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NATIONAL ACADEMY OF BUILDING INSPECTION ENGINEERS • PO Box 860, Shelter Island, NY 11964-0860

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

William L. Coulbourne, P.E.

It seems we just had this year's annual conference and we are already deep into the planning for the 2015 conference. If you attended the 2014 conference in Dallas, I hope you had a good conference experience. I heard a lot of good feedback about the program and the venue. Your board will work diligently to put together an equally good program for 2015.

Since we are in the middle of the year and our planning cycle, the board is actively working on a number of programs that need some input from all members. I would also like to mention how the board is going about this activity while we all also try to meet the needs of our "real work" clients. The board is operating differently than we have in past years in two ways. The first is that NABIE business is being discussed year round by the board with quarterly conference call board meetings. This has a couple of advantages – one is we spend less money than meeting face-to-face which we used to do once per year in addition to the annual meeting, and two each board member has taken on some additional responsibility to not only spread the work out but also to use their expertise in the work of NABIE in places where the board member can contribute the most.

The most active work currently where we need help and input from you includes:

1. One of the board members will soon be reaching out to you to do some one-on-one information gathering including your needs from the organization, your interest and ability to attend the annual conferences, and your ideas for how we can both grow and infuse more energy into NABIE. Look for this outreach over the next few months.

2. The NABIE web site continues to be improved from the time it went live as a new site during the 2014 conference. If you have any questions or issues with how it operates or want to see some improvements in it, please contact either Alex Binder, the NABIE ED, or Mark Waldman, the board member responsible for this important area of our service.

3. NABIE faces a difficult problem that faces many non-profit organizations these days, and that is, how we improve our service to members so we cannot only hold your attention but provide increased value to you. In that regard, we are embarking on the development of a strategic plan that will require some input from you so we set a course that meets your needs. I currently have leadership responsibility for this effort so if you have something you would like to see us do, please contact me.

4. One of the ways we provide outreach in addition to the annual conference is through the Examiner newsletter. Gary Caruso has been a tremendous help in getting this newsletter pulled together 4 times a year but we always need news of interest from you. Please let Gary hear from you by sending in an article you have written or submit a topic of interest about building inspection professionals in your area.

5. Of utmost importance is to put on a successful 2015 conference. In that regard, when the 2015 venue is selected, the board will be reaching out to members in that location to help with program planning, so that attendees hear about subjects and issues of importance

■ **President's Message**
continued on page 6

INSIDE THIS ISSUE

Tuscaloosa and Joplin Tornados: Preliminary Observations

Puddle welded connection on top of wall failed

A team, consisting of university engineers and scientists as well as industry professionals surveyed the structural damage caused by both the April 27th tornado which ripped through the city of Tuscaloosa, AL, and then the May 22nd tornado which devastated Joplin, MO. The tornados cut approximately a ½ - 1 mile wide swath through the centers of both Tuscaloosa and Joplin. Much of the residential construction consisted mainly of older 1930s to 1970s buildings and light commercial structures, with some newer multi-family structures scattered throughout. These were powerful tornados that the National Weather Service (NWS) rated as an EF4 in Tuscaloosa and an EF5 in Joplin. Approximately 5000 buildings were lost and 500 businesses were lost or directly affected by the tornado in Tuscaloosa. In Joplin, over 8000 buildings were destroyed or damaged and over 150 people lost their lives. Over a period of 1.5 weeks at the two locations the team looked at hundreds of homes and other structures. Preliminary observations of the structural damage and some generalized mitigation approaches to save lives and reduce losses are discussed below.

Many of the failures of the older buildings can be attributed to the lack of continuous vertical and/or lateral load paths, not just too excessive wind speeds. In a series of perpendicular transects to the tornado's path, the team observed a gradual reduction in severity of damage from the center of the path towards the edges. While there was complete destruction and some houses shifted completely off their foundations at the center of the path, between 100 to 200 yards further away, major structural components (some roof trusses, walls) failed but the building remained in place, and beyond 200 yards from the center, houses had severe siding damage, loss of roof covering, broken windows and failed patio/porch roofs. Many of the buildings at the outer boundaries of the damage swath had a discontinuity in vertical load paths created by inadequate connections at critical locations. This is not a surprising finding given the age and the location of these buildings in a non-hurricane area where no building code mandates special attention to the details of load paths.

Exterior wall collapsed – no connection at footing

The study team found numerous examples in load path failures where detailing in compliance with current building codes for hurricane-prone regions would have reduced the damage and potentially reduced injuries. Unfortunately, some of these discoveries were in school buildings, two built within the last 10 years. These examples included a lack of physical attachment of precast concrete walls to footings or to adjacent wall panels (Figure 1), insufficient attachment and no redundancy in the support of metal bar joist roof framing systems into load bearing walls, and the lack of adequate lateral support at the top of exterior walls (Figure 2). The team also observed frequent failures in masonry infill walls where there was no or minimal

■ Tornados continued on page 6

Building for Tornados

William L. Coulbourne, P.E. is a national expert in wind and flood mitigation and has been involved in FEMA Mitigation Assessment Teams and natural hazard damage assessments for close to 20 years. He has become intently focused on building design for tornados after the recent devastating touch downs in Alabama, Missouri and Oklahoma, and he shared his research in his keynote address at the engineering seminar.

Safe room shelters

Tornados are classified by the National Weather Service in very much the same way as hurricanes: by the most extreme damage they can find anywhere in the storm's path, even if only a small percentage of the area affected reaches that extreme. In most cases that Coulbourne has studied, the wind speed in a majority of the tornados' paths is an EF0 (65-85 mph), an EF1 (86-109 mph) or an EF2 (110-137 mph), which are comparable to hurricane wind speeds up to a category 3. As a point of reference, new homes along large portions of the Texas coast are built to withstand hurricane force-winds up to 130 miles per hour.

Coulbourne suggests that these same practices used for hurricane wind resistance be used in tornado alley. Translating the same awareness of natural disasters and application of stringent building codes during the design process has the potential to significantly improve the safety of homes, businesses and human lives in the event of a tornado. Practices such as creating load path continuity from the roof-to-wall connections through to the floor-to-foundation, installing laminated windows, and building a safe room or shelter should be used when rebuilding a home damaged by a tornado and when considering new construction in a high-risk area.

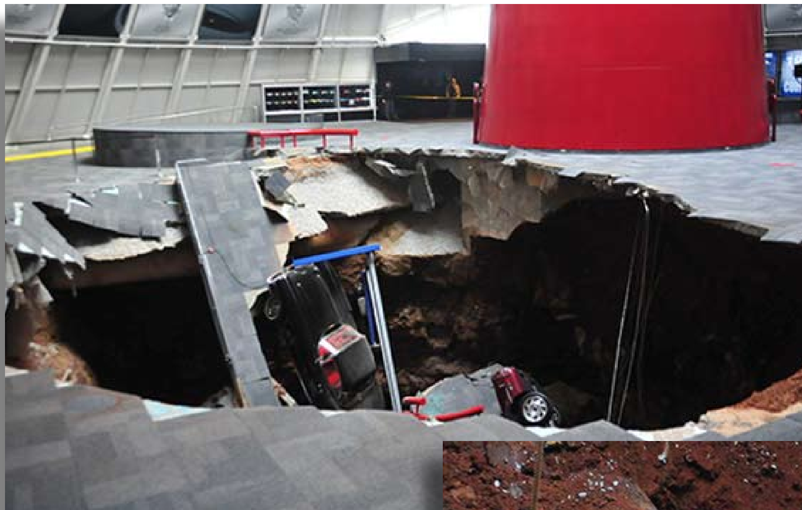
"If we could do something for hurricane-like wind speeds in places that get impacted by tornados, while everybody may not have the same level of protection and there could still be fatalities, we could reduce damage and improve the ability for people to survive a huge extent," Coulbourne said. "For example, 83 percent of the area affected by the Joplin tornado was an EF 0, 1 or 2. This corresponds to wind speeds represented by category 1-3 hurricanes. If we look at the wind speeds of the actual tornado events (mostly EF2s or lower) and compare it to the wind speeds we design for along hurricane front coastlines, I feel confident we can come up with some solutions that will work."

Coulbourne described how cities struggle to rebuild after a tornado, since most residents move to surrounding towns or wherever family and friends can help them get back on their feet. Families with children, in particular, will move quickly to a place where their kids can get back into school, and not fall behind. Once the kids are in school in a new town, the parents will search to find steady work, and before long they are settled. When the population of the original hometown shrinks, the tax base shrinks, and it becomes harder for the city to rebuild what is left. The probability that most of the people who left town would ever come back continues to diminish. Mitigation experts like Coulbourne try to help communities sort out their issues quickly, post-tornado, so they can begin to rebuild and thrive again. In any discussion related to construction for tornados, Coulbourne stresses that infinitely more important than salvaging a building is the goal of saving lives.

"If you want to be confident you'll be protected, put in a shelter," he said. "Instead of spending the money to make a whole building resistant to tornados, consider putting in a safe room. This is especially important in schools. Most teachers take the children into the hallway, but unless the hallway walls and roof are hardened, there is still a chance the roof may fall on the kids. In a scenario like that, the most cost-effective solution is not to build the whole building better, but instead invest in a safe room, so if the unlikely event of a tornado happens, human lives will be saved."

Sinkhole Swallows Pricey Corvettes at Hallowed Museum

(CNN - Thom Patterson) -- Sinkholes are swallowing Corvettes now. Last year it was houses in Florida, and on Wednesday nature gobbled up some of the coolest and fastest cars to come off the assembly line.



Eight valuable 'vettes at Bowling Green, Kentucky's National Corvette Museum fell victim to a 40-foot-wide, 20-foot-deep sinkhole that opened up in the facility's yellow Sky Dome wing. The museum unofficially estimates it caused millions of dollars in damage.

Motion detectors alerted security that something was amiss shortly after 5:30 a.m., said museum spokeswoman Katie Frassinelli. An employee who first walked into the room "has been in shock all day," she said.

"When you go in there, it's unreal," said Frassinelli. "The hole is so big, it makes the Corvettes look like little Matchbox cars."

The news triggered a collective worldwide gasp from the Corvette Nation.

"I was shocked," said Frazer Bharucha, 47, a Corvette owner since age 17. "We're talking about iconic cars that have been around for years."

Using remote-controlled drones, geologists and engineers from nearby Western Kentucky University have already explored the sinkhole and determined that the Sky Dome suffered no structural damage, Frassinelli said. "There's a cave down there," she said, adding that the museum is only a short drive away from Mammoth Cave National Park.

The damaged portion of the museum will be closed indefinitely, but the rest of the facility will be open as usual on Thursday, she said.

The painful losses have been tallied: Of the eight cars that fell, six were donated to the museum by Corvette enthusiasts, and two are owned by the car's maker, General Motors.

Here's the museum's list of cars that went down the hole:
-- a 1962 "Black Corvette"
-- a 1984 PPG pace car
-- a 2009 ZR1 "Blue Devil"
-- the 1992 white "1 Millionth Corvette"
-- a 1993 ruby red "40th Anniversary Corvette"
-- a 2001 Mallett Hammer Z06 Corvette
-- the 2009 white "1.5 Millionth Corvette"
-- a 1993 ZR-1 Spyder

The total value of the damaged cars is substantial, said museum executive director Wendell Strode. Almost all the cars have been removed from the room. They've been setting up ramps to get the last one out," said Frassinelli. That remaining Corvette is suspended in a precarious position on a riser directly above the sinkhole.

Bharucha, of the Long Island Corvette Owners Association, knows the museum well, having visited it at least six times. "There's a sense of awe and you get a lump in your throat when you walk inside."

He's right. I've been there. It's hallowed ground. Under the Sky Dome's recognizable red spire and towering vaulted 100-foot high ceiling sits a round chamber that cradled rare vehicles, including Indianapolis 500 and Daytona 500 pace cars. The room feels like a cathedral. And for many enthusiasts, it is kind of the Church of the Corvette. It is home to more than 70 unique Corvettes,

■ **Sinkhole** *continued on page 5*

Sinkhole *continued from page 4*

including several prototypes and a unique 1983 model -- the only one in existence.

Only 43 1983 Corvettes were manufactured before GM decided to scrap them and move on to the 1984 design. All were destroyed, except the one now housed at the museum. That car will likely go on display elsewhere in the museum, Frassinelli said, but the others from the damaged dome will be placed in storage.

Let's remember the Corvette's rich tradition. This is the ultra-cool car driven by Bill Bixby in the 1970s TV series, "The Magician." It also was the cherry ride that was good enough to be piloted by the dudes with the right stuff: NASA's Apollo astronauts.

"It's the all-American car," Bharucha said. "No matter where you go, people know it and love it. Sometimes they'll stare at it. Other times they'll wave."

You always remember your first car, and Bharucha is no different. For him it was a 1966 yellow Corvette convertible. Guess what? He still has it. "That's my baby," he said. "That's the one car I will not sell."

The sinkhole couldn't have come at a worse time, as the museum prepares to celebrate its 20th annivesary and open a 184-acre Motorsports Park in August. Some 5,000 people are already pre-registered to attend the park's grand opening.

Sinkholes at the Motorsports Park aren't really a concern, Frassinelli said. Several holes were found during construction and were made harmless, she said.

"We want to move forward as soon as possible", she said. "We want to start repairs and recovery."

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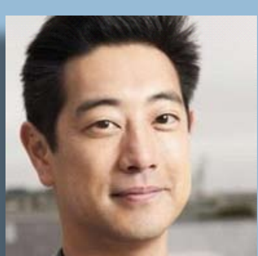


Grant Imahara

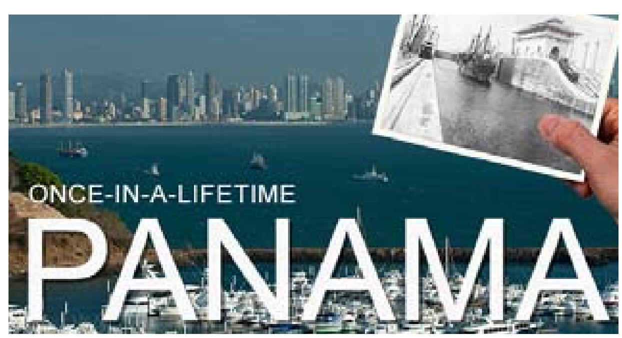
Grant has a Bachelor of Science degree in Electrical Engineering from the University of Southern California.

In 2003, Grant released his book, "Kickin Bot: An Illustrated Guide to Building Combat Robots." It is regarded by many combat robot-building enthusiasts as the bible for that sport

We are so excited to announce to you our closing keynote speaker!

Grant Imahara, the host on Discovery's "Mythbusters", and former animatronics engineer, will be joining us at the Global Engineering Conference 2014 in Panama City, Panama. You will not want to miss this once-in-a-lifetime opportunity!

Before becoming a Mythbuster, Grant Imahara was an animatronics engineer and modelmaker for George Lucas' Industrial Light & Magic in Marin County, California. He specialized in electronics and radio control at the ILM Model Shop, and has credits on numerous movies, including "Jurassic Park: The Lost World," "Star Wars: Episode I - The Phantom Menace," "Star Wars: Episode II - Attack of the Clones," "Terminator 3: Rise of the Machines," "Matrix: Reloaded and Revolutions," and most recently, "Van Helsing" and "Star Wars: Episode III."



He has installed electronics in R2-D2 units for "Star Wars Episodes I" and "II," Along with R2-D2 Crew Chief Don Bies and Nelson Hall, he is one of only three official R2-D2 operators in the United States.

Grant's skill set includes electronics design and fabrication, machining, welding, woodworking, CAD layout, pneumatics, CNC programming, and laser cutting, as well as some mold making and paint.

Tornados

continued from page 2

reinforcement. The designs of these buildings in several cases appeared to rely primarily on gravity to keep the vertical support systems intact. There was no evidence in any of the schools or other "engineered buildings" that safe rooms had been considered as a possible life saving design technique. It is important to point out that these buildings were designed to the minimal wind speeds of 90 mph. Drawings were not available so there is no information about the consideration of an Importance Factor in the wind design pressures.

For less-intense tornados (EF0-EF2), it may be possible to save lives and reduce injuries if, in those areas with a history of strong tornadic activity, load path enhancement techniques known to work in hurricane-prone regions of the country were added to local construction practices. At the moment, these enhancement techniques would be optional for owners since they are not required by the building code, but the techniques would need to be fully understood by builders and building code officials so that for those who want them, the quality of the construction and inspections insures improved building performance when the building is impacted by a tornado.

The team strongly believes that as structural engineers we should not accept the fact that people need to risk perishing in their homes or their schools from a tornado because the wind speeds are too high and thus there is nothing we can do. There appears to be significant evidence that at the lower tornado wind speeds associated with EF0-EF2 there are known construction practices and techniques that could be used to enhance the typical construction used in the lower design wind speed areas in the center of the country. One developed solution for protection of the occupants already practiced in "tornado alley" is the installation of safe rooms. For whatever reason though, this life-saving practice is not yet widely used. The team believes that other building strengthening practices for these types of events should be developed and then demonstrated by local builders and building officials as being accepted into local building practices for those building owners or users who want to reduce their risk of injury or death from tornados.

The damage inspection team members were: Dr. David O. Prevatt (Univ. of Florida), Leader; Dr. John van de Lindt (Univ. of Alabama), Dr. Rakesh Gupta (Oregon State Univ.), Dr. Andrew Graettinger (Univ. of Alabama), Dr. Shiling Pei (South Dakota State Univ.), Sam Hensen, P.E. and Bryan Wert, P.E. (Simpson Strong-Tie), Bill Coulbourne, P.E. (Applied Technology Council), Thang Dao (Univ. of Alabama), Dr. David Grau (Univ. of Alabama), John Miller, P.E. and Ben Jennings, P.E. (J&M Engineering – Springfield, MO) and graduate and undergraduate civil engineering students from the University of Florida, University of Alabama, Iowa State University and Clemson University.

President's Message

continued from page 1

inspection professionals in your area.

5. Of utmost importance is to put on a successful 2015 conference. In that regard, when the 2015 venue is selected, the board will be reaching out to members in that location to help with program planning, so that attendees hear about subjects and issues of importance to building professionals in that area. Please consider volunteering to help if the venue is near you. Your contribution to this effort will be invaluable.

As always, my best to each of you as your business grows throughout the summer.

Bill Coulbourne, P.E.

The NABIE EXAMINER is published quarterly by the National Academy of Building Inspection Engineers. It is the official publication of the Academy, but it also represents views of members and friends in the engineering community. The NABIE EXAMINER is a forum for and about members and a resource for information about building inspection engineering. © 2014 National Academy of Building Inspection Engineers, P.O. Box 860, Shelter Island, NY 11964-0860. Website address http://www.nabie.org. Email address director@nabie.org.

Common Sense Safety for the Common Areas

Gary J. Caruso PE, Criterium-Caruso Engineers

Associations are tasked with taking reasonable care for the safety of their members, neighbors and visitors. We should use common sense to minimize the chance of accidents. Each property is unique but some common features found in most communities and in our own homes deserve emphasizing in relation to safety. Safety features can be technically challenging. A full list of potential safety concerns and a detailed discussion is beyond the scope of this brief discussion. Safety concerns and requirements should be discussed with knowledgeable professionals. However an appreciation of most safety hazards involves no more than a common sense approach.

Stairs are one of the most hazardous elements that we encounter in our homes and they should be addressed in the common areas of our community as well. In general, all stairs should have secure railings, should be structurally sound, free of rot, corrosion and deterioration and have uniform height risers and tread widths. Landings, decks, balconies and the tops of high walls should also be protected by appropriate railings set to a height and baluster spacing as prescribed by current standards. The presence of children in the community should prompt even stricter adherence to standards. Guidelines and tolerances for these features can be found in the current building codes and by consulting with professionals.

Other trip and fall hazards are found at uneven sidewalks, patios and multi level walking surfaces. Uneven walkways, sidewalks and patios should be ground down to remove potential trip hazards. Walking surfaces with changes of elevation should use different floor finishes to draw one's eye to the steps, up or down. Avoid using the same color, texture and pattern of floor finish across a change in floor elevation. Ramps may be needed to accommodate the disabled.

Some areas are attractive nuisances and should be restricted to maintenance personnel and other authorized individuals only. Stormwater retention/ detention ponds should be fenced and access gates locked. Swimming pools have many safety considerations but limited access to the area by use of appropriate fencing and self closing, locked gates is an obvious requirement. Elevator equipment rooms, mechanical closets, maintenance rooms etc. should be kept secured.

Electrical junction boxes should be kept in good condition with appropriate covers. Electrical panels should not be left unlocked in unsecured locations where access is not monitored. Loose wires, damaged receptacles and switches, damaged light fixtures etc. should be repaired promptly. All electrical receptacles on the exterior and in areas close to water should be ground fault protected by the use of ground fault interrupter receptacles (GFI).

Access to flat roofs on buildings should be restricted. With the growing popularity of roof top decks, it is more and more important to attempt to restrict access to the deck only and not allow access onto the roof itself. Appropriate restrictive signage and video monitoring of the area may also be needed to protect against, limit or mitigate liability.

Proper knowledge of safety features required for workmen on the roof should be acquired. Fall hazards are present at roof edges, around skylights and at other openings in the roof and there are very specific requirements for the protection of workers. The association must require that all maintenance personnel take the necessary precautions when working on the roof.

The play surfaces in playgrounds should be a cushioned surfacing beneath equipment and fall areas and be extended for an area at least 6 feet in all directions. Surfaces must be maintained to a depth proportionate to the height of the equipment and must consist of a soft material able to resist shocks such as wood mulch, pea gravel, sand or synthetic materials. Playgrounds should be inspected periodically to check for broken and loose fittings, sharp corners and other hazards to children. Swings, slides and other features need regular inspection to ensure their safety.

Safety should be a primary concern in all communities. Problems and hazards should be discovered and corrected as soon as possible. Not only are we protecting ourselves, our guests, our neighbors, workers and our families, we are mitigating the liability for the entire community.

Transition and the Reserve Study

Gary J. Caruso P.E. R.S.
Criterium-Caruso Engineers

The costs that are associated with ownership of a property in a common interest realty group are, at least, two-fold. Affordability is only partially determined by an owner's personal mortgage commitment for the purchase of their home. The ongoing cost of the Association's dues is the other factor and in some cases it may be a critical factor in determining affordability. Along with taxes, the sum of these costs approximates the total cost of ownership. They should reflect both the operating and reserve fund expenses that can reasonably be anticipated over the near and long term.

Usually, some pro forma itemizations of these costs, broken down into each unit's share, are provided for review in the developer sales package. Usually the operating costs can be readily estimated since the property is currently experiencing the costs. A fair and accurate reserve fund contribution is generally much harder to estimate. Depending upon the property, its age, facilities and complexity, the amount of the reserve fund contribution can vary dramatically. A purchaser should consider if these costs appear to be accurate and reasonable.

Some significant considerations that should be identified, evaluated and estimated in a reserve analysis are as follows. No two properties are exactly the same. Depending on the property there may be more or less of these work items. Costs associated with these types of work items can be considerable depending upon the age and condition of the property.

- Dam and lake maintenance costs such as dredging. These costs can be considerable.
- Roof replacements
- Window replacements
- Moisture and waterproofing repairs
- Exterior painting
- Elevators
- Life safety systems
- HVAC equipment
- Mold, asbestos or lead paint abatement
- Other environmental concerns
- Retaining wall replacements
- Road re-surfacing or replacement

The only way to make a fair estimation of the future anticipated capital replacement and major maintenance costs is to perform a systematic review of the common areas and the expenses associated with these items. I would argue that a reserve study according to CAI standards, along with the inspections of the facilities for any construction problems are needed prior to transition from developer control to homeowner control. Only a thorough review can properly gauge the current and projected future costs to the homeowners. As you can imagine, the lower the published costs of the dues, the more affordable the property is perceived. Whether you are purchasing a home or condominium in an existing neighborhood or a new development, an accurate estimate of the total cost of ownership is needed to properly evaluate the purchase.

If a systematic reserve study has not been completed prior to transition, many communities are requesting a thorough reserve study shortly after the community has been turned over. Even a new community which may not anticipate any significant capital replacements or major maintenance in the next five years should be accumulating funds for expenses down the road. Unless you are intending to fund your capital replacements and major maintenance by special assessment or loans, an accurately estimated reserve fund along with a transition review is essential.

Part 2: Development of Real Estate Inspection Standards of Practice

The following is the second part of a multi-part discussion and update on Standards of Practice (SOP) for the home inspection industry.

Russell Strahan & John Cahill

SOP Developmental Considerations
In developing a method to define the inspection process, a number of fundamental concepts are consistently raised. These include, in no particular order:

- Definitions & Scope of Reporting
- Standards Structure (general versus prescriptive)
- Limitations
- Descriptions
- Repair or Maintenance Recommendations
- The Role of Code
- Safety or Hazard Identification
- Life Expectancy
- Product Recalls
- Document Review
- Cosmetic Items
- Prioritization
- Specialty Inspections
- Minimum Tools

Definitions
Clear, consistent and concise definitions are essential to a useful SoP. Many SoPs can be observed to use undefined language in requirements. Common terms which are vague or undefined include improper, appropriate, inadequate, where required, etc.

Properly structured definitions use tightly interlocking language, reduce redundancy and increase readability.

The most fundamental SOP definitions are Inspect, Deficiency and Accessible.

Definition of "Inspect"
Inspect is usually defined as "to look at or examine". However, the actual intent is inevitably to inspect and report observed defects. In existing standards the reporting function is often inconsistently applied or neglected in requirements. Defining inspect as to "examine and report defects" avoids both inconsistency and redundancy in requirements.

Definition of "Deficiency"
Deficiencies in home inspection generally fall into one of three categories.

1. Improper installation
2. Inadequate performance
3. Deterioration or damage

There are many variations in existing SoPs and this significantly affects the scope of reporting. Attempted variations have included cost thresholds and inclusion of safety (discussed later).

Inspectors often document relatively insignificant defects, a practice no SoP can prevent. This may be habit for experienced inspectors and a refuge for newer inspectors. But this can have unintended consequences: Exhaustively documenting minor defects can functionally act to de-emphasize more important issues with property condition. Consumers are most interested in avoiding foundation problems, water penetration, bad roofing, worn-out major mechanical components and obsolete utility distribution systems.

Definition of "Accessible"
Large variations exist in the definition of accessible in the existing standards. Most disclaim any condition affecting the safety of the inspector, but some infer no disassembly of required systems or disruption of furnishings. Other variations have to do with minimum head room or access openings. The practical fact that inspection of an occupied home is necessarily much more limited than a vacant home is rarely, if ever, addressed.

Limitations
A home inspection is a complex and inherently limited product. Published limitations are very powerful at defining the scope of a home inspection in a manner users can understand.

Every SoP includes minimum expected or required items for inspection. Functional experience indicates that the importance of the limitations tends to overshadow these enumerated requirements. No written standard can possibly anticipate all of the limiting conditions encountered at a given residence.

Regardless of desired appearances, there a virtually infinite list of excluded items in practical home inspection. Limitations are most clearly understood as itemized lists. Examples of this are often found within experienced inspectors' paperwork, either with embedded in report language or a separate contract.

■ **Real Estate Inspection SoP**
continued on page 10

Real Estate Inspection SoP

continued from page 9

Inspect is interrelated with the definitions

1. Accessible -- Can be approached, entered or viewed without moving items, probing, using specialized tools, damaging property or disassembly, and without physical limitation or danger to the inspector.
2. Deficiency – A condition adversely and materially affecting the performance of a system or component, as judged by the inspector. General deficiencies include but are not limited to: Inoperability, material distress, interior water penetration, damage, deterioration, missing parts and unsuitable installation.
3. **Inspect** -- To observe accessible systems or items in a non-exhaustive manner and report apparent deficiencies. Equipment listed herein shall be operated in at least one mode with ordinary controls at typical settings.
4. Performance -- Achievement of an operation, function or configuration consistent with accepted industry practice.
5. Report -- To provide the inspector's opinions and findings on the approved TREC form.
6. Representative -- Sampled according to homogenous use, age and design. Representative samples include sufficient repeated inspection to provide reasonable confidence as to the condition of similar items.
7. Specialized Tools -- Equipment other than ladders, flashlights, receptacle testers and ordinary hand tools.
8. Verify -- To closely inspect or test for one or more specific characteristics.

Exclusion lists often span multiple pages and consistently grow faster and larger than the affirmative definitions of scope.

Experience also shows that, absent explicit notice of limitations, consumers expect virtually everything to be addressed. Providing explicit limitations helps the consumer identify options to pursue additional inspection services that they might not have thought of on their own. It is an inconvenient truth that inspectors are generally incapable of functionally verifying some major mechanical components in modern housing. Examples include heat pumps, variable-speed cooling equipment, multi-staged heating systems, modulated gas controls and variable air volume air distribution. This trend will continue as automation and computer-integration advances in newer construction.

Repair Specifications (and Maintenance Recommendations)

It is highly unrealistic for an inspector to have specific knowledge of the best trade practices for all the systems they observe. Current standards uniformly exclude repair specifications, but often homebuyers ask the inspector for advice. Many inspectors are suggesting methods of repair in their reports, presumably to add the perception of value.

There is ample anecdotal evidence that the issue is aggravated by computers and standard note libraries. It has become very common for reports to inundate consumers with "boilerplate" language regarding maintenance and repairs. Again, this can act to de-emphasize the most important issues in overall home condition.

The Role of Building Code

Although all Standards of Practice disclaim code inspection, it remains a very controversial subject. Inspection practices definitely benefit from a working knowledge of building code, but how it is to be applied within the process is unclear. Home inspectors are generally not required to be code-certified. It is unrealistic for inspectors to be knowledgeable of the construction history of older homes, much less the position of various Authorities Having Jurisdiction (AHJ's) regarding existing housing. It is also worth noting that all AHJ's are indemnified by code, but private inspectors definitely are not.

Consumers are not knowledgeable about building code. Some inspectors (heavily aided by computers) will cite code references in their reports, leading to much confusion concerning older homes. Older homes obviously do not meet many requirements in modern code.

It is worth noting that code will largely guide installation defects and not condition items. Code offers no guidance as to when a foundation is failing or a roof is worn-out. It is not so much the established code which guides inspector judgment as changes in code: Many code revisions are driven by specific problems observed with developing construction practices.

Requiring code for home inspection compares a large inventory of pre-existing homes to the newest standard. That is analogous to requiring the entire inventory of vehicles in the United States to meet the most modern safety standards. Not only is this cost prohibitive, it is not what consumers expect.

This paper will be continued in subsequent issues of *The NABIE Examiner.*