INSPECTOR JOURNAL

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CHAIRMAN'S MESSAGE

DAVID PACE, MCI, CHAIRMAN OF THE BOARD

In 1976, some forty years ago, a few home inspectors got together sensing the need to share in each other's strengths and strengthen each other's weaknesses. That day the seeds planted, soil was watered and the California Real Estate Inspection Association began to sprout. This year we will celebrate our heritage, remember where we came from and take concrete steps to ensure our future.

In January CREIA will team together with ASHI and hold a joint conference in San Diego. InspectionWorld will be a celebration by CREIA and ASHI marking 40 years of leadership in the home inspection industry. Our strength is learning and sharing from each other and this is a golden opportunity to improve your inspection skills. Registration and hotel information can be found on the CREIA website. This is a can't be missed opportunity to not only learn from the best of the best in California but to rub elbows with inspectors from all across the country. Don't miss it. Register today.

Through the hard work of staff and some very dedicated CREIA members exciting progress is being made on several fronts. Let me share a few of those.

- The Technical Information Exchange (TIE) is providing a valuable resource of information and exchange of ideas. CREIA has been spotlighting this valuable resource in recent email blasts.

- CREIA will soon be re-launching ASK-CREIA. This will provide a valuable resource for consumers to ask questions of concern to them and will also provide name recognition for CREIA.

- E-learning has been a goal for many years. CREIA is currently working with one of the top inspection education providers to help CREIA with E-learning content. We hope to have some exciting news very soon on this front.

- When a Realtor or consumer thinks of home inspection, we want them to think CREIA. We are developing strategic plans to help bring that about.

- This year we celebrate 40 years as an association. Our success has come about through the hard work of dedicated individuals. Over this next year we will be looking back at those who have made significant contributions to our Association. Next September, at our fall conference, we want to celebrate their dedication and honor their contributions.

- CREIA continues to build strategic alliances with those that have a similar vision and share similar goals.

- Our website continues to make improvements.

The strength of our Association comes from you. Dedicated individuals who are determined to keep families safe by providing the very best in inspection services. They may not fully realize the extent to which you provide protection for their family and their investment. But you know. That's the strength of our Association.

David Pace, MCI
Chairman of the Board of Directors

MARK YOUR CALENDAR

CREIA'S 2016 ANNUAL CONFERENCE AND 40TH ANNIVERSARY

CREIA is excited to announce the dates of its 2016 Conference, which was moved to permit CREIA's partnership and participation with the ASHI InspectionWorld 2016. CREIA's Annual Conference will be held Friday, September 23 through Monday, September 26, 2016 at the Marriott Burbank Airport Hotel.

MAXIMIZING MARKETING AT REAL ESTATE SALES MEETINGS

BY DAN HUMBER, PRESIDENT/CEO INSPECTION SUPPORT NETWORK (ISN)

Marketing to real estate agents and offices can be one of the most rewarding ways to grow and maintain your inspection business. After all, the agents are the ones who "drive" the real estate market, no matter where you are. Having had a successful multi-inspector company for fifteen years, here are some key tips for developing relationships with agents and brokers, and therefore, cultivating more business for you through their referrals.

Real estate agents are typically very social people, which is partially what draws them to their industry. Inspectors on the other hand, are typically much more analytical, which is what helps them excel at their work. As a result, the two varying mindsets can be at odds and it is important to remember this in your marketing.

There are four key components to marketing to agents. The most important, basic principle to keep in mind while marketing to agents is to show them respect. Just as with inspections, what real estate agents do is much more difficult than it appears on the surface. They are very perceptive and it is very important for them to know you respect them and what they do.

The second key is to use a multi-layered approach to your marketing. (Methods and activities are limitless, but we'll focus on sales meetings for the purpose of this article.) Consistency and name/brand recognition requires exposure to them on a regular basis, and through different kinds of platforms.

The third key is to be approachable and fun! Marketing is a chance for you to mix, mingle, and allow the agents to see your personality!

The fourth key is to provide them with information. Become their source for answering questions of any kind relating to property inspections, construction, condition issues, etc. Real estate agents ***think*** they just need to get a property inspection, but what they ***really*** need is a professional who can consistently provide them with information when called upon. Assist them in any way you can by answering questions for them (even if it is not related to a specific inspection). By sharing your specialized knowledge, you become the expert in their eyes, and referrals will follow.

There are unlimited ways to gain exposure in the real estate market. For the sake of this article, I am going to focus on marketing at sales meetings within a specific company or office. More and more real estate offices are becoming "closed," and access to agents is often limited to "Preferred Vendors" as part of a program developed by the specific company or franchise. Typically, some kind of fee is charged for this preferred vendor status or open access to the agents in that office or brand. Brokers have various methods of allowing you access to their agents and what support they expect in return. It is certainly an important decision whether you wish to participate in this type of program. I have found it very successful to market within this type of structure. The results received can far outweigh the costs of being in the program. Success depends on two things: the quality of the agents and company you choose, and your participation in the program. Make sure the Broker truly will help you get the exposure you need or look for another office.

Select an office or franchise that is considered one of the most respected in your area. Focus on just one company or franchise, or perhaps two to three, depending on the number of agents to which you will be introduced. By picking only the top company or franchise, you immediately expose yourself to the best types of agents with which to work: professional and productive.

Whether you enter into a preferred vendor program or not, the process for marketing at their sales meetings is similar. The focus of your presentation, whether short or lengthy, should be to provide the agents with information that they will find helpful. Is there an issue such as energy efficiency, new construction techniques, new legislation, or environmental concerns relative to your market that the agents will find helpful? It's amazing how quickly you can become an expert in their eyes if you become their source of information.

Know your audience. Do your homework. Before you get to the meeting, take a look at agent rosters, whether online, or as part of your business management software system. Of course, we utilized the reports available through Inspection Support Network. Through customized reports, you can know who has referred you the most and how regularly. You can also monitor if specific agents used your services in the past but is no longer. Set yourself goals to seek out the agents with which you wish to further your relationship. Go to the meetings early, and be professional in your appearance and demeanor. Here is the most important thing about presenting at sales meetings: ***stay for the entire meeting!*** I observe most other marketing "reps" leave immediately after their presentations. Staying for the entire meeting demonstrates your respect, and allows you to learn more about their business challenges and procedures. Also, many people don't want to ask questions in front of their peers and would rather do so with you one-on-one afterward. Repetition is crucial. Attending meetings at the same offices once a month or at the least, once every quarter, is essential.

CONTINUED ON PAGE 5

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If your business management software provides it, utilize its tools to take "gifts" along to the agents. We took customized return address labels and/or "I've moved" type of personalized post cards to give to the agents for their clients we worked for. It give you a personal way to say thank you, and the other agents wonder what they are missing out on!

Of course, it is human nature to want to work with people you feel comfortable with, so, be comfortable at sales meetings. Be approachable, and as engaged with people as you can be. Don't take yourself too seriously, and injecting a little ice breaker or humor into your presentation always helps agents relate to you. Have fun, and think of it as "show time" if that helps switch your mindset!

To summarize, the four keys to the most productive sales meetings marketing are: demonstrate respect (by attending the entire meeting), repetitive exposure (visit the same offices on a regular basis), be personable and approachable (don't take yourself too seriously), and become their source of information about all things relating to property inspections, construction, etc. Following these four recommendations can help set you apart as the expert to ask questions of, and refer clients to, for many years to come.

Many inspectors are extra busy right now as the market has improved. Be sure to make time to create and maintain relationship within the Realtor® community as an ongoing part of being a business owner. Farmers don't just plant crops when they get hungry.

Happy inspecting everyone!

Dan Huber is President/CEO of Inspection Support Network (ISN), the world leader in connecting, streamlining and automating all aspects of running any inspection business. Dan helped found Inspection Support Network in 2000. Dan has been training inspectors and real estate agents across North American for over 25 years. He was a top producing real estate agent for many years including being a member of the RE/MAX Hall of Fame. He founded Home Pride Inspections in 1997, which is a multi-inspector firm and market leader in Las Vegas, Nevada with over 35,000 inspections performed. He sold in 2012 to focus completely on the growth of Inspection Support. Dan's understanding of the business needs of the inspector, real estate agent and client has helped the Inspection Support Network stay focused on real world solutions for growing inspection companies whether they are sole proprietors or multi-inspector firms. Visit www.inspectionsupport.net for information.

California Real Estate Inspection Association's

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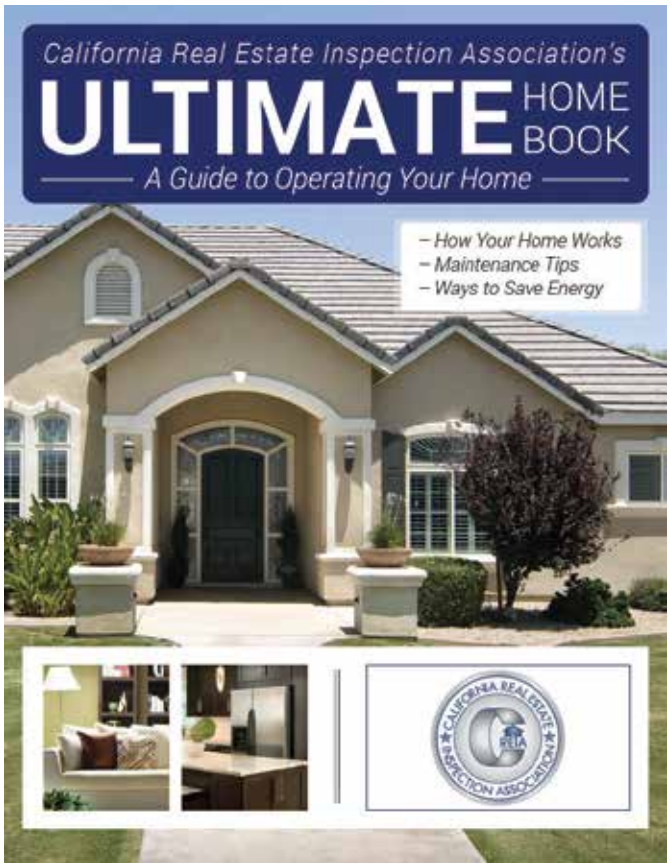
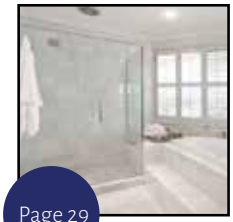


ABOUT

Tap into your home's potential with CREIA's Ultimate Home Book. This book is the cumulative guide for all homeowners. From a first time home buyer to a realty expert, this book is an invaluable resource for anyone with a home. This great guide is full of tips on home maintenance, repair, and much more! For anyone wishing that home ownership came with a guide, THIS IS IT. The Ultimate Home Book is the book that every home should have. This book guides home owners through step-by-step repairs, home safety, and even how to save energy and save money! The perfect leave-behind to accompany your inspection report!

TAKE A LOOK INSIDE



TOP 27 WAYS TO ENSURE THAT YOU TO CAN:

Make Less Money, Do Fewer Inspections, Work Harder, and Have an Abundance of Time Off

Proven Strategies for Sending Potential Business to Your Competitors

BY DAVID PACE, MCI

1 Don't build relationships.

2 Strive to be a mediocre inspector. Miss stuff that may complicate (read kill) the deal.

3 Make clients wait for reports.

4 Don't answer questions.

5 Don't have a website. If you do, load it up with a bunch of flash cartoons.

6 Remember it's all about you.

7 Charge too much. Charge too little.

8 Marketing is a waste. So don't waste your time marketing.

9 Ignore social media.

10 Don't answer the phone promptly.

11 Don't stand behind your inspection.

12 Don't follow up.

13 Answer all questions even if you don't know the answer. They won't know the difference.

14 Have no goals. No plan.

15 Remember it's all about you.

16 Never attend conferences. Never strive to improve.

17 Always walk on the ethics fringe. If your advertising is close, it's good enough.

18 Always be fashionably late to an inspection.

19 Don't be flexible with your schedule.

20 Never write checks over disputes. After all it's the principle.

21 Always speak disparagingly of the inspector an agent uses.

22 Don't plan for the future. Let it happen.

23 Always complain about the house, client, realtor, weather, filthy house and anything else you don't like.

24 Remember it's all about you.

25 Have a crappy atitude.

26 Never give back. Especially to those who helped you get started.

27 Avoid technology.

AND Remember it's all about you.

David R. Pace, MCI, is owner of Pace Inspection Services in Brentwood, California since 1993 and serves as the 2015-2016 Chairman of the Board of CREIA. For more information visit www.paceinspection.com

GFCI for the Submerged 120v Pool Lights

ORIGINAL AUTHOR MIKE CASEY, MCI. REGURGITATED BY JOHN GAMACHE, CCI

I would like to talk a little bit about pools. I know that many of us do not inspect pools but a lot of us do.

When testing the GFCI for the submerged 120V pool light(s), don't just turn them on for a few seconds. Turn them on and leave them on for five or ten minutes or so after the initial test. There are pool lights out there that will trip the GFCI after five or ten minutes of run time. Chat with the seller if possible and they will (or should) recollect, why yes, we've had some problems with the pool light going off but, only after a while. It is supposed that it may take a bit of time for the current leakage to reach the GFCI setting and open the circuit.

I turn the light(s) on and verify that they are working for my initial test. Keep in mind that the newer "LED" lights are extremely hard to see in the daylight. Then press the test button to trip the GFCI and make sure all of the submerged lights are off. This ensures that the lights are in fact GFCI protected. I then reset the GFCI after my initial test and leave them on. I continue other facets of the pool inspection for the five or ten minute period just to make sure they remain on. Be sure to turn the lights off! Also, never turn a pool light on if it is not submerged (bad things will happen). If there is no pool light, GFCI protection (usually mid-1970 pools and earlier) or the GFCI protection is missing, I strongly recommend upgrading to GFCI protection by a licensed and qualified pool technician.

One extra thought on pools. Be sure to look inside the skimmer for cracks. I have found many at this location. Of course, I only report the ones that are below the waterline.

ON BEING A HOME INSPECTOR

BY BRET HUSTED, CCI

Most of us did not start off with the intention of becoming a Home Inspector. The reality is that the home inspection business found us. Many of my colleagues started in the building trades and others came from totally unrelated fields. The art of home inspection is not an exclusive discipline. We all know what a home is and have some background in operation of common systems found in most housing. So what is so complicated about writing a few things down and issuing a home inspection report? EVERYTHING!

First you hear from other inspectors that there are pitfalls and law suits around every corner. Next you hear that new codes are coming out and that you shouldn't use four letter words in your report like "code" or "mold." Which contract are you using? Whose software are you going to buy? E&O, GL, Auto insurance? Business plan, bank account, business cards, business license, fictitious name? Flashlights, Infrared camera, CO sensor, moisture meter, circuit testers...What's a newbie to do?

Next time pick a simple career – maybe paperboy (oh, wait there aren't too many of those jobs left anymore). Well I just want to say that if you approach the profession with the right attitude you will do just fine. There is nothing about the business that doesn't follow common sense. As long as you report conditions honestly, keep to the facts and don't get too cocky the job can be fun, enriching and PROFITABLE.

MY MOST IMPORTANT MANTRAS:

Touch everything – put your hand on the wall, flip the switch, open that door, tug on it, push on it, smell it, listen to it, count how long it takes just don't walk by it thinking it looks normal so it must work.

Listen to your CLIENT and try to help them understand. Never assume that anybody already knows anything. While you are talking to the CLIENT ask them "Do you know what a GFCI is?" If the answer is "NO?" then you will soon be providing important information to them.

Ask yourself "What would a 6 year old boy do in this environment?" Just how many injuries could be involved (this is a Skip Walker-inspired thought).

Go through the property more than once. There always something you didn't see the first second or third time through …but don't spend all day. Look for what is obvious and identifiable and don't get to hung up on minutia. Ask yourself how relevant this is to the client. They may be worked up over a missing light bulb but not realize that there is nothing but aluminum wiring in the house.

Stick to the facts and try not to speculate. Choose your words carefully using accurate descriptions which are not necessarily provocative or that might gloss over important concerns. Stay away from adjectives like – extremely, major, very, etc. and never write a report that says item after item is good or serviceable, it's just not necessary and can get you in a lot of trouble. But nothing is worse than writing up something as what it is not.

you only know what you know

Stay humble and let the learning curve work its magic, in time you will come to understand. Until that time keep to what you feel comfortable with and ask your fellow inspectors questions.…*Just don't ask them for pictures of bad p-traps or you will receive 100's of pictures in your email box.*

Don't be a pawn to any participant in the transaction – including the CLIENT. You are the professional and you write your own destiny – literally. If something doesn't look or feel right it probably isn't. Never let an outside party influence you to re-write something unless it really needs to be that way to reflect reality. It is okay to make a mistake but as my daughter pointed out to me tonight – you don't let the same flame burn you twice. On that same point – nothing is free – if you have to go back or recheck something bill for the time it takes. This will ultimately earn respect and keep the lights on.

Keep learning – take on a new designation (there's only about 150 or so potential inspection add-ons). Get your ICC certification, take a mold course, learn how to use a thermal camera, lead test / RRP, learn Chinese ...and get really good at it. Sure we can do that for an additional fee of $_____.

When I first started HOME INSPECTING I had been a General Contractor for 20 years. I was sure I knew **EVERYTHING** about home building – heck my license plate was HSBLDR. Oh, how wrong I was. But I made it through and so can you.

Just hang loose follow some basic principles and attend as many of the CREIA or ASHI learning opportunities as you can.

Bret Husted is a CREIA and ASHI Certified Inspector, General Contractor B, C:10, C:36, ICC Certified Residential Combination Inspector, Structural Pest Control Operator, ACE Associate Certified Entomologist, Level 1 Certified Thermographer, Husband, and Dad.

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On Safety

BY ERIK BRYANT, CCI

As a home inspector, accuracy is one of the cornerstones of inspections. Recently I have brought on a trainee, which compelled me in thinking about what is important when inspecting and teaching about inspecting. Oftentimes, inspectors don't think about their safety while performing on the job.

My first rule of home inspecting has always been "Always come home alive!" This a very common rule among service professionals that have hazardous or dangerous jobs. I preach this every day to my trainee.

Most inspectors work on training, learning the ins and outs of the inspection business, report writing, and trying to perform an inspection according to CREIA's Standards of Practice (SOPs). But, what inspectors often overlook is their safety while inspecting homes.

Safety starts before you even begin traveling to the home to be inspected. Sacramento and many other cities in California can see well over 100 degree temperatures in the summer months. When you are in an attic, the temperature can be well over 160 degrees, which can kill in a matter of minutes. Be sure to carry water. Staying hydrated during an inspection is key. If you have two or more inspections in a day or if the house you are inspecting is large, be sure to freeze a second water bottle for later in the day. Inspectors need to be mindful of the weather and prepare. If it is raining, bring rubber gloves for the main panel and a waterproof jacket. If the weather is cold, make sure to have a jacket to keep warm.

Be mindful of creatures. In the spring in the foothills, snakes and other animals are coming out of hibernation. You never want to be under a house and discover a rattlesnake. Whenever I see a living animal in an enclosed area during an inspection, the inspection of that area is over and it should be for you, too. You never know if that animal whether a squirrel, raccoon, rat, opossum, snake, or any animal, is diseased, feral, venomous, has young to protect, or has any number of reasons to defend itself and attack you.

At the home being inspected, start with a "top down" approach to safety. Before going up onto the roof, closely spot check to make sure the roof is safe to walk on. If the roof is too steep or just doesn't feel right, be wary. Too many inspectors injure themselves, sometimes seriously, from falling from roofs or ladders. One such injury can put you out of work for months or worse.

There have been times when I have gotten up on the roof and then started to feel unsafe. Either my footing had started to go, I felt the pitch is too steep, or what I thought was a stable roof turned out to be anything but stable. When this happens, the first thing to remember is not panic - remain calm. Turn onto your back and crab walk down the roof, spreading out your weight as much as possible, crawling to a valley and down the valley. The support in a valley is much safer than just going down a flat roof surface.

When using a ladder, always use both hands to climb, never climb at a steep angle, and never go higher than you feel comfortable. Very early on in home inspecting, I was assisting an inspector who had fallen off a ladder and broke his leg. He later learned from a local firefighter how to safety climb a latter. The proper angle for a ladder is to have the base of the ladder at your toes, place the other end against a wall, and you should be able to reach straight out and touch the ladder with your fingers.

When inspecting outside and going around the exterior, always wear gloves. Gloves protect from scratches, barbs, and the occasional pests.

Testing the electrical can be very dangerous. If you are in doubt about main panels, use an electrical tester and see if the cover is energized before touching it. When removing a dead front cover, be careful. There is a reason they are called dead front covers. Be sure to wear gloves when removing the covers and be cautious because you never know what may be on the other side. I was inspecting a house out in the country in Woodland and on the other side of the dead front cover there was a black widow spider.

Two other areas in which to be safety-conscience are the attic and sub-area or basement. Always wear a respirator, gloves, and a hat. My father and mentor in home inspecting reasoned, "you only have one set of lungs. They can't be replaced. Protect them." Since then I have added gloves and a hat. The gloves help if there are rodent droppings, nails, and insulation. Many people, including inspectors, have problems or are irritated by insulation. While I am not one of them, it is still important to protect your skin.

In sub-areas or basements, wear cover-alls, knee pads, a respirator, and a hat. Carry two flashlights when going under a house. There is nothing worse than having a flashlight die while you are under a house and feeling trapped. I always carry an electrical tester as well. You never know if the water pipe you are about to crawl under was grounded improperly and is carrying enough current to kill you. Always test all pipes prior to crawling underneath them.

When in a sub-area, the earth may be muddy or water may be pooling. Electricity travels freely in water. Crossing a muddy sub-area can be very dangerous, so be careful and crawl cautiously. Never crawl through pooled water.

Most home inspectors take time to learn these tricks on their own, sometimes through much pain and grief. Some learn from whomever they have trained with. Some have never been told or instructed about any of this. Be aware of your environment. As the saying goes, an ounce of preparation is worth a pound of cure!

Erik Bryant has been a home inspector and a member of CREIA since 2007. He trained with his father and several other home inspectors before beginning solo inspections. Since then, he has performed well over 1,000 inspections, have served on the Greater Sacramento CREIA's chapter board as secretary for a few years, and has joined BPG (Buyer's Protection Group), a home inspection company. While he works diligently, he still finds time to spend with his wife and they travel frequently.

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This four-day event will feature pre/post conference activities, educational tracks with over 45 expertly led educational sessions, popular networking events, and exhibits that will provide the latest information on tools and technology. Earn 20 ASHI/CREIA CECs!

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CALSHAKE UPDATE:

NOT ALL DEFECTIVE ROOF SETTLEMENTS ARE CLOSED

In the last fifteen years, there have been numerous defective product class action lawsuits related to cement composite roofing materials. Most professional home inspectors are knowledgeable on this issue, and include the relevant information in the inspection report, when it applies.

Many inspectors do not realize, however, that one settlement fund is still open and accepting claims. The New CalShake fund (www.calshakeclassaction.com) has paid more than 9,000 roofing claims, and the Fund Administrator believes there are as many as a thousand roofs upon which a claim has not been filed. Since the presence of a defective roof becomes a liability for the seller and a possible detriment to the closing of escrow, the possibility of available settlement dollars can be a helpful outcome. The CalShake Settlement Fund Administrator is committed to prompt resolution of eligible claims, so a roofing claim should not affect most escrow closing dates. The settlement amount is $100 per measured roof square, set by the Court.

Eligible claims are determined by whether the claimant has, or had, a CalShake roof installed on or after February 1, 1986, ending on March 31, 1995. Senior Claims Analyst Susan Wayland is available to answer specific questions on the Fund's toll-free number (866-844-0600), but most questions can be answered by simply visiting the web site as listed above. In addition, the web site has a helpful "product identification" section to determine whether or not the roofing product in question is a Cal-Shake qualifying product. Claim forms can be downloaded directly from the site.

INSPECTION PHOTOGRAPHY

BY STEVE CARROLL, MCI

The expression "Use a picture. It's worth a thousand words." was a 1911 newspaper article quoting newspaper editor Arthur Brisbane discussing journalism and publicity. The use of photography in our reports often times can help illustrate and explain conditions well beyond the confines of the text in our comments.

My goal with every inspection is for my clients to become informed buyers or sellers. As Dave Pace states: "Well Inspected... Well Informed." This article will take you through aspects of both as it pertains to my experience with photography.

Back in 2000, I traveled to Oceanside and attended the ITA Residential Inspection course. There was no mention of photographs in the report writing section, although we did cover most of the carbon copy Matrix form that was standard issue for many of the established Inspectors at that time. Shortly after, I started my career with a large inspection company using their proprietary computer software on a Fujitsu tablet, well before tablets were commonplace. Near the end of my five-year employment with them photos were just being introduced into reports.

When I started as a sole proprietor, I began using software that at the time was somewhat of an industry standard in my market. One benefit of this software was the ability to include photos in the report, albeit fairly labor intensive compared to today. There was definitely no editing of photos or including symbols like arrows or circles to highlight concerns. My original point and shoot camera was bulky, slow, and ate up AA batteries like Double Tree cookies vanish at an Inspection Conference. As with all technology, as time moves forward so does inspection software and camera technology.

Today I still us a tablet but it's significantly smaller, lighter, less expensive, and can do things that we couldn't even dream about ten years ago. My iPad Mini fits in one of my cargo pockets and goes everywhere with me except the crawlspace. The camera on my iPad Mini 2 takes 80-90 percent of the photos, which are edited when necessary in my Spectacular Inspection Software app as I'm entering the comments on the fly. I also carry a Nikon Coolpix S6800 on me and have a Nikon Coolpix AW120 waterproof next to my Krawler. Although my iPhone 5S is always handy, its only advantage over my Mini is its smaller size so it is rarely used except to check text messages and (believe it or not) use as a phone.

There are advantages and disadvantages for each of my cameras. One disadvantage is some of my colleagues think I'm crazy for having three cameras, so does my wife. She has instituted a moratorium on purchasing cameras as well as flashlights, but that's another article and a topic of conversation for our MFT. Well hopefully she doesn't read this because cameras are being mounted on radio controlled vehicles, both land and air, which will bring accessibility and technology to new heights, pending FAA approval of course. We will discuss this later.

My dad is a retired professional photographer who worked with the same aerospace company for 35 years. I never knew what he worked on but a little light was shed on the subject at his retirement party when a few individuals from Washington D.C. were there. The assets he photographed took on a much more significant role after 9/11. His knowledge and experience about getting the right photo given perspective, location, and lighting techniques has been an integral part of his work product; which to a certain degree are shown to my clients today. Early in my career he explained that photography is a form of communication and transfer of information.

As this relates to the inspection profession there are several key applications: report documentation, reference materials, and marketing. The first is the most apparent. If I can include a photograph that helps explain, clarify, or locate a condition, it is used. I mentioned at the beginning of the article that I want my clients to become informed. I also want them to understand. My litmus test for this is based on how many call backs I receive. I tell each of my clients to call if they have any questions, need something explained, or just want to go through the report. I count callbacks as any call where it is a question, complaint, or claim. Fortunately I receive very few callbacks and when I do almost all of them are questions.

The late Gene Prowizor thought that including photographs in your report could increase your liability. His rationale was documenting multiple conditions in a picture but only reporting on one. Gene's perspective comes from his experience as an expert witness working on numerous cases. On the other side is Michael Casey's belief that the use of photography will reduce your liability. At a conference Mike explained that his litigation support is frequently assisted by not only the photos used in the report but also often the photos saved for reference or simply documenting general conditions of the building components and sometimes those interesting things we see.

The camera on my iPad Mini lacks a flash as well as sufficient zoom but does offer exposure control that easily supersedes anything offered by either of my Nikons. The "AE/AF Lock" feature allows you to tap the area you want to focus, then tap the sun symbol and move your finger up and down to change the exposure. This feature works great for backlit scenarios like taking a picture of something in front of a window on a bright day.

The Nikon Coolpix S6800 is a point and shoot camera, or as my dad calls them PHDs (Push Here Dummy), and offers 12x optical zoom. Yesterday I inspected a detached two-story townhome where the client wanted the 13-year-old asphalt composition shingle roof inspected. No balconies, so my trusty Leupold 10x42 binoculars came out. From a distance on the ground it looked like the shingles may have been improperly installed with overexposure. I changed the image quality in my S6800 from VGA to 8MP and captured a few photos. When I viewed the photos on my office PC I could zoom in and confirm my suspicions. I cropped one

CONTINUED ON PAGE 15

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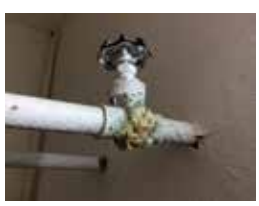
of the photos on my iPad Mini that replicates the zoom and included it with the comment to consult a roofer during their inspection contingency. Without that caliber optical zoom my level of inspection for that client would have suffered.

Another advantage of both of my point and shoots is the flash. In low light environments as well as attics and crawlspaces they are a must. Using the flash fill for water stains accentuates the stains much better than using ambient light. If you have leaking valve stem the flash fill will capture the water as it drips under the handle, one less possible call back to clarify.

I consider my Streamlight Stinger DS LED HP (translation: flashlight) a piece of my camera equipment. Need to document water damaged that has warped a wall? Shine the flashlight across the surface to heighten the texture difference. A local mold inspector has coined the phrase "texture mapping." Turn off the camera flash and your clients will see photographed what can't be accomplished without the flashlight. Using the camera in confined areas where ambient light is insufficient and flash fill is overpowering can be frustrating. To overcome this circumstance I bounce my flashlight off an adjacent wall and use indirect light. In cabinets under sinks and water heater closets are two of most common locations. Another environment to use indirect light is in the crawlspace. Foundation cracks will often lose detail with flash fill or use of a direct flashlight. I turn my flash off, set the self-timer to two seconds and bounce my flashlight off the floor framing. The reason for the self-timer is without a flash fill the camera will automatically adjust the ISO sensitivity (light sensitivity) and replicate keeping the shutter open to obtain as much light as it can. If you move the slightest bit the photo will be blurry. The camera is supported on my handheld Pelican 1010 Microcase, which produces excellent results.



A year or two ago I was in a crawlspace and came across a set of tracks that definitely weren't from my Krawler. The tires were two inches wide and the wheelbase was about a foot. A few weeks later I came across the culprit, Corey Gerritse with All Cities Termite. In conversation I learned that since he was young, Corey's hobby was RC (radio controlled) cars, planes, and helicopters. He came up with the idea of mounting a wireless camera on an RC car to assist with crawlspaces. Several prototypes and models later he started selling them to the inspection industry. Interest spread and recently InspectorShop.net started selling them nationwide under the name CrawlBot. Corey explained that the CrawlBots provide in-depth inspections when abnormal circumstances would prevent access: inadequate clearances, sewer leaks, and unfriendly animals like raccoons, opossums and everyone's favorite skunks. If there is seven inches of clearance under a deck your inspection is underway. Today the rotating HD cameras transmit to a 5-inch screen with a built in DVR to record screenshots or videos, which are saved to a SD card.

The day before the Fall CREIA Conference in Santa Clara, Corey showed me his new DJI Phantom 3 Drone. As luck would have it I attended a seminar at the conference called "2015: Year of the Drone" where Romeo Durscher from DJI presented. I looked into the assistance a drone would provide and decided to purchase a Phantom 3 Professional. Similar to RC vehicles, the drone would not replace walking roofs when practical but would provide accessibility on tall, steep, or damage prone roofs that were deferred in the past.

Unfortunately the FAA has yet to come out with guidelines for Unmanned Aircraft Systems (UAS) for commercial use. The only exception is to submit a FAA petitioning for exemption under Section 333. As of the beginning of October there have been 1,742 petitions granted and the wait period is roughly four to five months. According to PC Magazine the FAA's plan to create a series of national regulations for commercial use of small UAS (under 55 pounds) has been extended to next spring. This has given me plenty of time to inspect friends and family roofs. The technology is great especially with GPS-assisted flight for the novice pilot like myself and a camera that you can shoot 4K video then capture HD pictures from the individual frames. I purchased my drone through Corey and commissioned him for a hands-on training. His extensive experience came through and I left with the necessary base knowledge and skill set to begin my solo time behind the controls. I would like to tell you more about my Phantom 3 but that could be an article on its own. Go to DJI.com for more information.

Photography like any other technology is ever-evolving. Sharing ideas, tips, tricks, and the latest gadgets with our colleagues helps us all to become better inspectors. CREIA has provided that plus exemplary education and so much more that my career has flourished beyond my expectations. When asked about helping on the CREIA Board of Directors and writing an article my first thought was no; then I played my tape back and realized what CREIA has truly meant for me and the best Inspectors I continually learn from.

Steve Carroll, MCI
2015-2016 State Director
CREIA Board of Directors

On Professionalism:
Keeping the Seller's Home As You Found It

BY JOHN GAMACHE, CCI

Many of us realize that we must be professional with our clients, and be confident in our abilities so they, as well as the real estate agents are confident in us. Many times we forget that little things may impress not only our clients but the sellers too! Remember, the seller and listing agent are potential clients!

Of course, a thorough inspection is a given. Today, I will offer you with a few tips on keeping the seller's home as you found it.

Always put things back where you found them. Replace covers back on furnaces and other appliances that have been uncovered or opened. Be sure to reset the thermostat to their original position even if you have to leave your keys on the floor below the thermostat so you don't forget. (But wait! There may be a better place for your keys!?!) I set the thermostat 10 or 20 degrees above or below the set point. That helps me remember where to return the settings. Do a "once over" look around to ensure the room looks the way you found it before leaving.

If there is a refrigerator or freezer in the garage make sure its working before you leave! (Another good place to leave your keys!) If you accidentally tripped a GFCI you don't want their food to spoil. It may have been 70 percent hamburger meat and a couple of Lean Cuisines but when the call comes, it will become $1,000.00 in Omaha steaks… I'm just saying.

Some inspectors carry rubber "Totes" boots. I carry extra shoes. I have my indoor shoes and my outdoor shoes (crawlspace shoes, too) when the inclement weather dictates. Upon entering a home, I place a 6x6 painter's tarp at the front door entrance and change my shoes there and it allows others to use it as a walk-off mat. I also carry plastic booties, which can be worn multiple times to cover my shoes when required, which I find much better than doing the inspection in my socks (especially with my big toe sticking out). I offer booties to anyone at the inspection.

There are some inspectors who place old bed sheets on the floor before setting up their ladder. This prevents scratching (or being blamed for scratches) on the floor or getting the carpet dirty with debris that may fall from the attic access hatch. I carry an extra 6x6 painters' tarps to cover clothes if the access is in the closet. These can be folded and taken outside and shaken when completed, which is much easier than a vacuum (which I also have).

I carry a clean rag in my inspection tool bag. I use this whenever I open the fireplace damper so that I don't get my hands black with soot then leaving soot on whatever I touch. Be sure to look in a mirror. No one will tell you that you've got a black smudge on your forehead!

More tips to follow a little later.

John Gamache
2015-2016 Region 8 Director
CREIA Board of Directors

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AFFILIATE MEMBER REIA

THE CALIFORNIA REAL ESTATE INSPECTION ASSOCIATION CELEBRATES ITS 40TH YEAR

BY STEVE JOHN, MCI

40 years ago a small group of home inspectors from all over Southern California started meeting together in Los Angeles to try and figure out what this new profession of inspecting homes was all about. In my local San Diego chapter, one of those original founding members, Dennis Para Sr., is still around and I always enjoy listening to him talk about those earliest days. You can hear the passion and emotion in his voice when he talks about how some of the biggest names in our association's history helped mentor and encourage him as he struggled with his own business. He talks about how the few founding members of the San Diego Chapter grew into a chapter that is over 100 members strong today and how those humble beginnings have now spawned 20 chapters throughout the state. Those original members came together knowing that by working together, sharing their knowledge freely with the group and acting collectively for the greater good of the home inspection profession, that every individual in the group would be better for it. They knew that the more you gave and participated yourself, the more personal growth and benefit you would receive in return. Now after 40 years, our association is still rooted by those very same beliefs.

CREIA is a true non-profit, member benefit association dedicated to using all resources for the benefit of CREIA members and the public we serve. This is an association of members for members and is founded on the principle that joining together and working together we can do so much more to advance this profession than we could possibly do individually. We have been dedicated to this ideal for 40 years now and we need and want your continued support.

Today, CREIA is the only association that has a Contract and Standard of Practice that is specifically written to match California's unique legal requirements and case law. Where every single line was specifically analyzed with the sole purpose to work best here in California without any concern for trying to make it broadly applicable to the rest of the nation. That specific focus on California makes our documents unique in critical ways where other standards needed to strive for a more generic national perspective. Thousands of man hours, unprecedented review by a diverse collection of lawyers as well as the inspector community and many years of tested acceptance in the courts make these documents the only reasonable choice for the California legal environment.

CREIA is the only association with chapters throughout California where inspectors have an opportunity to meet face-to-face with their fellow inspectors to share, network, and learn from one other. Every month, local chapter meetings provide an opportunity to hear a different expert speak in-depth and in-person on a specific topic where you can interact and ask questions. Local chapters provide the perfect opportunity to develop a network of fellow inspectors to rely upon for advice, referrals, and camaraderie. Please support your local chapter by attending meetings, volunteering, or plan a toolbox and help it to grow and thrive.

CREIA is the only association that is actively monitoring the California State legislature for any activity that could potentially impact home inspectors and the only association standing by ready to protect the interests of Home Inspectors in the state of California.

CREIA is all about educating its members and is the only association that has a major educational conference in California every single year. With the annual conference, monthly dinner meetings, and lots of half and single-day, single-topic seminars throughout the state, there is nobody that even holds a candle to CREIA's educational mission for home inspectors in California.

As you already know, this year is special and CREIA is teaming up with the American Society of Home Inspectors (ASHI) to put on an incredible joint inspection conference in San Diego, January 25 to 27, 2016. ASHI is the oldest national home inspector association and by coincidence is also celebrating its 40-year anniversary. This will be one conference you definitely don't want to miss.

ASHI and CREIA have collaborated and cooperated with each other for many years and many of our local CREIA chapters throughout the state are actually joint CREIA/ASHI chapters. We are proud of our cooperative relationship with the oldest and best national home inspector association in the nation and we are equally proud of our independence and unique focus on California.

CREIA is on the move and dedicated like never before to using your membership dues as wisely and productively as possible. Our outreach to the real estate community is expending statewide. Membership is growing again. Our new association management company is up to speed and now ready to take us to new heights.

The new website is improving and becoming more functional and the Technical Information Exchange, TIE, is expending daily. If you haven't been on the TIE lately, please jump back in and start participating. The more of you who participate the more valuable a tool it becomes, so make it what you want it to be.

All of this and so much more for the very modest annual dues that is just a single modest inspection fee for any of us and hopefully a minimum fee for most.

CREIA may not be the marketing cooperative that some members think it should be. What we are, at our essence, is an association that believes that through our collective efforts we can strengthen this profession to the benefit of every member. We share our expertise freely in the firm belief that this will not only benefits us collectively but each one of us individually. We believe that the best way to improve our service to our clients is through continuing education, the sharing of ideas and improving the quality of home inspections. CREIA today, as in its beginnings, is still all about educating and nurturing every home inspector in the state to be the very best home inspector they can be.

I wish every one of you all the success in your personal career and hope all of you will stick around to be a part of CREIA for our next 40 years.

Steve John, IF, MCI, CNCS
Immediate Past Chairman of the Board,
2015-2016

GREATER SACRAMENTO CHAPTER TOOBOX RECAP:

MANUFACTURED HOME CERTIFICATION TOOLBOX

BY TERRY BROWN, MCI

On August 29th a Manufactured Home Inspection Certification Toolbox was held in Sacramento. The class was hosted by Steve Parrish, CCI and Jim Lucas, MCI. The class was attended by new attendees and some returning previous graduates in total about 20 people. Steve Parrish hosted the event in his newly built shop, which worked out great. Steve presented the bulk of the PowerPoint presentation with Jim interjecting additional information. The class was well-presented and well-received by the inspectors.

The new attendees received a full "Manufactured Home Inspection" manual with a lot of valuable information on the Title 25 codes applicable to this type of inspection. Jim and Steve administered the certification test and went through the correct answers with discussion on each. After the test, we proceeded to an onsite mnufactured home inspection where Steve took the attendees through the exterior and interior of the unit pointing out key areas and concerns to watch for. Afterwards, the attendees had positive comments about the day's education.

Overall, the toolbox provided solid and useful education, even to those of us who have gone through it in the past. It is always good to review and upgrade your inspection education. The Certification on our resumes helps our clients to decide on a more educated inspector and gives them more confidence to choose us for the job.

Special thanks to Steve Parrish and Jim Lucas for a job "Well Done."

Terry Brown, MCI, 2015-2016 State Director, CREIA Board of Directors

InspecTest

BY SKIP WALKER, MCI

This series of columns is designed to familiarize CREIA members with The Glossary Project, which is "Standardized Terminology for the Professional Real Estate Inspector." This book is a must have for all inspectors. The goal of the glossary is to develop a common set of terms that we use in communicating with clients and each other.

1. A pump which forces refrigerant through an air conditioning system is called a _____
2. A horizontal sometimes decorative board enclosing the roof overhang that runs along the roof edge is called a _____
3. An electrical circuit distribution panel with overcurrent protection fed by the main service panel is commonly referred to as a _____
4. Acrylonitrile-butadiene-styrene plastic pipes & fittings used primarily for the waste, drain and vent system is commonly known as _____
5. Vertical support members used in guardrails at stairs, landings, balconies and decks are called _____
6. A diagonally oriented piece of structural material on a horizontal plane that serves to reinforce or strengthen a ceiling or roof framework often used in pairs forming an X pattern is called a _____
7. A molding attached to the middle of a set of double doors to prevent drafts is called an _____
8. A vented self contained heating appliance is called a _____
9. Space within a dwelling unit utilized for living, sleeping, eating, cooking, bathing, washing and sanitation purposes is called _____
10. The portion of a fuel-burning appliance designed for the attachment of a draft hood, vent connector or venting system is the _____

ANSWERS:

1. Compressor 2. Fascia 3. Sub-panel 4. ABS 5. Balluster 6. Cross Tie 7. Astragal 8. Furnace 9. Living Space 10. Flue Collar

DEFECTIVE ABS PIPE – THE PROBLEM STILL EXISTS

BY DAVID PACE, MCI

Glenn was a contractor friend of mine who was building his dream house. It was 1989. He was running a little behind schedule and asked me to help him with the drain, waste, and vent piping. I had many years of experience in installing DWV piping and was happy to help him out. With the rough framing, electrical, mechanical, and plumbing complete the drywall was installed. The house was completed and Glenn moved in. Not long after Glenn and his family moved in, a stain developed on the ceiling of the entry. The ceiling was below a bathroom. He opened the ceiling and there was a leak at a cracked ABS joint. It wasn't until years later I would realize it was defective ABS pipe.

When I entered the inspection business in the early 90's, defective ABS pipe was a hot topic. There were stories on the local television news outlets about defective ABS pipe and the damage it caused to homes and their heartbroken homeowners. It was a common topic of discussion at chapter meetings. Inspectors became tuned in to the problem of defective ABS pipe. The inspectors were familiar with what to look for and the companies whose piping was potentially defective. Many home inspectors carried around sheets listing defective ABS brands, manufacturing dates of the defective ABS pipes, and their serial numbers. Discovering homes with defective ABS pipe was a weekly occurrence. Homes with multiple cracked ABS pipes were not uncommon. I recall inspecting a home having 17 cracks in ABS pipe joints. As the years passed the number of new defective ABS pipe discoveries lessened. However, last week I discovered two instances of defective ABS pipe.

At a recent chapter meeting the subject of defective ABS pipe came up. I asked those in attendance if they were aware of the defective ABS pipe problem. Several had never heard of the problem.

THE PROBLEM

Much of the ABS piping manufactured by a number of companies between 1985 and 1989 was found to be defective. In some cases the defective pipe may have been manufactured as late as 1993. Those companies included Polaris Pipe Company, Gable Plastics Incorporated, Centaur Manufacturing, Phoenix Extrusion Company, Apache Plastics and a company called Spartan. The ABS pipe was commonly used in residential drain waste and vent piping to serve sinks, tubs, showers, toilets, washing machines and dishwashers. The resins used in the manufacturing of ABS piping were made by a company called Plastic Processing. This company used recycled plastic materials such as old phone casings and automobile backup light covers in the resins used in the manufacturing of the ABS pipe. It was found that over a period of days, weeks, months and even years the glue used to join the ABS pipe to the fittings reacted with the ABS pipe causing the piping to crack around the perimeter of glue joints. The results were catastrophic. A homeowner may discover a leak under a sink or in the crawl space. The homeowner would call a plumber to repair the leak only to find within a short period of time another leak developed nearby or at another portion of the house.

THE LAWSUIT

A class action lawsuit was filed and on January 16, 1998 the Contra Costa County California Superior Court granted preliminary approval to several class-action settlements totaling about $70 million. On May 14, 1998 final approval was given. Those funds were long ago depleted.

WHAT TO LOOK FOR

1. Watch for homes constructed or remodeled between 1985 and 1988.
2. Look for the names of the manufacturer and manufacturers codes on the piping.
3. Become aware of the housing tracts that have a history of ABS problems.
4. Look for stains on sheet rock. The stains could be on walls or ceilings below bathrooms, laundry areas or anywhere drain piping may be installed.
5. Look for visible damage, leaks or staining on ABS pipe.
6. In crawlspaces look for wet areas on the soil below ABS pipe.
7. Look for loose ABS pipe joints.
8. Look on the underside of horizontal drain piping for stains.
9. Look for repair couplings and places you would not expect them.
10. Look for cracks at glue joints.

One of the methods for testing ABS piping, which is in doubt, where there are unexplained sewer odors or which are hidden in the wall is a pressure test. This test is clearly outside the scope of a home inspection and would be performed by a qualified and licensed plumber.

HOW TO REPORT THE PROBLEM

Report what you see and recommend the advice and services of a qualified and licensed plumber for further evaluation and repair.

HOW TO DISCUSS THE MATTER WITH YOUR CLIENT

In discussing the matter with your client, the following comments may be of help:

LEAKING ABS PIPING MAY BE SUSPECT

ABS drainpipe, made by a handful of companies, has a history of failure in pipe manufactured in the mid-1980's. We noted one or more leaks and, if the pipe in this dwelling is from one of the suspect lots, ongoing failure at the joints and in the piping can be expected. Determining the need for future repair or replacement is beyond the scope of a home inspection. Major expense could be involved. We recommend further consultation with experts familiar with defective ABS pipe.

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If you see couplings in locations you would not expect them the following comment may be of help:

Precautions Regarding Some ABS Sewer Piping. There exists an extensive history of failure in ABS drain piping manufactured by a handful of companies in the mid l980's. Several repairs to the drain piping in this dwelling had been performed, but no active leakage was visible. This piping may have come from one of the suspect lots, and failure of the piping is possible.

NEED PRINT-READY MARKETING MATERIALS?

Print-ready marketing materials to distribute to your realtor agent contacts are available to CREIA members. Showing that you belong to the only California-dedicated real estate inspection association of 40 years proves that you are trained by the best. Getting CREIA's name out there is synonymous with getting your name out there.

Print-ready marketing materials on Buying an Investor Owned Property and How to Choose a Home Inspector are available on the CREIA Website or by emailing the CREIA office at info@creia.org. Chapters may list members on the reverse side of these documents or inspectors can include their contact information on the writeable PDF copies.

David Pace
2015-2016 Chairman of the Board
CREIA Board of Directors

A Few Risk Management Tips

BY MIKE CASEY, MCI/IF

I am still seeing quite a few claims regarding sewage disposal method (public or private) being incorrect as described in home inspection reports. First, home inspectors are not required to determine sewage disposal method by any standards of practice. Second, you don't know for sure as these systems are underground. My best recommendation is to take identification of sewage disposal method completely out of your reports. If you absolutely must have this item in your report, please include the information source, such as Property Profile, Seller Disclosure, or verbal from seller or whoever told you. Additionally, I would add the caveat used by the MLS for all information afterwards: "this information is deemed reliable, however, buyer to verify."

Another popular item is claims by the client that they did not understand the magnitude (mainly cost) of the deficiency noted in the inspector's report. To help avoid this claim, please include in your report the notice "contact a qualified specialist/contractor to evaluate this deficiency and the identified system to provide repair/replacement options and costs prior to the end of your inspection contingency period" or similar.

LEARN MORE AT ULTIMATE INSPECTION CONFERENCE – CREIA PARTICIPATING!

Mike & Kelly Casey, Nathan Thornberry, Jenny Thornberry, the Inspector Services Group, and Home Inspection University, a CREIA Premier Educational Affiliate, are pleased to announce the Ultimate Inspection Conference, March 13-16, 2016 at the Monte Carlo Las Vegas. This event is designed for continuing education and a select list of vendors, which are currently being contacted for participation, as the Exhibit Hall vendor space will be limited, and CREIA will be there. We expect upwards of 500 inspector attendees and we will be submitting for CE credit approval to many states and associations.

This conference will focus on education for home inspectors. Our speakers list includes: Bruce Barker, Mike Casey, Alan Carson, Dominic Maricic, Peter Hopkins, Kenny Hart, Joe Ferry, Nathan Thornberry, Mike Crow, Bob Pearson, Dr. John Shane and more!

Weekend (Fri-Sat) sleeping room rates of $145, weekday $86 for Deluxe Rooms. Many upgrade options (for a reduced rate) will be available as well, such as suites, strip view, and others and you may extend your stay at the same group rates two days pre and post event dates. Cutoff date for the group rate reservations is February 22, 2016. The Monte Carlo reservations link is on our site www.UltimateInspectionConference.com.

PRESERVATIVELY TREATED (PT) LUMBER

BY SKIP WALKER, MCI

By now, most inspectors will have seen instances where a relatively new deck or foundation has hardware that inexplicably exhibits high levels of corrosion. In some cases, it may be so significant that it left you scratching your head wondering why? Beginning in 2002, the chemical formulas used for preservatively treated (PT) lumber were altered to include much higher levels of copper. An unintended consequence of this has been a significant increase in metal corrosion where it contacts the high-copper level PT materials. In extreme cases, corrosion can be so severe that metal connectors and fasteners may degrade to structural failure in as little as six months. We have all seen copper pipes directly connected to galvanized water pipes. The galvanized pipes corrode because of the reaction between the two metals. This is ***EXACTLY*** the same issue, except the copper is in the PT wood and the ferrous metals that corrode are the nails, screws, bolts, washers, nuts and structural metal connectors.

HOW WE GOT HERE: A BRIEF HISTORY OF PT LUMBER

Redwood and cedar were the mainstay of naturally resistant lumber. For years, they were used for foundation sills/framing, decks, fencing, etc. But mankind being who we are used the lumber faster than Mother Nature could replenish it. Today's redwood is almost all newer growth. Much of what is found at local lumber yards is sapwood, soft and with little of the deep reddish hue that indicates it is insect and rot resistant. The span tables in the building codes have not included redwood for some time.

Even though we used up most of the old growth lumber, we still needed insect and rot resistant wood for construction. The quest for chemicals that could be applied to other woods and provide some degree of protection began. Creosote was used for years. Starting in the 1940's, *Chromated Copper Arsenate* (CCA) began to find favor. CCA was used successfully for decades. It was cheap, effective resisting insect and wood rot and had little corrosion impact on fasteners. In the 1990's the EPA began looking at the arsenic in CCA and its potential impact on the environment. By the early 2000's the plans were being formulated to ban CCA. On February 12, 2002 the EPA announced a "voluntary industry transition" away from CCA. The reality was that EPA informed the manufacturers of the impending CCA ban. So the manufacturers "voluntarily" transitioned to other chemicals.

On December 31, 2003, the industry "transition" was complete. On January 1, 2004, the EPA announced a ban on the use of CCA treated lumber in residential construction, playground structures, decks, walkways, etc. The EPA banned the use of CCA even though they had no evidence that it posed a risk to the public. However, they felt that the arsenic component in CCA was not desirable to have in playgrounds where children might come in contact with it, in landfills where it might leach into the aquifer, etc. The concerns, while legitimate enough, were not backed by data. The EPA allowed existing inventory to be sold. Some CCA treated wood was still allowed to be sold through wholesale lumber yards, primarily for commercial and marine use.

> ***"While the Agency has not concluded there is an unreasonable risk to the public from these products, EPA believes that any reduction in exposure to arsenic…. is desirable."***
>
> – EPA CCA Compliance Strategy, June 2004

The chemicals used to treat PT lumber are regulated as pesticides. The testing and approval procedures to bring new pesticides to market are lengthy and very costly. The "transition" period mandated by the EPA was short. Consequently, the choice the manufacturers had was to use existing approved formulations. All of the existing approved formulations were standardized through the American Wood Preservers Association (AWPA). In order to achieve the required levels of protection, the copper levels in the alternative formulas are significantly higher than those found in CCA. EPA documents show that from the very beginning, they recognized that alternative outdoor use formulations would increase levels of metal corrosion. They felt that the manufacturers could deal with it.

> ***"The Agency is aware of that some new generation wood preservatives may have the potential to corrode fasteners. Manufacturers of ACQ and copper azole are working to provide better information on types of fasteners (e.g., stainless and galvanized steel) that are more appropriate to use with wood treated with these pesticides….."***

The path to a very warm place is paved with good intensions, or so the saying goes. In this case, the consequences may have been unintended, but they were foreseen.

The manufacturers of PT wood and metal connector/fasteners have been dancing around the corrosion issue since the transition started in 2002. Early on, the severity of the corrosion issue may not have been fully understood. Every few years, Simpson© has updated its guidance. The latest update was in April 2015 and is significant. The use of hot-dipped galvanized and the proprietary Z-Max© coatings are allowed if the end user can verify that they will perform properly. As if the end user has the ability to run metallurgy testing. When you net it all out, all metal fasteners or connectors in contact with high concentration copper PT lumber (ACQ/CA) in environments that are subject to water or high levels of moisture should be stainless steel. You read that right – stainless.

WHAT ARE THE CHEMICALS CURRENTLY USED?

There are several AWPA standardized chemicals to treat lumber used in residential construction since 2002-2003. The predominate formulas used since the EPA ban are:

Alkaline Copper Quaternary (QUAT) is referred to as **ACQ**. There are several variations on the standardized formulations. ACQ - Type A has been discontinued. ACQ - Type B is the most prevalent formula used in the Western U.S. All ACQ formulas consist of 66.7 percent copper oxide. Type B uses 33.3 percent ammonia as a carrier. The ammonia gives the chemical better penetration into Douglas Fir. As we will see, all ACQ formulas have corrosion issues, but ACQ with ammonia is one of the worst.

Micronized Copper Quaternary (QUAT) is referred to as **MCQ**. Micronized copper is basically copper that is ground into nano (very small) particle sizes. This allows the copper to be suspended in solution and penetrate the wood fibers. MCQ is often marketed under the name Wolmanized.

Copper Azole is referred to as **CA**. Copper Azole Type B (CA-B) was standardized by the AWPA in 2002. CA-B consists of 98.1 percent copper and 3.9 percent azole as Tebuconazole. CA-B is used throughout the U.S. and Canada

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for treating softwoods. Wood treated with CA-B will often have a greenish-brown color and will have little to no odor.

µCA-C is a copper azole that is similar to MCA. It is also marketed as *Wolmanized* and used micronized copper.

Borate based formulas are referred to as **SBX** or **DOT**, which are abbreviations for the chemical names. Borates are effective across a wide spectrum of pests and fungi. They have a low environmental impact and have a 70+ year track record of successful use. However, borates are water soluble. Meaning they can only be used in dry interior applications. Most crawlspaces are considered interior – damp, which might preclude the use of borates even there. Borate treated lumber is never allowed in exterior applications, such as decks, etc.

RETENTION LEVELS – HOW WE MEASURE CORROSION PROTECTION

The relative level of chemical protection is quantified using the ***Retention*** Level of the wood. The retention level is a measure of the chemicals absorbed/retained by the wood. The wood is weighed before treatment and then again afterwards. The Retention Level is expressed in pounds of preservative chemicals retained *Per Cubic Foot* (PCF) of wood. If a cubic foot of wood weighed 1 pound before treatment and weighed 1.25 pounds after treatment, then the Retention Level would be .25 PCF. The higher the Retention Level, the higher the level of insect and rot protection and the more corrosive the wood will be.

The amount of chemicals needed to achieve a given level of protection varies with the formula used and is also directly related to the amount of copper in that formula. For example, ACQ has 66.7 percent copper oxide and needs a retention level of .41 PCF to be rated for Ground Contact. CA-B has 96.1 percent copper and needs only .21 PCF to be rated for ground contact.

Wood is a natural material and its absorption characteristics can vary significantly even within the same piece of lumber. The retention levels represent minimum levels to achieve a given level of protection. It should be expected that levels will vary from sample to sample. In theory, the marked retention level is the minimum that should be found in that sample.

The chemicals never fully penetrate the wood. This means that the center of the wood and any field cuts are unprotected. Both the wood manufacturers and the codes require field cuts and bores to be field treated. In the real world, this seems to happen rarely. The exposed untreated wood has no protection and will be susceptible to both rot and insect damage. Beginning circa 2002, copper napthenate, sometimes referred to by the trade name Copper Green©, was banned by the California Department of Pesticide Regulation (DPR) and the EPA. The DPR and EPA specifically define crawlspaces as an *INTERIOR* space. This means other chemicals should be used for treating field cuts inside the building footprint.

INCISION MARKS – WHAT ARE THOSE LITTLE CUT MARKS?

In the western U.S., Douglas Fir is the wood of choice for PT lumber. In order to facilitate the chemicals absorption into the lumber, the wood is first "incised." Incisions puncture the wood and allow chemicals to flow below the surface. Incised wood is also not as strong as wood that is not incised. Per the National Design Standard (NDS) for wood, the strength of members such as joists and beams must be reduced by 20 percent when calculating spans, etc.

WHAT ARE "USE CATEGORIES?"

Wood may be exposed to a wide variety of environmental conditions. The required retention levels vary by environment. The AWPA has developed a standard set of weather exposure categories as a way to give a user a way to match the retention level needed for a given set of environmental conditions.

The AWPA Use Category (UC) system is the only exposure category system used in the International Residential Code (IRC) and International Building Code (IBC). Below is a list of the AWPA standard Use Categories.

UC1	**Interior Dry**
UC2	***Interior Damp ****
UC3A	**Exterior Above Ground, Coated with Rapid Water Runoff**
UC3B	**Exterior Above Ground, Uncoated or Poor Water Runoff**
UC4A	***Ground Contact, General Use *****
UC4B	**Ground Contact, Heavy Duty**
UC4C	**Ground Contact, Extreme Duty**
UC5A	**Marine Use, Northern Waters (Salt or Brackish Water)**
UC5B	**Marine Use, Central Waters (Salt or Brackish Water)**
UC5C	**Marine Use, Southern Waters (Salt or Brackish Water)**
UCFA	**Interior Above Ground Fire Protection**
UCFB	**Exterior Above Ground Fire Protection**

**Typical Crawlspace Environment*
***Most Common PT Wood Stocked at Lumber Yards*

For residential construction, we are generally dealing with UC1 through UC4A. The higher the use category, the higher the chemical retention level needs to be to deal with the harsher environmental conditions. In general, crawlspaces in a non-coastal or non-severe environment would be classified as ***UC2 – Interior Damp***. So the mudsill material could be any PT wood intended for a UC2 or greater. The above ground wood framing on a deck with good drainage or where the wood is painted or sealed would be a UC3A. If the same deck were not sealed/painted or did not drain readily, it would be considered a UC3B. Wood fence posts are in ground contact, so they would be a minimum of a UC4A. Soil type, the presence of water in the soil, proximity to the ocean or a swimming pool could push the use category even higher and consequently, require a higher retention level.

Understanding the AWPA Use Category system is key to reading the PT wood labels. It is also useful as you evaluate exterior elements or wood in ground contact in your daily inspections. For example, we should not see any UC1 or UC2 rated wood used on the exterior or in ground contact. UC3A and UC3B rated wood may be used interior or exterior but should not be used in ground contact.

THE CHEMISTRY OF CORROSION

Corrosion is an electrochemical reaction. Metals have different levels of reactivity. The higher the reactivity, the more readily the metal will corrode. A materials corrosiveness is measured using the *Galvanic Scale*. Highly reactive metals are described as having a high energy state. These metals are very "willing" to give up electrons. Corrosion is simply the chemical process a more reactive metal goes through as it moves to a naturally less reactive or lower energy state material. In the case of iron/ferrous metals, they naturally want to react with other materials to form iron oxide, a low reactive material. Contact with more reactive materials simply exacerbates this tendency.

There are a number of ways to describe how corrosion actually works. Scientists refer to these as "models." A model is basically a hypothesis as to how something occurs. In other words, they don't really know for sure. In general, there are two basic types of corrosion models at work in the buildings we inspect. One is called ***Uniform Corrosion***. The other is ***Galvanic Corrosion***. It is possible to have multiple types of corrosion occurring at the same time.

In ***Uniform Corrosion***, air and water are the corrosive triggers. Iron exposed to air and water react to from iron oxide on the exposed metal surface. The ways we inhibit Uniform

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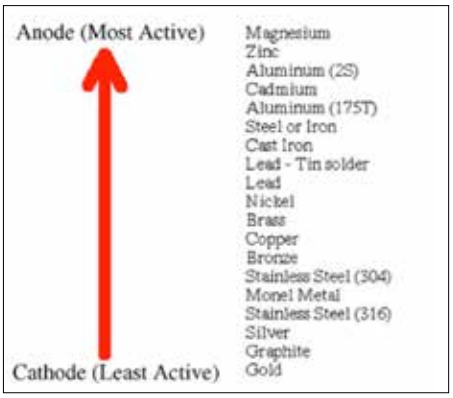
Corrosion is by limiting exposure to air and water. This can be done by applying paints, lacquers or other coatings. While primarily serving a different purpose, applying a zinc coating to iron (galvanization) acts as a water and moisture barrier to some extent. Applying current to the metal (cathodic protection) will also inhibit Uniform Corrosion. This is called Cathodic Protection and is sometimes used on foundation steel in aggressive soil areas. Other ways to prevent Uniform Corrosion include using a less reactive metal. An example would be switching from iron to stainless steel.

Applying a more reactive metal over the iron of will protect the underlying material. A zinc coating over iron is referred to as galvanization. The zinc is sacrificial and will react with the air and water effectively shielding the underlying iron from the corrosive effects of the air/water. The zinc is consumed over time. Once depleted, the underlying iron is exposed and begins to corrode. In some cases, applying a metal over the base material that forms an oxide coating may be used. As long as the oxide binds to the base material, it can form an oxygen barrier.

With ***Galvanic Corrosion***, contact/proximity to equally or higher reactive metals causes corrosion. Again, this is exactly what happens when copper and galvanized water pipes are directly connected. With water pipes, we can install dielectric fittings or buffer them with a less reactive material such as brass. Unfortunately, there are no dielectric fittings for the foundation bolts or nails that make contact with pressure treated wood.

Galvanic corrosion occurs *whenever* dissimilar metals are in contact. If stainless steel is in contact with galvanized steel, galvanic corrosion will occur. As would stainless steel in contact with iron.

To inhibit galvanic corrosion, we need to break direct contact between the dissimilar metals. With water piping, we use dielectric or brass fittings. Zinc (such as found in galvanized steel) may be used as a buffer between corrosive wood and iron hardware.



Galvanic Scale

Other means to inhibit galvanic corrosion are to pick metals of similar reactivity. The Galvanic Scale is used to measure corrosion potential. Picking metals close to each other on the Galvanic Scale will minimize corrosion potential. We can limit ion movement with coatings. Maintaining a dry environment and making sure water is not trapped will also inhibit galvanic corrosion.

WHY IS CORROSION BAD?

Using iron as an example, where the iron is exposed to air/water and or high copper levels it reacts to form a surface layer of iron oxide. This reduces the thickness of the remaining iron. The iron oxide will not bind to the iron. Instead, it flakes off and exposes the underlying iron. The newly exposed iron then reacts to form iron oxide. The process continues until all the iron has been converted to iron oxide.

It is not necessary for a screw or nail to completely rust away. The fastener only has to shrink until the diameter of the shank no longer "bites" into the wood. At that point it will pull out or may shear off. Foundation bolts and nuts fail similarly. In the case of a foundation bolt, it does not have to rust completely through. All that is necessary is for the nut/bolt threads to degrade to the point where they are weakened and no longer can resist stress.

WHY GALVANIZATION?

Coating iron/steel with zinc is referred to as galvanization. Zinc is a more reactive metal than iron, so it is higher on the Galvanic Scale. The corrosion process is like water, it takes the path of least resistance. So when molecules of air and water are in close proximity to iron and zinc, they choose the zinc because it is more willing to give up electrons. The zinc coating acts primarily as a sacrificial anode and to a lesser extent provides a barrier that shields the iron from air and water exposure.

Zinc is a little like the secret service. The zinc molecules throw themselves between the iron and the water/air. Effectively, taking the corrosion bullet to protect the iron. As long as we see white powder on a galvanized component, it means the galvanization is doing its job. The white powder is either zinc oxide, zinc hydroxide or zinc carbonate. Essentially it is the zinc "rusting" or oxidizing. Once red corrosion starts to form on the galvanized steel/iron, it means the galvanized coating is depleted and the underlying steel will now be consumed.

HOW ZINC COATINGS WEIGHTS ARE MEASURED

The zinc coating is depleted over time, so the thickness of the coating is directly proportional to the coating service life. Let's say that a given thickness of zinc coating has a service life of five years under a given set of conditions. Doubling the coating weight of the zinc would effectively double the service life of the coating to about ten years.

The ASTM© A653/A653M Standard covers galvanized coatings. This includes how the zinc coating weight is measured and how the material is labeled for identification. ASTM© standard descriptors for galvanization are G60, G90, G185, etc. The "G" means galvanized. The trailing number is the zinc coating weight per square foot on both sides of the metal. The number represents tenths (.1) of an ounce. So a G90 designation means that there is .90 ounces of zinc per square foot of metal on both sides. Or .45 ounces of zinc per square foot per side. G185 means 1.85 ounces per square foot on both sides or .925 ounces per side.

Again, the coating weight corresponds roughly to the service life under a given set of conditions. So if a G90 rated component had a five-year service life under a given set of conditions, a G185 component would have roughly a ten-year service life under the same set of conditions.

HOW IS THE ZINC APPLIED?

In general, zinc is applied to steel using a few basic techniques. We either electroplate the zinc, use mechanical deposition, or hot dip the metal.

Electroplating involves placing the steel in a bath with a zinc solution. Electricity is applied and the zinc is drawn to the steel and deposited or plated onto the surface. In general, steel sheet metal is electroplated then the metal components are stamped out of the metal. This leaves the edges with no zinc protection. Electroplated metal has a relatively thin coating weight, usually G90. It is characterized by a very shiny finish.

Mechanical deposition uses force, either impact or pressure to bond a zinc dust or foil to the underlying steel. Mechanical deposition coatings also tend to be shiny in nature. As with electroplating, sheet steel is usually coated and then stamped. This leaves the edges unprotected. Screws may be mechanically coated as well.

Simpson Z-Max© products use a proprietary deposition method. According to Simpson©, this achieves a coating weight roughly equivalent to G185.

Hot dipped galvanization (HDG) is literally just that, the iron piece is dipped in a vat of molten zinc. The metal may be dipped then stamped/fabricated or it may be stamped/fabricated then dipped. The coating weights that can be achieved by hot dipping are significantly greater than either electroplating or mechanical deposition. Think on the order of 10x greater. Hot dipped coatings are characterized by a dull gray appearance.

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WHAT YEARS OF CONSTRUCTION ARE IMPACTED?

Some high copper content wood (such as AZCA) may be found even in the 1990's. However, the EPA announced the "voluntary" transition in 2002. The actual EPA residential and playgrounds ban took effect January 1, 2004. However, it isn't that easy. The EPA allowed existing inventory to be sold. This means you might see ACQ/CA type formulations as early as 2002 and CCA potentially into late-2004 and possibly even 2005. Remember, these dates would be the period of construction. It is possible for a building to have been framed with the problem materials, but not have sold until much later.

BRANZ NEW ZEALAND STUDY

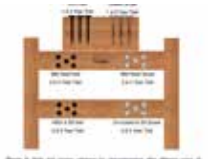
Testing for corrosion issues has been predominately accelerated. Both ASTM and AWPA tests involve the use of test chambers with high temperatures, high humidity, salt compounds, etc., to simulate long term exposure. There has been little multi-year testing done in real-life weather exposure situations. The most extensive study seems to be one conducted by BRANZ (Building Research – New Zealand), a New Zealand non-profit government funded construction and building materials research group.

In 2007, BRANZ started a three year study that was designed to test real-world behavior of untreated wood and CCA, CA and ACQ PT wood chemical treatments in coastal (severe) and mild/non-coastal environments. BRANZ tested mild steel, hot-dipped galvanized (G185) and stainless steel nails, screws and flashings in ordinary lumber and each of the PT wood-types in both mild and severe environments. The BRANZ testing used wood species native to New Zealand. The NZ weather exposure categories have different designations than the AWPA Use Categories we use in the U.S. To simulate worst case situations, BRANZ had the test PT lumber manufactured with retention levels 10 percent above the normal amount for the given use level for that chemical. So ACQ rated for ground contact would normally have a minimum .41 PCF retention level, it was manufactured with a retention level of .451 PCF.

The BRANZ test is certainly not 100% apples to apples. However, it is close enough to be VERY concerning.

BRANZ selected two test sites. The first site, Judgeford, was away from the coast with a generally moderate climate. The second site, Oteranga Bay, was literally yards from the beach and represents a severe coastal/marine exposure environment. At each site, a series of wood frames were installed, each frame had nails, screws and flashing material installed. The wood frames were made of untreated lumber and PT lumber using CCA, CA and ACQ. The nails, screws and flashings were mild steel, hot-dipped galvanized and stainless steel. The metal components were carefully weighed before being driven into or attached to the test frames. The nails and screws were driven in specific patterns, some horizontally and some vertically. Each test frame had the same pattern of nails, screws and flashings.

Test Frames in the Field



Frame Fastener Layout

At the one-year mark, five nails, five screws and one flashing of each metal type were removed from test frames representing each wood type. This was repeated at year two. At the year three mark, the remaining ten nails, ten screws and one flashing were removed. Again, all three metal types were sampled. The researchers carefully cataloged, photographed and weighed each of the samples. The before and after weights were tabulated for each component and charted by chemical and wood type.

As we now know, corrosion results in material loss, so the degree of corrosion correlates directly to the weight loss of the component. The test results paint a bleak picture. In all cases, the ACQ and CA PT chemicals in contact with mild steel and hot-dipped galvanized (HDG) materials resulted in accelerated corrosion levels. The study determined that for CCA, the service life of hot-dipped galvanized (HDG) materials in the mild (Judgeford) to be eight years. In the severe (Oteranga Bay) environment with CCA, the service life of HDG was only five years.

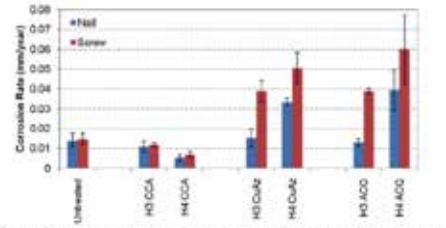


Figure 14: Corrosion rates of zinc-coated fasteners embedded into timbers exposed at Judgeford site for one year

BRANZ Study

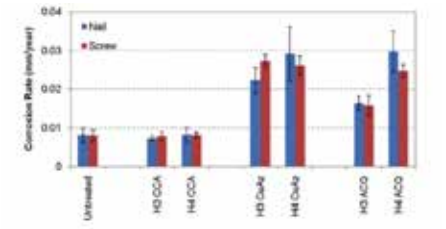


Figure 31: Corrosion rates of zinc-coated fasteners embedded into timbers exposed at Judgeford site for three years (these fasteners were retrieved from the top part of the gate-shaped timber structure i.e. their longitudinal orientation was vertical to the ground)

BRANZ Study

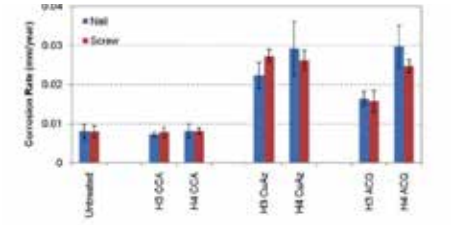


Figure 31: Corrosion rates of zinc-coated fasteners embedded into timbers exposed at Judgeford site for three years (these fasteners were retrieved from the top part of the gate-shaped timber structure i.e. their longitudinal orientation was vertical to the ground)

BRANZ Study

BRANZ Study: Marine Environment Accelerates Corrosion. (left) Bolt/Nut - 3 Years Mild Environment; (right) Bolt/Nut - 3 Years Marine Environment

Remember, CCA is the PT wood treatment that was banned in the U.S. We are only allowed to use CA and ACQ formulas here. HDG and Simpson Z-Max are generally what is being used with the high copper content CA and ACQ PT lumber chemicals.

The study measured the increase in corrosion activity between CCA, CA and ACQ. This is where things get really frightening. With HDG metal and ground contact (UC4A) ACQ versus CCA, the corrosion rates were accelerated by a factor of **3.3-3.8** times. With mild steel, the corrosion rate increased by a factor of **6.4** times.

Let's run the numbers. Given the mild environment. If HDG nails in CCA PT wood has a service life of 8 years, then HDG nails in UC4A ACQ would have a service life of:

Using a corrosion increase factor of 3.3, we have: 8/3.3 = ***2.42 Years*** and worse yet, a factor of 3.8, then we have: 8/3.8 = ***2.1 Years***.

Depressing, but let's run some more numbers. Given the **severe** environment. If HDG nails in CCA PT wood has a service life of 5 years, then HDG nails in UC4A ACQ would have a service life of:

Using a corrosion increase factor of 3.3, we have: 5/3.3 = ***1.51 Years*** and worse yet, a factor of 3.8, then we have: 5/3.8 = ***1.31 Years***. There were individual cases where the increase in corrosion was up to 10 times the CCA rate. The 3.3-3.8 are the means.

This means that in a severe coastal environment, the projected service life of a hot-dipped nail in UC4A ACQ would be 16 to 18 *months*. In a mild environment, the projected service life of that same nail might be 25 to 29 *months*. To be clear, service life is the period in which the fastener is capable of performing its intended purpose.

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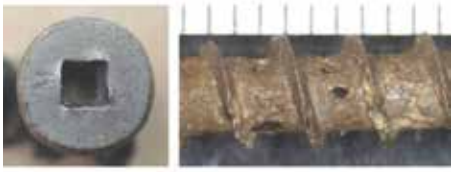
The other big takeaway from the BRANZ test is that the nail and screw heads showed little damage. Almost all corrosion was on the nail shanks and screw threads – where you can't see it. So everything may look fine, but it's really not.



HDG Screw Head Versus the Shank

HDG Nail Head Versus the Shank

BRANZ also tested stainless steel. In 100% of the test cases, stainless steel showed no measurable levels of material loss in either the mild or severe environments, with all fastener types and against all chemical formulations. In other words, the only material that actually works is stainless steel.

In general, the BRANZ Study shows that ordinary lumber is less corrosive than CCA, which is less corrosive that CA which is less corrosive than ACQ. So ACQ is the most corrosive formulation. It is also the most prevalent formulation used in the western US because it penetrates Douglas Fir best.

AND TO MAKE MATTERS WORSE – SICK NAIL SYNDROME

Unfortunately, things actually get worse. When metal embedded in wood corrodes, the resulting oxides create acids that damage the adjacent wood fiber structure. This condition is termed "Sick Nail Syndrome." Sick Nail Syndrome has been a recognized issue in boats, docks, etc., for years. As the wood fiber structure is damaged, it softens. Corrosion of the fastener combined with localized deterioration of the wood causes a loss of strength to the joint and to the structural integrity of the assembly. The damaged wood that surrounds the nail will usually be stained black. Think about how many times you have seen black stains around the nail heads on shear panels in a crawlspace. This process is accelerated when the wood is wet. It is further accelerated when dissimilar metals are present - such as where mild steel or HDG screws and nails are in contact with the copper in ACQ or CA.

DECIPHERING STRUCTURAL METAL CONNECTORS

We will talk specifically about Simpson© product numbers. This is not meant to "pick on" them. Simpson© makes great products. The reality is that Simpson© has a huge percentage of the market, so Simpson© hardware is the type you will be most likely to see on a daily basis. Other manufacturers are out there. Most will make only electroplated and hot-dipped galvanized versions of the connector products. The problem is the same regardless of manufacturer.

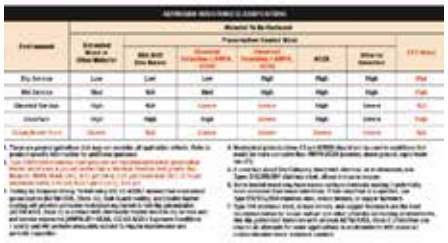
Simpson part numbers follow a very logical sequence. If the part number has no trailing characters it is a standard electroplated part and is a G90 weight. A part number followed by a "Z" means it has a Z-Max© coating which has a G185 equivalent coating. A part number followed by a "HDG" means it has is a hot-dipped galvanized coating which has a G185 coating weight. Lastly, a part number followed by a "SS" means it is made from stainless steel.

For example:

- Simpson© A35© – This is an electroplated part and has a G90 coating weight
- Simpson© A35Z© – This is a Z-Max© part and has a G185 equivalent coating weight
- Simpson© A35HDG© – This is a hot-dipped galvanized part and has a G185 coating weight
- Simpson© A35SS© – This is a stainless steel part

The California Residential Code R317.3.1 says that all metal in contact with PT lumber shall be in accordance with the manufacturer's instructions. Absent the manufacturer's instructions, a G185 or equivalent shall be used. There is an exception for borate SBX/DOT treated products that allows electroplated metal connectors and standard nails. Again, the only place this is allowed is in Interior - Dry (UC1) locations.

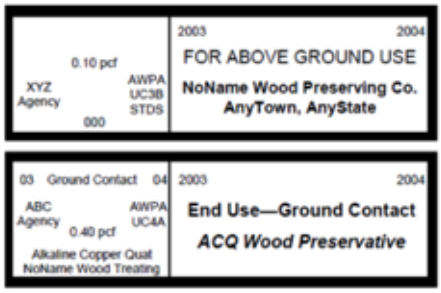
In a nutshell, we should never see electroplated/G90 products used on the exterior - period. Per current Simpson© guidance, HDG and Z-Max©, stainless materials are the only materials that should be used outside. In the Simpson chart below, G90 is allowed in dry conditions. While the chart says G90 is allowed in dry applications less than UC4A, the only dry application is Interior-Dry UC1. HDG and Z-Max© products are allowed for wet applications. But footnotes 2, 5, 6 and 7 indicate that in a number of situations, stainless steel should be used. Of the wood manufacturer's instructions sampled, none recommended less than G185 hot-dipped galvanized for their products.



Simpson Strong-Tile 2015 Connector Catalog

IDENTIFYING WOOD – READING LABELS

The EPA and AWPA publish guidelines on what information is required on the label. Now that we have the pieces of the puzzle, we can begin to decipher them.



End tags have many different formats. The end use and type of preservative are usually shown on the front, but also look on the back. In these examples, the third party inspection information is shown on the left-hand side.

The label will include the Preservative Chemical Used, the Retention Level, the Exposure Level, AWPA Exposure Category, the verification agency, the company that treated the wood and the plant location. The label may also show the year of treatment.

This wood was treated with ACQ at a retention level of .40 PCF. The Use Classification is UC4A, which is Ground Contact rated. The treatment was performed by NatureWood and the verification was performed by TP. The wood was manufactured in the 2003-2004 range – see the upper right corner (03-04).

This wood was treated with ACQ at a retention level of .40 PCF. The Use Classification is UC4A, which is Ground Contact rated. The treatment was performed by NatureWood and the verification was performed by TP. The wood was manufactured in the 2004-2005 range – see the upper right corner.

This wood was treated with CA-B at a retention level of .21 PCF. The Use Classification is UC4A, which is Ground Contact rated. The treatment was performed by Conrad Forest Products and the verification was performed by TP. Note the severely corroded bolt and washer.

CONTINUED ON PAGE 27

CONTINUED FROM PAGE 26

This wood was treated with CA-C at a retention level of .06 PCF. The Use Classification is UC3B, which is Above Ground rated. The treatment was performed by TrueGuard and the verification was performed by TP.

This wood was treated with SBX/DOT at a retention level of .42 PCF/.28 PCF. The Use Classification is UC2, which is Above Ground Continuously Protected (Interior Dry). The treatment was performed by Advance Guard and the verification was performed by TP. The wood was manufactured in the 2012-2013 range – see the upper right corner.

The wood may be stamped as well. This wood is treated with SBX/DOT at a retention level of .17 PCF/.25 PCF. The Use Classification is UC2, which is Above Ground Continuously Protected (Interior Dry). The treatment was performed by Advance Guard and the verification was performed by TP. The wood was manufactured in the 2009-2010 range – see the upper middle.

Using borate SBX/DOT PT wood for Interior –Dry (UC1) applications is a great solution. The wood requires no special nails or hardware. It cannot be used in wet or exterior applications. The problem is that the wood storage space in lumber yards and big box retailers is limited. This is doubly true for indoor storage space. Borate products must be stored in an interior/protected location. It is much easier to stock a single product that can be used in most applications and also doesn't require any special storage. So most yards will only stock ground contact UC4A PT lumber. Which of course has the highest potential to cause corrosion issues.

WHAT HAPPENS WHEN THINGS GO WRONG

Circa 1950's Bolt – Some Powdery Surface Rust Only, 60 Plus Years Old and Performing Fine

Crawlspace: Ledger Bolts and Hanger – Only 3-5 Years Old and Houston, We Have a Problem

Crawlspace: Hangers – Only 5-6 Years Old and Again – We Have Problems

Crawlspace: Note Black Stains At Shear Nails In What Appears To Be A Dry Environment – Sick Nail Syndrome?

Exterior Stair Landing: 7-9 Years Old – Note Rust Dripping From Hanger

Elevated Deck, Coastal Environment, Less Than 7 Years Old. Note Corroded Bolts, Right Hanger is Almost Completely Rusted Through

Elevated Deck, Coastal Environment: Note Bracket is Severely Corroded

CONCLUSION

When people talk about corrosion problems, the focus is usually on the foundation bolts. Conventional wisdom says that corrosion will take forever to rust a bolt to the point of failure, so why worry? Not necessarily true. The corrosion does not have to eat through the entire bolt. It need only degrade the threads. Once the threads on the foundation bolts/nuts and hold-downs are compromised, the nuts will simply pull off under stress. The load-path concentrates loads at the mudsill connections. One of the highest stress points is the shear panel nailing into the shear panels at the PT sill. Corrosion need only degrade the nailing, the bolts and damage the wood around the nails (sick nail syndrome). At that point, the house is basically held onto the foundation using gravity. The modern day version of an unbolted foundation.

Think of all those decks and balconies. Many of them were built improperly to start with. Compound improper construction with corrosion and you have a recipe for disaster. This issue is unseen by our clients and agents. Most structural engineers and virtually 100% of contractors don't seem to grasp the magnitude of this issue. Yet the statistics are clear – when an elevated deck or balcony collapse, 75% of the people on it will be seriously injured or killed.

In new construction, the solution for the foundation is simple, use borate (SBX/DOT) wood. Replacing the mudsills in existing construction isn't a great option. Borates are intended for Interior – Dry (UC1) applications only. They may not perform well in damp interior (UC2) locations and should never be used in exterior or ground contact applications. Retrofitting with stainless hardware is both difficult and expensive. Yet, in many cases, stainless may be the lessor of many evils – if you can find it.

The magnitude of this problem is hard to comprehend. Just imagine how many homes were either built or remodeled since 2002. It is frightening to think how many wood decks, stairs and balconies were built or repaired over that same period. This is certainly a national issue and probably an international issue as well. This is essentially a bomb just waiting to go off.

I am aware of attorneys that are looking seriously at the issue. The legal system may afford property owners some relief, but it will rarely make them whole. As CREIA inspectors, we are not required to confirm that a product is installed per the manufacturer's installation instructions. However, we are required to report on significant safety concerns. The consequences of improper exterior installations pose a significant safety concern. Think about the deck packed at a party with family and friends, the balcony overloaded with college kids. Both are a recipe for disaster. Deteriorated foundation connections may result in failure not only during an earthquake, but also tornados, hurricanes, etc. This problem is not just a residential problem. It impacts much of the post-2002 wood framed construction. Clearly, it seems things will get worse before they get better

Understanding the issue is the key to identifying and articulating the issue and the implications. It is my hope to build some awareness and start a dialog so that together we can arrive at a unified message. Is it any wonder we don't get invited to parties at friends' houses so much anymore?

REFERENCED MATERIALS:

Simpson Connector Catalogs, 2009, 2011, 2013, 2015; EPA CCA Compliance Strategy, 2004; Study Report: Corrosion of Fasteners in Treated Timber, Li, Marston, Jones, BRANZ, 2011; Degradation of Wood Products by Corrosion, Baker, USDA Forest Service Forest Products Lab, 1974; Simpson Technical Bulletin: Preservative Treated Wood, 2008; United States Steel Technical Bulletin: ACQ Pressure Treated Lumber Effects on Sheet Metal, 2005; Beginners Guide to Corrosion, National Physics Lab, UK, 2003; An Assessment of Risk Associated with the Use of CCA-Treated Timber in Sensitive Environments, New Zealand Forest Research Institute, 1997; A Comprehensive Review of Copper-Based Wood Preservatives, Freeman & McIntyre, Forrest Products Journal, 2008, Evaluating ACQ As An Alternative Wood Preservative System, For The EPA, By Battelle, 1994; Wood Preserving Resource Conservation and Recovery Act Compliance Guide, EPA 1996; CCA-Pressure Treated Wood – Guidance for Outdoor Wooden Structures, EPA, 2011; EPA Reregistration Eligibility Document for CCA, 2008; New Pressure Treated Lumber Requires Use of Correct Fasteners to Resist Corrosion, Ryan, 2004; Late Lessons from Pressure Treated Wood, Steingraber, 2010

A special thanks to Skip Walker, MCI for the hours of research, writing, proofing, re-writing, editing, and still more proofing of this article and other CREIA endeavors!
~ CREIA Board of Directors and Staff

ANNOUNCEMENTS:

Chapter Leaders:
Keep us up to date with your events and leadership!

Please send us the details of your Chapter's meetings, toolboxes and recaps (with pictures). We want to make sure your events are up to date!

Also, when your Chapter leadership switches hands, be sure to let the CREIA office know. We want to make sure the Chapter Leaders and Chapter Presidents are added to the Chapter Leaders' and Chapter Presidents' Listservs to receive important updates and to keep communication open.

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CHAPTER CALENDAR 2015

FOR MORE INFORMATION GO TO WWW.CREIA.ORG AND CLICK ON UPCOMING EVENTS!

DELTA CHAPTER:
2nd Wednesday of the month, 6 p.m.
CK Grill and Bar, 14725 Harlan Rd, Lathrop, CA 95330

GOLDEN GATE CHAPTER:
1st Tuesday of each month 7 p.m.
Buttercup Grill & Bar
660 Ygnacio Valley Rd., Walnut Creek, CA 95496

GREATER SACRAMENTO CHAPTER:
3rd Wednesday of the month, 6 p.m.
Sam's Hof Brau
2500 Watt Ave., Sacramento, CA 95821

GREATER SAN GABRIEL VALLEY CHAPTER:
2nd Tuesday of each month 5 p.m.
Zapata Vive, 101 S. 1st Ave., Arcadia, CA 91006

INLAND EMPIRE CHAPTER:
3rd Wednesday of each month 7 p.m.
Carrows, 11669 E. Foothill Blvd., Rancho Cucamonga, CA 91730

KERN COUNTY CHAPTER:
3rd Tuesday of each month 6 p.m.
Casa Munoz Restaurant,
Corner of E. 18th Street & Union Ave., Bakersfield, CA 93305

LA/MID VALLEY CHAPTER:
1st Wednesday of each month 6 p.m.
219 Central Ave., Glendale, CA 91203

LA/VENTURA CHAPTER:
1st Thursday of each month 6 p.m.
Knights of Columbus Hall #3601, Canoga Park, CA 91304

LA WEST/SOUTH BAY CHAPTER:
3rd Wednesday of each month 5 p.m.
Coco's Restaurant
2620 N. Sepulveda Blvd., Manhattan Beach, CA 90266

NORTH BAY CHAPTER:
1st Wednesday of each month 5 p.m.
Ping's Mandarin Restaurant
816 Francisco Blvd. West, San Rafael, CA 94901

NORTH SAN DIEGO/TEMECULA VALLEY CHAPTER:
2nd Thursday of each month 5:30 p.m.
Castle Creek Golf Course

ORANGE COUNTY CHAPTER:
3rd Monday of each month 5:30 p.m.
The Hometown Buffet
1008 East 17th Street, Santa Ana, CA 92704

PALM SPRINGS CHAPTER:
3rd Thursday of each month 6 p.m.
Doral Desert Princess Report, 67-967 Vista Chino & Landau

SAN DIEGO CHAPTER:
1st Tuesday of each month 5:15 p.m.
Dave & Buster's
2931 Camino Del Rio North. San Diego, CA 92108

SAN FRANCISCO / PENINSULA CHAPTER:
4th Tuesday of each month 5:45 p.m.
Mimi's Cafe, Bridgepoint Shopping Center
2208 Bridgepoint Pkwy., San Mateo, CA 94404

SAN JOAQUIN VALLEY CHAPTER:
3rd Wednesday of each month 7 p.m.
Letys Restaurant, 4770 E. Clinton Ave. Fresno, CA 93703

SAN LUIS OBISPO CHAPTER:
3rd Tuesday of each month 6 p.m.
Margie's Diner, 1575 Calle Joaquin, San Luis Obispo, CA 93405

SHASTA/CASCADE CHAPTER:
1st Tuesday of each month 5 p.m.
Sailing Board Restaurant
2772 Churn Creek Rd., Redding, CA 96002

SILICON VALLEY CHAPTER:
2nd Wednesday of each month 5 p.m.
Blue Pheasant Restaurant
22100 Stevens Creek Blvd.. Cupertino, CA 95014

TRI-COUNTIES CHAPTER:
2nd Thursday of each month 6 p.m.
Grinder Deli Restaurant & Catering
1 W Los Angeles Ave (Moorpark Ave), Moorpark, CA 93021