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LASER CLEANING

by Neil Savitch, Construction Specialties Group

Cleaning is a critical part of the conservation process. It serves not only to improve the aesthetic appeal of an object or building, but also to reveal its true condition so that appropriate action can be taken to ensure that it survives for many future generations to enjoy.

During recent years, there has been increasing concern over some of the more conventional methods of cleaning used and sculptural decoration on historic buildings. Careless and inappropriate use of techniques, such as air-abrasive, chemical, and steam cleaning, can lead to severe damage of the underlying stone surface. The loss of surface detail by over cleaning can reduce the visual appeal of a surface and in



extreme cases can even lead to its accelerated decay. Even if cleaning is carried out very carefully, techniques such as air-abrasive cleaning or even chemical and medium to high pressure water, will result in some loss of material from a surface, particularly from a decayed crumbling surface or a very delicate stone or

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THE AGGREGATE INSIDE

Laser Cleaning

The pros and cons of laser cleaning of buildings to ensure architectural integrity.

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Safety Column

Learn about different types of heat related illnesses and how to prevent them.

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Check Out Our Upcoming Events

Local & National Events

See Page 3

Legal Column

The False Claims Act – A Costly Trap for the Unwary

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ICRI MISSION STATEMENT

The mission of the International Concrete Repair Institute is to be a leading resource for education and information to improve the quality of repair, restoration, and protection of concrete and other structures in accordance with consensus criteria.

ICRI is an organization composed of Engineers, Consultants, Contractors, Manufacturers and other Material Suppliers, Property Managers and Owners all working together for the betterment of the industry and of all involved. Providing an open forum to speak about our work, new technologies and methods, exchange ideas. Creating and following standards to produce the best results for all involved.

PRESIDENT'S MESSAGE



Hola BW Chapter members!

I recently returned from the National ICRI Spring Convention in Puerto Rico. The food was great, the presentations were very informative, and the weather was awesome. I am bringing back some good memories and a

newfound love of mofongo, but most importantly, a better understanding of new developments with ICRI National and of how the national association is reorganizing in the future and what that means for us at a local level.

First off, all of you hopefully know about the new website. If not, please check it out at www.icri.org. It is easier to navigate now (especially with mobile devices) and there will be even more capabilities added in the future. Please note that if you are an individual member (this is different than working for a member company), you should have received an email with a password to log into the website. If you have not received this, please reach out to me at ahibshman@valcourt.net, your favorite board member, or Dale Regnier at daler@ewald.com.

The website will allow you access to the ICRI guidelines that are available for free download to member individuals. These are a recent addition to the benefits of individual membership. Not all of the guidelines are free, but if you are logged in to the website, you will see which ones are free of charge.

Another new development is the changing of the management company that supports

ICRI National. Ewald is the new company (as you will notice from Dale's email address), and they have dedicated more resources to better support the association. The transition is still continuing, but many of the hiccups have already been worked out and there should only be a positive impact moving forward.

The most exciting new direction from national, which I learned at the convention, is the introduction of additional ICRI certifications available to individuals. The concrete slab moisture testing certification has been available for many years now, and I have personally taken the level one certification class to better understand the testing. There is now the concrete surface repair technician (CSRT) certification program available. See the new website under "certification" for details. There are two new certifications coming soon for a carbon fiber technician and a surface preparation technician. These certifications will continue to add value to individual ICRI membership.

Finally, if you are interested in attending ICRI National conventions in the future, please let me know. We are always looking for new delegates from BW Chapter to attend (which comes with a rebate on the cost of attending) or I would be happy to provide a personal reference on the value of attending the national conventions... even if mofongo is not a dish at any of the upcoming venues (hello Cleveland).

Stay busy and safe!

Sincerely,

Adam Hibshman

2016 ICRI BW Chapter President
Valcourt Exterior Building Services

LASER CLEANING

Laser continued from Page 1

masonry surface, simply because abrasive particles nor the pressure of high pressure water can discriminate between the soiling and the stone surface. The removal of black encrustations from limestone sculpture is usually accompanied by removal of the patina, which develops on the surface over a period of time and within which the original surface relief is preserved.

Chemical-based cleaning techniques also have associated problems: chemicals often leave residues within the stone, which can cause problems later on and once they have been applied, their reaction cannot be suitably controlled. The fundamental difference between cleaning with laser radiation and conventional methods is that particles of light,



or photons, can discriminate between the soiling and substrate. This allows the conservator to control the level to which the surface is cleaned. Laser cleaning generates very small quantities of waste material (of the order 100 g/m² for a uniform black soiling approximately 0.1 mm thick on outdoor limestone).

Laser cleaning does not work on everything. Laser radiation at 1.06m has successfully been used to remove dirt and other coatings from a wide range of materials including marble, limestones, sandstones, terracotta, alabaster, plaster, aluminum, bone and ivory. Provided cleaning is carried out within suitable parameters, it is possible to remove layers of dirt without removing any original material from the surface of the object. Such control allows the conservator to select exactly what is removed from a surface and also allows him or her to go back over an area which has already been cleaned to remove remnants of dirt without over-cleaning. The technique is sensitive enough to

See Laser Page 5

UPCOMING CHAPTER EVENTS

- | | |
|--------------|------------------------------------------------------------------------------------------------------------------------------|
| May 19, 2016 | ICRI BWC Social Outing
Location: Top Golf
Alexandria, VA |
| Sept 8, 2016 | ICRI BWC 3rd Quarter Meeting
Topic: Decorative Concrete
Location: TBA |
| Nov 3, 2016 | ICRI BWC Awards Dinner & Board Election
12th Annual Outstanding Repair Projects Award Program
Location: TBA |
| Dec 1, 2016 | ICRI BWC Fall Technical Seminar
Theme: Historic Restoration
Location: Baltimore, MD |

UPCOMING NATIONAL EVENTS

- | | |
|------------------|-------------------------------------------------------------------------------------------------------|
| Nov 9-11, 2016 | ICRI 2016 FALL CONVENTION
Location: The Westin Cleveland
Hotel Downtown
Cleveland, OH |
| January 16, 2017 | ICRI Kick-Off Party
Location: Las Vegas, NV |
| Jan 16-20, 2017 | World of Concrete
Location: Las Vegas, NV |
| March 15, 2017 | ICRI 2017 Spring Convention
Location: Montreal, Quebec |

THE BALTIMORE/WASHINGTON, DC CHAPTER OF ICRI

May 5, 2016

Gaithersburg Marriott Washingtonian Center
9751 Washingtonian Boulevard
Gaithersburg, MD 20878
301-590-0044



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BALTIMORE WASHINGTON CHAPTER

Advance Reservations by 04-28-16:	\$50
After 04-28-16 & Non Members:	\$60
4:30 pm	Board Meeting
6:00 pm	Social Hour
6:30 pm	Dinner & Presentation

"Recent & Anticipated OSHA Regulation Changes"

OUR FEATURED SPEAKER

Charles J Brienza, CHST
Concrete Protection & Restoration, Inc.



Chuck has an extensive and varied career including:

- * CPR Safety Director;
- * ICRI-BWC Chapter Board Member;
- * National ICRI Environmental Health and Safety Committee Chair;
- * Construction Health and Safety Technician;
- * 25 years in the Construction Industry;
- * 15+ years as a Safety Professional;



OUR FEATURED PRESENTATION

This robust discussion with Q & A will encompass recent OSHA regulation changes and anticipated regulation changes. They are:

Recent Changes:

- Jan 2015 - OSHA mandates new recordkeeping/reporting requirements for workplace injuries;
- August 2015 - OSHA released a new "Confined Spaces in Construction Standard;"
- August 2016 - OSHA increases citation penalties by 50%.

Expected Changes:

- Respirable Silica Dust standard;
- Walking/working surfaces standard - probably not relevant to Construction;
- Injury Reporting Guidelines - employers of a certain size will be required to report their OSHA logs quarterly.



REGISTRATION DEADLINE IS APRIL 28, 2016

NO-SHOWS WILL BE BILLED

Please email (bradcliff@etc-web.com) or print this page and fax to **Bobby Radcliff**, Secretary, at 410-740-9409 no later than April 28, 2016. Checks to ICRI BWC may be turned in at the meeting or mailed with your form to:

Bobby Radcliff, Secretary
ICRI BW Chapter
c/o Engineering & Technical
Consultants
8930 Old Annapolis Road, Suite G
Columbia, MD 21045-2121

**You may also register and
pay online at**

www.ICRIBWChapter.org

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LASER CLEANING

Laser continued from Page 3

preserve the surface relief as original tool markings can be uncovered and delicate patinas left intact.

The laser produces an extremely intense and directional source of light, providing energy in the form of a very intense single or wavelength when a laser beam interacts with a surface, part of the energy is reflected and the remainder is absorbed. The fraction of energy absorbed



depends on the wavelength of the laser radiation and on the physical and chemical properties of the surface. The absorption of laser radiation in the surface of a dirt crust will cause a thin volume of material to heat up rapidly. This leads to a very fast expansion of the heated material, which in turn generates forces sufficient to eject particles of dirt away from the surface. A laser beam can have no effect on a surface unless it is at least partially absorbed. The most common lasers being used for cleaning provide short pulses of radiation creating short pulses of heat. Typically the soiling layers are much more strongly absorbing than the underlying substrate. This also means that further pulses will have no effect on the substrate itself since there would be insufficient energy absorbed to cause any damage.

The self-limiting effect of the laser, selectivity of removing only the soiling or contaminants, localized cleaning only where directed, immediate

control of the cleaning process and the environmental factor of the only waste being the soiling or contaminants are significant advantages of cleaning by laser. The disadvantages at this point of cleaning with laser are the cost of the equipment and the fact that the large scale laser-cleaning of buildings cannot, at the moment, compete in terms of speed with techniques such as grit blasting, chemical cleaning and high pressure washing. It does, however, leave the stone surface intact. The development of laser systems is so rapid that it might not be too long before large-scale laser cleaning systems become available. Until then, with the small convenient Laser equipment such as the backpack units, laser could be used for the extremely soiled, areas effected by black encrustation, or sculptured or textured detailed areas that seem to be virtually impossible using any other method.

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NATIONAL DELEGATE REPORT

ICRI PR Delegate Report

by Adam Hibshman, President

Wednesday morning's technical sessions were interesting and informative. The author attended all the technical sessions on Wednesday. Of particular interest was the study presented by Jacques Bertrand on the effects of surface prep and concrete repair material type on bonding strengths. As expected, an increase in the profile if cleaned, lead to an increase in bonding strength. Also, latex modified concrete provided a better bond than a more standard formulation.

Mark Chew's presentation on crystalline growth crystals was also insightful. Many case studies were presented showing how crystalline sealers can seal the concrete surface, drive moisture out of the surface, and allow for rapid coating of green concrete. Tom Ouska was great introducing all of the speakers and keeping the sessions right on schedule.

Wednesday evening was the opening reception and it was a great chance to meet people from other regions, as well as to interact with friends from the BW chapter.

Thursday morning provided more opportunities for increasing knowledge during the technical sessions. Hazel Jadallah from BASF provided a detailed presentation on the process of pier encapsulation with FRP jackets. The process can be done underwater because the epoxy is pumped into the jacket after it is sealed and the water is displaced out of the top of the jacket. Also, Neil Rouleau with Gorman, Richardson, Lewis Architects gave a practical presentation about a façade repair project in Boston. Challenges that were overcome included: insufficient available capital, historic district review, permitting, access, and hazardous material challenges. Neil provided a great visual presentation.

See Delegate Page 8



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WE HAVE DRIVE!

Enjoy an early evening of fun, fellowship and golf when ICRI- BWC heads to TopGolf in Alexandria, VA on May 19, 2016. **Best of all, the first 20 ICRI-BWC members who sign up get their registration covered!**



When: Thursday, May 19, 2016
5:30 pm—8:30 pm

Where: TopGolf
6625 South Van Dorn St
Alexandria, VA 22315
703-924-2600

Cost: \$55/member & non-member

Deadline: Friday, May 6, 2016

A SPECIAL OFFER FOR ICRI-BWC MEMBERS:

To register, you MUST email Kevin Kline **AND** Bobby Radcliff at kkline@concretecpr.com **OR** at bradcliff@etc-web.com.

The first 20 members who register will have their fees covered.
A confirmation email will be sent to the first 20 registrants.

REGISTRATION DEADLINE IS MAY 6, 2016 NO-SHOWS WILL BE BILLED

Registration is done by email only.



Payment may be done online at www.ICRIBWChapter.org

OR

by mailing a check to :

Bobby Radcliff, Secretary
ICRI BW Chapter
c/o Engineering & Technical Consultants
8930 Old Annapolis Road, Suite G
Columbia, MD 21045-2121



NATIONAL DELEGATE REPORT

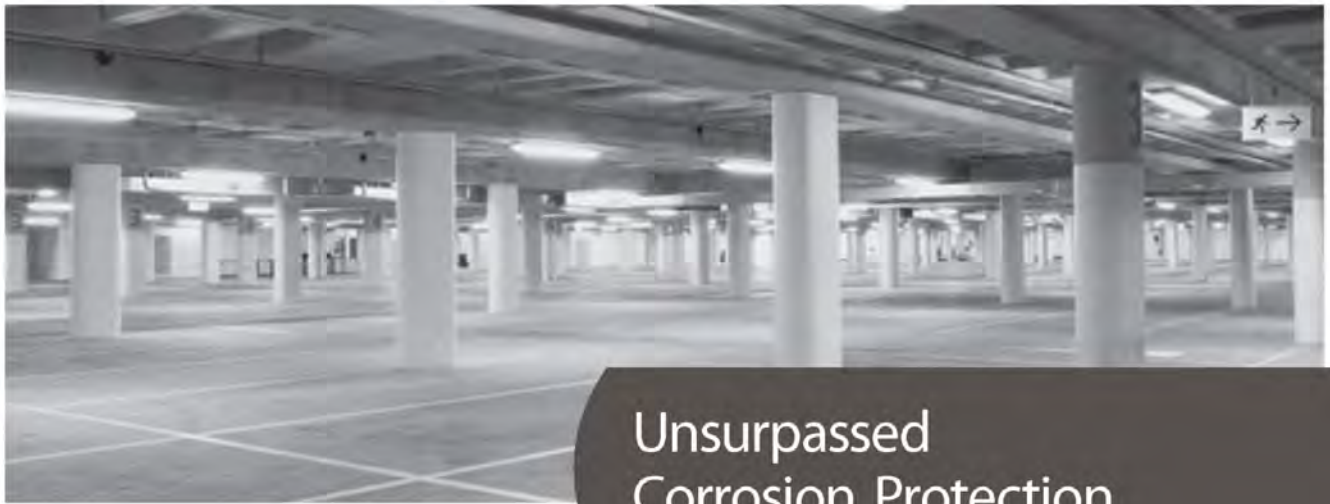
Delegate continued from Page 6

Thursday for lunch was the recognition luncheon and passing of the gavel from past president, Katherine Blatz, to new president Keith Harrison. The board of directors was introduced and also some new direction for the national organization. The author will take some of this information back to a local level to share with our members. The chapter awards were also presented and the chapter of the year was awarded to the Metro New York chapter.

The author attended more technical sessions Thursday afternoon. The two highlights were the new process for designing anchors and development length of reinforcing bars in existing concrete presented by Jeff Stoneman of Simpson Strong Tie and Scanning of PT tendons using non-destructive methods prior to concrete repair in PT applications presented by Todd Allen with Radarview. These presentations continued the trend of valuable and very well prepared educational and technical presentations.

Friday it was time to observe some committees. The author sat in on the Evaluation Committee where plans were made for reviewing and revising a guideline that was at the 7 year mark as well as a discussion about the process involving the Technical Activities Committee of suggesting new guidelines. In addition, the Waterproofing Committee was observed. The transition to the new website caused some hiccups in the finalization of a guideline and the vetting of comments during the response and voting period. Plans were set on how to move forward with document approval.

The delegate lunch and chapter committee meeting on Friday were great for hearing about other chapters and upcoming deadlines. Highlights were discussions about the capabilities of the new website, an update on Dale's new role, procedures and processes, and a conversation about upcoming topics for inter-chapter luncheons.



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1ST QUARTER MEETING WRITE UP

JOINT ICRI-BWC & NCC-ACI MEETING ANOTHER SUCCESS

By Adam Hibshman, President

On February 11th, the 1st quarter dinner meeting was held at Maggiano's Little Italy in Tyson's Corner, VA. Facilities committee chair, Kevin Kline, made sure that all the arrangements with the facility were locked up and it was another great meeting because of it. As usual, the happy hour was filled with spirited conversation and enjoyable networking. The downstairs bar was a popular gathering place but not an easy place to get a cold one unless you had a seat at the bar.

Frank Morabito of Morabito Consultants spoke to a group of just under 100 about his recently completed project, the rehabilitation of Dolphin Towers Condominium in Sarasota, FL. The story of this condo was locally (to the project area) famous as a sudden crack occurred in the transfer slab of the building and quickly after, the building was evacuated and condemned with significant media coverage. Frank and repair contractor, Concrete Protection and Restoration, ended up with the project after many design ideas, and were able to repair the building at a significant cost savings to other proposals.

The images of the work and excellent description of the repairs and design by Frank kept the audience very engaged. It seemed like the questions could have gone on all night! Great job, Frank, and thank you again for the excellent presentation on the ICRI award winning project.



1ST QUARTER MEETING WRITE UP





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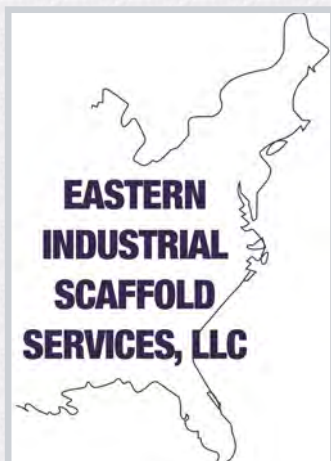
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SAFETY COLUMN

Heat Related Illness

by Charles J Brienza, CHST, Safety Director, Concrete Protection and Restoration, Inc.

As summer draws near, heat related illness and hazardous working conditions such as high heat and high humidity are in the forefront of the minds of many outside construction workers. The fact of the matter is that heat related illness can strike at any point throughout the year. Repairing concrete in a steam tunnel or boiler room or the high heat and high humidity conditions of an underground hydro-demolition operation can all spell disaster for the unprepared, dehydrated worker. Under most circumstances, preparation and training are the key to preventing heat related illnesses.

Before prevention is discussed, "Heat Related Illness" must be defined. In 2011, the Occupational Safety and Health Administration (OSHA) launched a campaign to prevent heat related illness in outdoor workers. In that campaign, OSHA defines heat related illness as a condition caused by the body's inability to cool itself when working in high heat and high humidity. They classify heat related illnesses into two categories; Heat Exhaustion and Heat Stroke. The symptoms of Heat Exhaustion are dizziness, headache, sweaty skin, fast heartbeat, nausea, vomiting, weakness and/or cramps. Heat Stroke is characterized by red, hot, dry skin, high body temperature, confusion, fainting and/or convulsions. It should be noted that not all symptoms will always appear in either condition nor is Heat Exhaustion the precursor to Heat Stroke or vice versa.

As with all hazards, it is an employer's responsibility to identify the hazard and then train their workers to protect themselves from the hazard. Identification is simple; for outdoor workers, monitor the weather forecast. Most weather services forecast a value called "Heat Index". The Heat Index takes into consideration both the temperature and humidity to determine how hot a person feels. This is caused by a reduction in evaporative effect of cooling encountered in high humidity environments. The body's chief cooling function is sweating. Sweat evaporates on the skin causing a cooling effect. When humidity is high, perspiration can less readily evaporate into already saturated air. If your weather service does not forecast the Heat Index, OSHA has launched a Heat Safety Tool which will calculate the Heat Index based on ambient conditions. The tool is an application (app) which can be installed on an Android or iPhone. This APP can be found at www.osha.gov/SLTC/heatillness/heat_index/heat_app.html.

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Adam Hibshman
General Manager
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Workers exposed to high heat and humidity should be trained to protect themselves from injury. The first step in being protected is to drink plenty of fluids such as water, fruit juice or sports drinks. Avoid beverages that contain caffeine such as soda, energy drinks, coffee, tea, cocoa or alcohol. Fluid intake should begin well before the exposure to heat and humidity. Fluid intake should continue throughout the work shift to help in remaining hydrated. Fluid intake should continue beyond the work shift to replenish any fluids which may have been lost during the shift. One way to determine hydration is to self-monitor urine color. A well hydrated individual's urine color will be clear or a very light translucent yellow. If the urine color is dark yellow or orange it could signify dehydration thus indicating more fluids should be taken. OSHA recommends that at least 1 cup of water be consumed every 15 minutes regardless of thirst, when working in heat stress environments.

Workers should wear light colored, breathable clothing that covers as much skin as possible; including a hat. Although it may not be intuitive to wear long sleeves when working outdoors in the summer, shielding the skin from the sun's damaging rays and the radiant heat to which they expose a worker can be imperative. Dark colored clothes absorb heat which is transferred to the body; light colored clothing reflects heat away from the body.

SAFETY COLUMN

Heat continued from Page 14

Work shift or task modification can be a very effective tool in reducing a worker's exposure to heat stress conditions. It's not always possible to schedule tasks that require heavy physical exertion to be performed early in the morning as opposed to the middle of the afternoon; however, if this is done, heat stress placed on the body is greatly reduced.

When working outside shade breaks are another effective method to cool workers. According to OSHA, at least five minutes of shade is required for the body to cool. The frequency and duration of shade breaks should be modified based on the work task and prevailing conditions. Supervisors play a key role in determining when shade breaks are necessary. In California, The Division of Occupational Safety and Health require shade be provided when temperatures exceed 85 °F (29.4° C) or whenever an employee requests it otherwise.

Workers should use the "buddy system" in which no worker ever works alone and every worker is trained to know and identify the symptoms of heat related illness. Furthermore, workers should be prepared to respond to a possible case of heat related illness. If a worker is suspected of suffering from a heat related illness, it is an emergency. Once an ambulance has been called, initiate first aid. Move the affected individual to shade. If the person is conscious and not vomiting, give them a little water at a time. Loosen any clothing which could be constricting blood flow and thus

See Heat Page 16

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Heat continued from Page 15

impairing cooling. Fan the person, put ice packs in key locations such as the groin or underarms or soak the individuals clothing with cool water. DO NOT IMMERSE THE VICTIM IN COLD OR ICE WATER! This could cause a person to go into shock, another very serious and possibly deadly condition.

An acclimatization period is required for the human body to operate at peak cooling efficiency. This is especially important when introducing new workers to a "hot job" or even when hiring new workers in the middle of the summer. It applies to all workers if there is an extreme weather change. For example, the average temperature in Washington, DC in May is 75°F (24°C) with a recorded high temperature in May of 99°F (37°C). If worker last works a Friday in which the high temperature is in the 70s and the next day he goes to work, perhaps Monday, and the temperature is approaching 100°F, the extreme temperature change creates a very dangerous environment for what could be a grossly unprepared worker. A NIOSH study titled "Occupational Exposure to Hot Environments" published in 1986 states "heat acclimatization can usually be induced in 5 to 7 days of exposure at a hot job". If the weather change is gradual, the acclimatization is natural. In the case of extreme weather change or immediate introduction into a heat stress environment, acclimatization should be regimented and controlled by the employer. This can be accomplished by slowly introducing the worker to the environment. For example, introduce a new worker for 2 hours their first day, then 4 hours the next, then 6 hours on the third day and finally 8 hours on the fourth day.

In very extreme environments, Personal Protective Equipment may be needed to further protect workers. Cooling vests can be worn by workers. Some cooling vests are passive and only require periodic soaking on cold water to activate. Some vests are active and have pumps that transport coolant into chambers in the vest to cool the body.

In conclusion, Heat Related Illness is a serious matter that can be prevented in most cases by planning ahead and training workers in the effective management of heat stress environments. For more information, OSHA's website (www.osha.gov) has volumes of information on Heat Related Illnesses. The campaign OSHA launched to combat Heat Related Illness can be found at www.osha.gov/SLTC/heatillness/index.html. The page includes educational materials including a very informative and well-designed training guide. Furthermore, ICRI has recently published a White Paper devoted to heat related illness. The heat related illness white paper can be found in ICRI's website (www.icri.org).

The False Claims Act – A Costly Trap for the Unwary

By Jennifer Mahar, Esquire

Searching for business opportunities in a difficult construction market, contractors and suppliers, who in the past focused primarily on the private commercial sector, are now looking to the Federal sector. If you are among those seeking to do business with the Federal Government, you must realize that the rules of engagement are different from the private commercial sector due to the complex statutory and regulatory landscape. Violating just one of these Federal statutes or regulations can have serious business consequences.

Take the False Claims Act for example. The False Claims Act was enacted to protect the Federal Government and its funds from fraud. The Act prohibits, among other conduct, the knowing presentment or causing to be presented a false or fraudulent claim for payment or approval directly to the Federal Government or indirectly to the Federal Government by way of a recipient of federal funds. See 31 U.S.C. § 3729(a). If federal funds are in play on the project, either through the project owner being a Federal entity or through a Federal grant, than the False Claims Act likely applies.

The Act broadly defines "claim" as "any request or demand, whether under a contract or otherwise, for money or property . . . that is presented to an officer, employee, or agent of the United States or is made to a contractor, grantee, or other recipient, if the money or property is to be spent or used on the Government's behalf or to advance a Government program or interest" and the Government provides the funds or reimburses any portion of the requested funds. 31 U.S.C. § 3729 (b)(2). A demand for payment, such as the submission of an invoice or request for a change order, constitutes a claim under the Act.

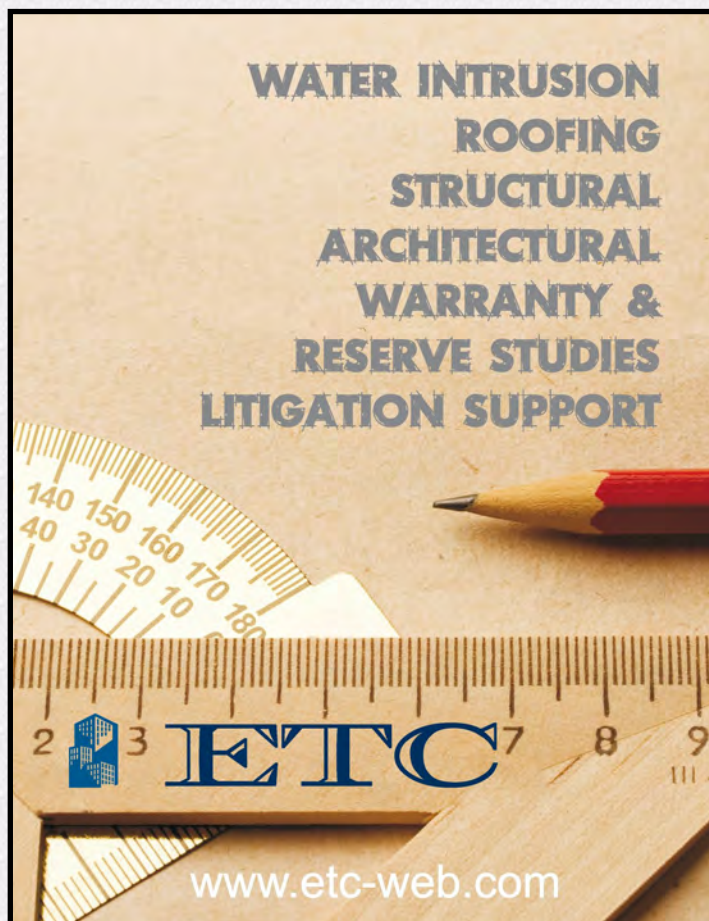
You do not need to have a specific intent to defraud to violate the Act. The Act defines "knowing" as having actual knowledge of the information, acting in deliberate ignorance of the truth or falsity of the information, or acting in reckless disregard of the truth or falsity of the information. See 31 U.S.C. § 3729(b)(1).

The False Claims Act applies equally to general contractors, subcontractors and suppliers. A false claim may be as basic as the submission of an invoice for payment that includes amounts for work not performed, materials not delivered, or defective work that has not been disclosed. It may also be the submission of a pass through claim from a lower-tiered contractor or supplier where the contractor incorporates a false invoice from a lower-tiered contractor or supplier into its payment application.

The consequences for violating the False Claims Act can be economically hefty. A violator is subject to a civil penalty between \$5,000 and \$10,000 for each violation plus three times the amount overstated in the false claim. See 31 U.S.C. § 3729(a). For example, if a contractor submits three false invoices which overstate the amount due by an aggregate amount of \$15,000, the contractor could face reimbursing the Federal Government \$45,000 in damages (3 x \$15,000), paying civil penalties in the range of \$15,000 to \$30,000 (3 violations at \$5,000 - \$10,000 each), and reimbursing the Federal Government its costs incurred to prosecute the false claim.

Accordingly, fundamental to succeeding in the Federal sector as a contractor or supplier are an understanding the Federal statutes and regulations which govern, such as the False Claims Act, and the implementation of appropriate processes in your business operations to make sure you comply with these requirements.

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