique feature of San Antonio is the River Walk, a sub-street level and open air venue with a variety of restaurants and shops that line the banks of the river as it meanders through San Antonio. The River Walk has received engineering and architectural excellence awards from both ASCE and AIA. Designed initially for flood control, the River Walk allows the river to flow below street level while affording an interesting tourism based aesthetic to exist along with a more practical one. Tour barges ply the river for the full length of the Walk.

Texas is also home to some NABIE members with a keen interest in the organization. We are hopeful that their enthusiasm can be leveraged into a stronger western presence for our society.

Where's the Housing Market Going?

You cannot be in the inspection engineering business without paying attention to the economy. There is no arguing that while some improvement is apparent, as a whole the economy remains sluggish and increasing thought is being given to the notion that what we have now is the new American economy.

Personally I reserve judgment on that issue, and will let you as readers of The Examiner develop your own conclusions based on the region of the county in which you live. No matter what, however, the inspection engineering industry is inevitably tied to the nation's housing market.

The June 20 edition of the Wall Street Journal (WSJ) carried an article entitle, "How To Tell If Your Housing Market Has Hit Bottom." While it is not going to help you improve your local business climate and market for your services, the article contains a few interesting pieces of information that may help you gauge your local conditions.

First, as a percentage of gross domestic product, housing today is down about 3.5% from 2005 levels. With that, home ownership in the nation is also down about 2.1% from 2004 levels. Home price indices today, on average, are at 2002 levels.

Yet with those disappointing statistics, parts of the country are not doing too badly. WSJ states that, "(Some areas)…have pretty much recovered from the five-year-and-counting housing recession…According to a statistical analysis performed for The Wall Street Journal by the online real-estate information and search firm Zillow, home values in a handful of communities are where they were just before the most frenzied days of the real-estate bubble. Focusing on communities with

sufficient sales activity to produce statistically valid value estimates, Zillow spotted 25 places that are within single-digit percentage points of their home-value peaks. (Zillow found no communities where values have surpassed their high-water marks.)"

So how do some regions recover quickly or perhaps remain remarkably immune, and others suffer devastating collapses? WSJ suggests looking at statistics for three factors in your area:

- Employments
- Rent
- Foreclosures

Regions with recovering housing markets have been found to have unemployment levels that lag the current national 9.2% level by about 2%.

Another aspect to examine is rent levels. In real estate investment parlance this sometimes called a capitalization rate. As a rule of thumb if housing prices are on average more than 15 times the annual rent for a property, the market will favor renting rather than buying. If that ratio places annual rent versus average purchase price at less than 15, the market will tend to favor purchasers.

Foreclosures also help gauge the market. In 2010 the national average for foreclosures was 2.23% of all homes. Really depressed markets had foreclosure rates in the double digit area; some as high as 12%. Yet parts of the country where housing prices were more stable saw foreclosure rates as low as .04%.

Monitoring those three indicators in your geographical area can help you predict where the market may be headed. Doing so permits some strategic business planning to help your practice stay on track.

Have you or your company moved?

Changed your email address or website information?

Added a new cell or telephone number?

Let us know!

Update your contact information regularly so we can…

Stay Connected

Tornado Safe Rooms

By Dave Carlysle, PE, NABIE Past-President

The spring of 2011 has been one of the deadliest tornado seasons on record. Living in a state that has its share of tornadoes, residents of Alabama as well as the other Southern and Midwestern states, know all too well how destructive tornadoes can be. Our house and office are equipped with weather alert radios, and there is a tornado siren that can be heard at both locations when Jefferson County is under a severe weather warning including tornado warnings. April 27, 2011 is a day that will long be remembered in Alabama, as 241 people lost their lives due to an unprecedented number of large powerful tornadoes. There were EF-2 tornadoes during the early morning hours of April 27 within 15 miles of our home and office. The weather forecasters were saying the morning storms were just a warm up for what was to come in the afternoon. The forecasters were right. There were seven EF-3 or stronger long-track tornadoes that struck Alabama during the late afternoon and evening.

An EF-4 tornado formed southwest of Tuscaloosa and remained on the ground for 82 miles. Four miles of that path passed through Pleasant Grove, our home town. We are very familiar with what a large, powerful tornado can do. On April 8, 1998, an F-5 tornado followed a path only one mile northwest of the April 27 tornado. While we know what these storms are capable of, the building industry has not made many improvements in the construction of residential or commercial buildings constructed of wood or steel. These storms typically tear the structures apart completely, tear off the roof, tear portions of walls away, or move entire structures 10 feet, 20, feet or farther from their foundations. Nailed connections at corners, tees, rafter/top plates, ceiling joist/top plates that rely on the pull out strength of the nail perform poorly under tornadic wind loading. The only safe place in our typical residential structures during an EF-3 or stronger tornado is a reinforced concrete storm shelter or a retrofitted safe room. The only other option is an underground storm shelter if guaranteed survival is the objective. Shelters will reduce the death toll but will not reduce the property loss.

Simple solutions may include extending coastal wind design loads to the interior portions of the country where tornadoes are most likely to occur. Perhaps it is more practical to increase the design wind speeds from 160 mph to 200 mph or even 250 mph. Even then, there are millions of buildings that remain as death traps. For residents of those structures, a retrofit storm shelter or safe room or possibly community storm shelters that are within a short distance of populated neighborhoods may offer the best chances for survival.

As building inspection engineers, we have the opportunity to advise building owners or buyers of where they should go during a tornado. The old advice of going to a room at the center of the lowest floor, while not bad advice, may prove to be fatal. There were a number of people that survived by lying in a bathtub and covering themselves with pillows or a small mattress. These "safe places" are not guaranteed to keep building's inhabitants alive in a strong tornado.

While buildings have not changed significantly in tornado-prone areas, meteorologists have become much better at predicting severe weather. Dr. Greg Forbes of the Weather Channel has developed a tornado condition index that has been quite accurate in putting areas on alert that tornadoes may develop. He has predicted that conditions would be favorable for most of the storms in the South, the Midwest, and even the storm in Massachusetts. On April 27, the tor-con index for Tuscaloosa started the day at 9, or a 90% chance of a tornado within 50 miles. He upgraded the tor-con index to 10 later in the day. If we can just put this information to better use, lives can be saved at a minimum and hopefully in time, property damage can be reduced.

The storm missed both our house and office for which we will be forever grateful. Gwen and I want to thank the NABIE members that called to check on us after the storm. We were quite busy during the night of the storm and for the next four days with rescue efforts. The power was off so our answering machine did not pick up when the phone (which was still working) rang. It was truly a blessing to have people from around the country checking on our well being after such a disaster. We will do our best to return the favor but pray that none of you has to deal with such devastation.

Moonlight Graphics Spearheads Tornado Relief

NABIE operates as a pretty lean organization when it comes to organizational support and administration. As the Executive Director, all of the day to day management functions are handled by me from NABIE headquarters on a part time (approximately .20 full time equivalent) basis. But several needs persist and are out-sourced to those best able to serve them.

Shelter Island Graphics handles all web-based aspects for NABIE.

Moonlight Graphics of Cape Neddick, Maine headed by firm principal Juanita Reed, performs much of the graphic design and visually based creative services for NABIE. Juanita has been a long and invaluable member of the NABIE family for years, dating far back into Mike Stotts' tenure as Executive Director. Like many of us, Juanita wears many hats in her business, yet manages to find time for both her family and her community.

Juanita serves as the local Girl Scout Leader for Brownie Troop 404.

This spring, when immediate past president Dave Carlysle, PE's home town in Alabama was devastated by a severe tornado, Juanita decided to have her Brownie troop work on collecting through donations many needed supplies for the crippled community. Coordinating with Dave (who is both a volunteer paramedic and firefighter), Juanita guided her Brownie troop in a relief effort. Juanita's daughter, Taylor, assisted as well and is a more advanced member of the Girl Scouts.

Brownie Troop 404 ~ York Beach, Maine

Troop 404 managed to collect some 13 cartons of needed supplies for Pleasant Grove, as well as the funds to ship them to the town's fire department. Not only did the supplies provided much needed assistance to Dave's home town and his neighbors, but some young ladies in Maine under the tutelage of a compassionate scout leader and her daughter gained a wonderful object lesson in helping others in a far away place. So many times such efforts have an anonymous quality, but in this instance Juanita was able to offer a much more "connected" experience to her charges.

NABIE commends Troop 404 in Maine, Juanita Reed, and her daughter Taylor for embodying the spirit of professional engineering in caring for health, safety, and welfare.

Operation and Maintenance Aspects for Inspection Engineers

As inspection engineers we are tasked with numerous responsibilities in assessing building conditions for our clients. In the final analysis, much of our evaluation is a judgment on how the building has been, is, and will continue to operate in an "acceptable" manner. Successful operation of most buildings is almost entirely a function of their maintainability.

Consider the fundamental elements of life time costs relating to a building. Typically the acquisition aspect (which can also include costs associated with renewal and disposal of the structure) runs about one fifth – on average – of the overall life time costs. Another typical cost is that relating to design and construction. Once again using an average, such costs represent about ten percent of overall life time costs. The balance – representing an enormous 70% of life time costs – relates to operation and maintenance.

That should tell us that focusing our inspection engineering efforts on building operations and maintenance will deliver the most bang for the buck for our clients. With some careful consideration, you will probably realize that is where most of your effort already is focused. But let's see if we can further discuss and consider such efforts.

My early career as a new engineer out of college was largely spent in power plant operations, and in various aspects of the utility industry in general. A considerable portion of that effort focused on maintenance management of

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plant systems. I quickly learned the basic philosophies of maintenance in those days broke down into running equipment to failure, then repairing it; following a preventive maintenance schedule and addressing equipment needs on a scheduled basis regardless of operating condition; and lastly, following predictive or condition based maintenance. The first two are easily understood. The third category is best exemplified by considering maintenance performed on equipment that might be fitted with vibration detection. As vibration conditions changed from those considered "historically acceptable" maintenance could be planned ("predicted") before an actual failure occurred.

Today a more sophisticated category can be added which is referred to as automated fault detection and diagnosis. Technological advancements involving computerization over the last 25 to 30 years has enabled software based problem detection and diagnosis.

So how does all this relate to our work as inspection engineers? Before we can make that assessment, let's consider the real purpose or functionality of any building system. We want any building system to be consistently available to perform its function. To perform its function the system must have the inherent capability to do so. This is at least a part of design, but can also relate to the state of maintenance. Next we want the system to have good deliverability. When the system must do its job, it can do so at the highest possible level. Dependability is another important aspect, embodying the ability to count on the system being "predictable" in its ability to do its job. A system's durability speaks to the age related service life. Knowing something about durability says a lot about the possible functionality of the system in question. Lastly, system maintainability has implicit in it many of the other aspects just cited. A system that cannot be maintained because it is inaccessible has inherent risks regarding its long term functioning.

As we examine buildings for our clients I submit that the very first part of any inspection engineering service should be a short "head game" we play in advance of visiting the site. The basis for the head game is the material just presented. Going to a single family residence? In all likelihood even the most sophisticated single family residence has probably followed the "run to failure and repair" approach. Not too many homeowners are operating preventive or predictive maintenance programs for the houses. For single family homes, this simple thought process will tell you that there is a huge chance for many problems in residences. Similarly, multi-family structures such as rental apartment buildings and often condominium and cooperative facilities use the same approach. The "head game" thought process suggested here should alert you to be especially tuned in to many potential problems in such buildings.

Now let's imagine a small clean room type manufacturing facility. Here the "head game" should tell us that certain aspects of building operation and maintenance are crucial to the financial success of the operation. While elements of run to failure and repair may exist, there is a good chance some type of preventive and maybe even predictive maintenance is on going to ensure the financial viability of production. In this case our mental exercise should not cause us to be less aware, but can shift the focus of problem detection to more subtle indicators of deterioration.

A final example is a hospital. Hospitals are generally accredited by a specialized agency that has many standards that must be met and are subject to periodic accrediting agency examination. Our pre-inspection mental gymnastics should not tell us to drop our guard, but may cause us to want to focus on specific records likely to be maintained for the accreditation process.

Is it more apparent now that the work of building inspection engineers very largely focuses on an inherent understanding of owner operation and maintenance of the facility? Once a building has been erected and occupied, virtually anything else concerning its success as a structure to house some particular function is entirely dependent on its operation and maintenance. That means a sound understanding of those functions is inherent in arriving at correct, usable conclusions for our clients.

Even design or construction errors manifest themselves as part of operation and maintenance (O&M). An effective owner or occupant based program for O&M can often detect such problems. But in a building with no such program in place, only the alert inspection engineer will identify such issues.

One of the most important questions that can be asked of a building owner (or tenant) is what kind of maintenance is being performed on the building? Asking that question and disclosing the answer in your report findings speaks volumes about the risk of future problems.

Note: Some material for this article is derived from chapter 39 of the 2011 ASHRAE Handbook for HVAC Applications. The Examiner acknowledges and thanks ASHRAE for the material.

■ President's Message

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experience on standards writing committees and it shows. I have been very impressed by the high level of discussion during the committee meetings and active critiques in-between meetings. I expect that at our mid-year board meeting your Board will see a draft for review and by next year's annual meeting the new SOP will be ready for final review and approval.

Bill Coulbourne and John Cronin have been actively planning next year's annual meeting which will take place in San Antonio TX at the Emily Morgan Hotel, across the street from the Alamo. This year's conference should prove to be as enjoyable a destination location as our conferences have been informative. We are also hoping to get more participation by building inspection engineers in the western part of our country.

By the time you read this newsletter, I will have made a presentation at the annual NSPE meeting to their Board of Directors. My pitch has three themes: 1. Increase awareness of NABIE's role as ambassadors for NSPE; 2. Request greater visibility for NABIE on NSPE web site & through PEPP; and 3. Request a survey of NSPE members about their building inspection work.

Alan Mooney, PE, our founding president had penned a fine article that was in the last NABIE Examiner. It should still be available on our web site, if you did not get to read it. As I requested of our NSPE leadership during our last annual meeting, I am seeking greater visibility for NABE by NSPE to help us grow. I am convinced that many engineers perform at least some aspect of building inspection engineering and for that reason I would like to see a survey of all NSPE members to identify the extent to which NSPE members perform some or all building inspection engineering functions and to be sure all NSPE members are aware of NABIE.

I hope you have updated your contact information at www.nabie.org. More of our communication will be via electronic means so this is very important. Also, have you reached out to your officers to assist with their area of focus? See our last newsletter for more information about each officer's area of focus. Our newsletter includes the e-mail address for all officers. Bill Coulbourne, P.E., VP, is overseeing a strategic planning process and is focusing on membership growth. Mark Soderlund, P.E., Treasurer, is focusing on membership services. And, Mark Waldman, Secretary, is focusing on technology and the development of tools that will help us strengthen NABIE's mission and support our members. Please let them know of your ideas and offer whatever assistance you can.
Thank you.

■ Administrative News

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It is extremely important that you keep your data current on the web site. Changes to postal addresses, phone numbers, and emails can all be achieved by members themselves. NABIE is further working to coordinate the communication between three data bases maintained by the organization and this goal is best met by members taking the personal responsibility to ensure the information is accurate and up to date. Web site data base changes by members are now automatically flagged for use in other NABIE data bases.

As you may know, NABIE is a Virginia based corporation, reaching back to the formative years of the organization. NABIE has been represented by the same legal counsel in Virginia over that time. The finalized revisions to NABIE's incorporation documents and by laws, now approved by the board of directors, is being handed off to our legal counsels in Virginia for appropriate filing. While the changes may not appear significant they were executed to reflect necessary revisions to bring us current with typical operating requirements for societies such as ours.

NATIONAL ACADEMY OF BUILDING INSPECTION ENGINEERS

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Membership Update

New Members and Applicants

For some years NABIE membership has remained fairly constant, representing about 40% of the market NABIE thought it could penetrate in the 1990s. Membership drives were not paramount for us for a number of reasons, including a significant effort made to get the certification program established coupled with a need to rely heavily on part time and volunteer worker efforts.

NABIE is very pleased at the recent flurry of membership activity this spring. It is especially gratifying to see membership activity such as this at a time when the inspection engineering market is experience some weakness.

New Members

Sam Harris, PE, AIA, Esq. Sam was this year's Sigman Lecturer in Myrtle Beach. He has been admitted as a Professional Member. Sam hails from Pennsylvania where he maintains a practice largely dedicated to historic buildings. He has also been a professor at the University of Pennsylvania. Sam is also the author of *Building Pathology*, an excellent text recommended as a reference for the building inspection engineering certification exam. He is also certified as a Building Inspection Engineer by written examination.

Richard M. Gibbs, PE Richard is based in Tennessee, where he maintains a practice heavily involved in property condition assessments. His undergraduate degree in civil engineering is from the United States Air Force Academy, while his graduate degree (also in civil) is from Georgia Tech. Richard enters NABIE as a Professional Member.

Byron L. Martin, PE is admitted to NABIE as a Professional Member. Byron is from Missouri and is a civil engineering graduate of the University of Missouri. He is licensed as a PE in a dozen states and his engineering practice (Silverhill Co., LLC) focuses heavily on inspection engineering relevant to problem investigations in buildings.

Nathan M. Toothman, PE is admitted as an Intern Engineer to NABIE. Nathan is based in Honolulu, Hawaii and holds a Bachelor's Degree in Civil Engineering from University of Colorado and a Master's Degree from in Engineering Management from Old Dominion University. As Nathan builds further experience in building inspection engineering it is interesting to note that he is additionally qualified as a chief engineer in the US Navy Nuclear Propulsion Program.

Applicants

Charles M. Butt, PE has applied to become a Professional Member of NABIE. Charles is from Long Island, NY and holds degrees in electrical engineering technology, engineering science, electrical engineering, and management engineering from schools including SUNY and Polytechnic Institute. Charles currently serves as the second vice president of the Nassau County Chapter of NSPE. A significant part of Charles' professional engineering practice focuses on residential buildings.