

## *Proper Boiler Operations*



*David Mathews  
SCHM, CHFM  
Chief Engineer  
Mercy Medical  
Center, Redding*

**P**roper boiler operation and maintenance cannot be stressed enough. In today's world of automation it is easy for an operator to rely on his or her equipment to notify them of a problem. We have automatic

feed pumps, automatic blow down controls, automatic chemical injection, low water cut-offs, flame sensors, and the list goes on and on. Today's operators running these plants are likely to be more familiar with adjusting operating parameters remotely with their IPAD than they are with identifying the different components making up the fuel train. Thankfully, this progression of automation over the years has led to a reduction in boiler casualties.

A boiler explosion is a catastrophic failure of a boiler. Boiler explosions are of two kinds: over-pressurization of the steam and water sides and an explosion in the furnace.

A boiler pressure vessel explosion is an expanding vapor explosion. This is particularly devastating because of the energy stored up in the heated liquid water. A basic fire-tube boiler steaming at 50 psi contains water at a temperature of roughly 300 °F. Were a catastrophic failure to occur and the vessel depressurized, most of the water would instantly flash into steam. Steam takes up 1,600 times more space than liquid water, meaning that each cubic foot of heated boiler water will expand into 1,600 cubic feet of steam and it will do so in a fraction of

## *Robert Mack Scholarship Foundation*

*Ted Beshwate  
Chair, Robert Mack Scholarship Foundation*

**T**his is the time of year when the Robert Mack Scholarship Foundation (RMSF) Board anticipates receiving applications for potential scholarship candidates. RMSF will once again look to CSHE and its members to remind students to visit the CSHE website for instructions and to download an application. The scholarship award criteria are for college students perusing studies in the field of healthcare engineering and related disciplines. The RMSF Board is hopeful for several applications in the healthcare engineering field that meet the requirements. Please encourage those that you may know that would benefit from healthcare scholarship support to apply. For further information, check the home page of the CSHE website at [www.cshe.org](http://www.cshe.org) or [info@robertmacksf.org](mailto:info@robertmacksf.org). If you have additional questions, please contact a RMSF board member listed on the website.

a second. That enormous volume of steam will expand outwardly to equalize its pressure with the atmosphere and produce an explosion.

A furnace explosion in a boiler happens when an air-fuel mixture gathers in enough concentration that if an ignition source is present it ignites at an uncontrollable rate. This type of explosion can vary in intensity all the way to the point of causing a rupture of the steam vessel creating the boiler explosion previously discussed.

The stationary steam engines used to power machinery first came to prominence during the industrial revolution. Automation was unknown, safeties were few and oversight was essentially unheard of. In the early days there were many boiler explosions from a variety of causes resulting in thousands of deaths.

Modern boilers are designed with redundant pumps, valves, water level monitors, fuel cutoffs, automated controls, and pressure relief

**Boiler continued on page 3**



*Patrick Silvestri  
CSHE State  
President*

**A**t the ASHE Annual Conference, CSHE received the Platinum Chapter Affiliation Award for 2010. Congratulations, once again!! This shows the dedication and effort put forth by the CSHE Board of Directors and Joyce Jones to ensure we meet our goals of providing educational opportunities for our membership.

Congratulations to Jonathan Huls, CSHE San Diego Chapter President, who received the ASHE Emerging Leader Award for Region 9!! He is one of our outstanding members who are very involved within CSHE, and currently the chair of the Education Committee.

The ASHE 48th Annual Conference was held in Seattle Washington, with three CSHE Executive Committee members in attendance. ASHE Region 9 was well represented by all of our member chapters (four states with six chapters), with three receiving chapter affiliation awards. Both California and Utah received Platinum, and one of the Arizona chapters receiving Gold. More than 3,200 people attended the ASHE Conference this year. The educational classes and trade show were very informative; for additional details, please contact Ken Gomes, ASHE Region 9 Representative at [ken.gomes@emanuelmed.org](mailto:ken.gomes@emanuelmed.org).

## **CSHE**

Please visit the website for details about the upcoming CSHE regional educational events—LA Seminar on September 22 in Monterey Park; and the Northern California Seminar, October 20 in Concord. Both events have exciting educational classes available.

## **CHA Accreditation & Licensure Committee**

The third quarter meeting was held earlier this month in Sacramento. There were numerous activities; however, the two items of pertinent importance to CSHE involved the change in the Humidity requirements and the Life Safety Code Occupancy Classification issue.

- **Humidity** — it appears that CMS will adopt this “change in range”; hopefully, by the end of the year. All other regulatory agencies have endorsed this change.
- **Life Safety Code Occupancy Classification** — this is still under discussion between ASHE and CMS, and to date no hospital has been cited for non-compliance. Stay tuned.

## **Title 22**

The final draft of Article 8 “Physical Plant” has been completed and submitted to all pertinent agencies. A very special thanks to Tony Moddesette, chairperson, who lead the charge to get this task completed. I also want to thank the other members of this workgroup who spent a lot of time and effort to accomplish this task in the allotted short time period.

## **AQMD**

Another workgroup has been created to assist our membership with AQMD related regulations and issues. Devin, Hugie, chairperson, is another hard working involved CSHE leader. This work group is made up of four members, who meet quarterly to review and advise both CSHE and CHA on AQMD proposed regulations that could impact healthcare systems. This workgroup will also be submitting quarterly articles in the CSHE News, so we can stay current with this important information. Thanks Devin for volunteering to lead this team!

## **ASHE Member Honored for His Achievements**



(July 18, 2011) The American Society for Healthcare Engineering (ASHE) of the American Hospital Association (AHA) today honored members during the opening session of its 48th Annual Conference and Technical Exhibition in Seattle.

### **Emerging Regional Leaders**

The Emerging Regional Leader award is presented to one individual from each of ASHE's 10 regions who has shown a commitment to the field and demonstrated leadership qualities.

Region 9 – Jonathan David Huls, MBA, CHFM,  
Palomar Pomerado Hospital, Escondido, Calif.

The CSHE Newsletter is published quarterly. The advertising closing date for the December issue will be November 18, 2011.

For advertising requirements and information, contact CSHE at (916) 552-7639 Fax: (916) 552-7617.

Patrick Silvestri, CSHE State President; Roger Richter, Executive Director; Joyce Jones, CSHE Program Manager;

Teri Frost, CSHE Database Administrator; Lezlee Willems, graphic designer.

**Boiler** *continued from page 1*

valves. In addition, the construction must adhere to strict engineering guidelines set by the relevant authorities. The NBIC, ASME, and others attempt to ensure safe boiler designs by publishing detailed standards. This results in a boiler unit which is less prone to catastrophic accidents and is safer, leading to today's relatively safe boiler plant environment.

With all of today's built in safety mechanisms there is a tendency to become complacent to the inherent dangers associated with boiler plant operations. The operator has never been exposed to the real danger potential of a steam boiler. Although rare, boiler explosions do still occur (I was part of a rescue crew to a shipboard explosion in 1990). Plant managers should hold regular training that includes going into the plant and discussing the different components of the boiler and its purposes. The various safety devices should be identified and

what the result of their failure could be.

At one of my recent department meetings, I shared a PowerPoint presentation of a report from a boiler explosion that occurred on June 18, 2007. There are great photos of the damage caused by the explosion and the power released is amazing to see. Although we had discussed the dangers of a boiler explosion before not many had ever seen the outcome of this type of disaster. This made a real impact on most everyone in the department.

I invite everyone to share this PowerPoint at your next meeting, hopefully it will help raise awareness of the potential danger of a steam boiler and make your facility a safer place to be.

For the complete document entitled "Boiler Accident, Dana Corporation, Paris Extrusion Plant, Paris, Tennessee, June 18, 2007" request the forwarded email from [jjones@calhealth.org](mailto:jjones@calhealth.org).



## Become a BOC-Certified Building Operator

### ***COURSES BEGIN THIS FALL***

Building Operator Certification (BOC) is a national workforce training and credential program offering job skills in energy efficient building operation and maintenance practices. Students will learn to identify and implement energy savings opportunities. Course series will be held in the following California cities beginning on the dates shown. To learn more about BOC, visit [www.theBOC.info](http://www.theBOC.info) and register for a free webcast on Wednesday, November 9, 2011 at 8:30am (PST).

#### ***BOC LEVEL I***

Location	Start Date
Tulare.....	10/18/11
San Jose.....	10/25/11

#### ***BOC LEVEL II***

Location	Start Date
Irwindale .....	9/7/11
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# Hospital Building Safety Board Update



*Carl Scheuerman,  
Hospital Facilities  
Representative*

The Hospital Building Safety Board (HBSB) full board meeting was held in Sacramento on June 28 2011. It was pleasing to see the number of our member hospitals that provided representation at the meeting; the meetings are public and more hospital representatives from throughout the state are encouraged to attend.

This was the first full board meeting since the departure of Office of Statewide Health Planning and Development (OSHPD) Director David M. Carlisle, M.D., Ph.D. Dr. Carlisle's leadership was an essential catalyst that drove process improvements in the conduct of plan review and construction oversight for hospital projects; he will be missed. OSHPD Acting Director Stephanie Clendenin gave the board a report updating the activity of the agency. She shared that OSHPD has been impacted by the freeze on all non-mission critical travel over 50 miles. She also advised the board of the progress of companion legislation to SB 90 related to the Hospital Fee Program that must be enacted for the seismic extension portion of SB 90 to become effective.

OSHPD Facilities Development Division (FDD) Deputy Director Paul Coleman provided a presentation showing current work load and productivity with FDD. As of the day of the board meeting, OSHPD had almost \$22.7 billion in work in progress, with \$13.4 billion in plan review (1,485 projects) and \$5.4 billion (3,544 projects) in construction in progress; the balance of the work is either between review and construction or in close-out. Plan review was impacted in March 2011 when staff undertook training

in the new OSHPD log book; the timing to begin use of the new computer system was still pending at the time. In May, the governor exempted 26 OSHPD positions from the state hiring freeze. As a result, with the exception of the downturn in March, OSHPD continued to make progress in meeting their goals for plan review turnaround time due to being able to add staff. Among the new staff positions is that of Principal Structural Engineer to serve as head of discipline for OSHPD's structural engineering team; John Gillengerten was announced as Acting PSE, and the announcement was well received by the board.

Deputy Director Coleman announced the strategic goals for the Facility Development Division, which includes:

- Reduce and simplify regulations by adopting national standards to the extent possible;
- Consolidate seismic compliance programs;
- Review criteria and process for geologic reports and reviews; eliminate steps that do not add value;
- Adopt standard details for use by project teams to simplify plan review (draft PIN is in the works);

- Continue implementation of Electronic Plan Review; and,
- Reduce turnaround goals.

Glenn Gall, HFR Supervisor for the OSHPD building standards unit advised the board on the status of the mid-term 2010 code adoption cycle. Affected codes are available for review on the California Building Standards web page. Glenn also reported on the adoption of PIN 48 (school fee payments), and pending revisions to CAN 2-3403A and 2-3406A.

The board heard reports from its various subcommittees, including Senate Bill 499, Education Opportunities, Standard Detail and Senate Bill 90 committees. Items of particular interest were the news of progress toward revisions to the OSHPD project best practices manual and preparation of extension application rules under SB 90 for seismic compliance projects. Both will have additional results in the weeks to come. Board Chairman Joe La Brie then reviewed the board goals for each committee with the members.

The next full HBSB meeting is tentatively scheduled for October 26 & 27 2011 in Sacramento. Please plan to attend if possible to see the work of this important board.

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## CSHE 41<sup>st</sup> Annual Institute: May 3-4, 2012

*Rick Barker  
Chair, 41<sup>st</sup> Annual Institute*

The planning committee is working towards completion of the speaker schedule for the 2012 CSHE Annual Institute to be held at the Resort at Squaw Creek, Lake Tahoe. The event at the Resort at Squaw Creek will have a day and half of educational presentations for both management and technical. This is a critical time as we look ahead to the issues that concern healthcare engineers in the coming year. Your institute planning committee members would like to hear from you with suggested topics for consideration. Please forward suggestions to the CSHE State Office to [jjones@calhospital.org](mailto:jjones@calhospital.org).

The planning committee has taken into consideration feedback regarding high-profile speakers scheduled at the same time. At the institute, the presentations of George Mills, The Joint Commission, and Paul Coleman, OSHPD, will be held without conflicting with other presentation.

The annual banquet will be held at Squaw Village in the Terrace Room which show case the panoramic views of Squaw Valley, Lake Tahoe and the surrounding Sierra Mountains. The cable car will transport attendees from the valley floor 8,200 feet to High Camp for dinner.

The participant brochure and exhibitor packets will be available in mid-December. I look forward to seeing you at the 2012 CSHE Annual Institute in Lake Tahoe!

# ASHE Region 9 Update



*Ken Gomes  
ASHE Region 9  
Director*

The ASHE 48<sup>th</sup> Annual Conference and Technical Exhibition was held at the Washington State Convention Center in Seattle, Washington with great education sessions and approximately 3,200 attendees. After the annual Chapter Leadership Forum was the Chapter Awards Luncheon. I am proud that CSHE earned the highest award level of Platinum. This speaks volumes about the CSHE leadership and members.

Monday started with the opening ceremonies with chapter and individual award winners were announced. CSHE member Jonathon Huls received the “Emerging Leader” award for Region 9. Jonathon is CSHE’s Education Committee Chair and was an important part of the CHFMs Study Group that just concluded. Congratulations to Jonathon!

Approximately fifty Region 9 members from Utah, Arizona, Nevada and California attended the breakfast meeting. After self-introductions there was a time of sharing information from individual chapters: Bob O Brien (Arizona), Fred Lastar (Central Arizona), Andrew Burkhardt (Utah), and Jeff Campbell (BYU Students) reported on their chapter activities. At the breakfast, I asked if there were any volunteers to be part of a task force to develop an ASHE Region 9 Conference by the end of next year. I am pleased

to announce that we have several members interested in serving on the task force. There will be further communications on this in the near future.

I reported on my activities as Region 9 Director. Discussion ensued regarding the development of a chapter in Nevada where several members expressed their desire to help in developing an ASHE presence in Nevada.

Currently, the ASHE presidential elections are in progress with voting concluding

on September 2<sup>nd</sup>. Several Bylaw changes were on the ballot, as well. Election results and Bylaw approved changes will be reported in the next CSHE News.

I am excited that we held our first regional CHFMs study group this year. I would like to thank CSHE, and especially Joyce Jones, for coordinating and hosting the conference calls.

If you have questions pertaining to ASHE, please contact me at [ken.gomes@emanuelmed.org](mailto:ken.gomes@emanuelmed.org).

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## Sutter Health Engineering Video

*Rick Barker  
CSHE State Treasurer  
President Redwood Chapter*

Recently at a staff meeting I received feedback from my building engineers concerning the amount of interruptions they receive when walking down the hallway and being asked for service from other departments. This is certainly an issue for all of us. I replied that I would send out a memorandum concerning the accepted method for

contacting engineering for repair services.

A day later Justin Pollard, Stationary Engineer, asked if the staff could produce a video for presentation to the hospital staff. The goal was to let everyone know how to schedule engineering services. Within two weeks a video was produced and presented to staff. Our hats are off to Justin for finding a creative way to inform staff. Please take three minutes and follow the link to view the video that our facilities crew developed.

<http://www.youtube.com/watch?v=0rRF49JYxhI>



# CSHE Gold Sponsors



# The SCAQMD Plans Tougher Emission Control for New Diesel Generators by Amending Rule 1470



*Devin Hugie  
Los Angeles  
Chapter Vice  
President*

The South Coast Air Quality Management Department (SCAQMD) recently decided to impose tougher emission control requirements for diesel emergency generators (rated over 75 brake horsepower). The requirements, once approved by the governing board,

will require most new diesel engines to be retrofitted with particulate filtration systems that will add additional cost to the installation, but more importantly will add additional service and operational requirements that will be critical to maintain the reliability of the emergency power system.

In late 2010, the California Air Resources Board relaxed the state regulation through eliminating Tier 4 emission standards for diesel standby engines. The SCAQMD originally intended to follow the CARB to remove the Tier requirements. In fact, as recent as early May 2011, their engineers still issued permits for engines that met the 2010 emission

standards. Also, the SCAQMD staff extended the expiration date on the pre-approved models – again, with the 2010 standard – until 12/31/2011 in their Certified Equipment Permit program.

However, on 5/12/2011, the SCAQMD abruptly announced that it intended to amend the diesel engine rule (Rule 1470) and enforce the stringent particulate emission limits in Tier 4. The items below reflect a summary related to the proposed amendment that continues to be a work in progress as the next working group has been scheduled for September 6, 2011.

*SCAQMD continued on page 9*



## CSHE Welcomes New Gold Sponsor

Alliance Environmental Group, Inc. is one of the leading environmental remediation companies in California and a new CSHE Gold Sponsor. With more than 50 years of experience, our company provides innovative solutions in the areas of air and HVAC duct cleaning; asbestos, lead, and mold abatement; demolition and emergency response.

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dust; demolition or building component removal which creates moderate to high levels of dust; and major demolition and new construction projects. AIRTEK's team can also build and utilize containment areas for control, monitor negative air pressure, coordinate and pull necessary permits, conduct terminal cleaning and ensure compliance with all health and safety rules and regulations, including coordination of firewall penetration installations and inspections of fire stopping in compliance with current fire codes.

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haust hood cleaning, dryer vent cleaning, and power washing. The company has several technicians with the prestigious Air Systems Cleaning Specialist (ASCS) designation as well as a Ventilation System Mold Remediation (VSMR) certification. AIRTEK is also certified by the National Air Duct Cleaning Association (NADCA) and is a member of the Indoor Air Quality Association and the Green Mechanical Council.

Clients have included the Scripps Research Institute, Hoag Memorial Hospital, Rady Children's Hospital San Diego, North County Neurology, Sharp Hospital, Imaging Health Care Specialists, Escondido VA Clinic, Aviara Health Care Center and Vet Medical Center.

## CMS/CDPH and OR Humidity



*Martin Schoonderwoerd, MBA, CHFM, FASHE  
Director of Engineering  
Sharp Metropolitan Medical Campus  
CSHE Immediate Past President*

We recently received the following question from one of our members: “Has CDPH adopted the lower 20% Relative Humidity (RH) limit for anesthetizing locations as defined in ASHREA Standard 170?” We called CDPH, but have not received a response. Tony Moddesette informed me that the California Building Standards Commission Code Committee

adopted it for the next CA Mechanical Code cycle.

Answer: CDPH and CMS are still citing the 1999 edition of NFPA 99, section 5-4.1.1 that recognizes 35% as the lower acceptable limit of relative humidity in anesthetizing locations. CMS has advised hospitals that **if they are cited for RH below 35%**, they should request a waiver to use the 20% lower RH limit that is now recognized by CBC/Title 24, ASHRAE standard 170, and recognized by The Joint Commission (TJC). Please note that if a hospital requests the waiver before they are cited, it will be disapproved.

The new NFPA 99 2012 edition is expected to be published in September or October 2011 and it does not mention any minimum humidity; it refers to ASHREA Standard 170 which presently establishes

20% lower limit. Doug Erickson, ASHE has a verbal commitment from CMS that they will be willing to discuss the issue at a Healthcare Interpretations Task Force (HITF) meeting. Hopefully, they will agree with TJC to observe that section in the 2012 edition of NFPA 99 for OR humidity, similar to the agreement to observe the 2005 edition with regard to oxygen storage.

Until that happens and 20% is universally accepted, the risk assessment and waiver request is a hospital’s “get out of jail free” card with CMS. You may contact Joyce Jones at [jjones@calhospital.org](mailto:jjones@calhospital.org) for a copy of the risk assessment; this tool was developed and vetted internally by Infection Prevention, OR managers, and Safety at Sharp Healthcare in San Diego and is used whenever RH is outside the 20% - 60% range for documentation and decision-making.

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- Originally, the SCAQMD decided to retroactively apply this to applications submitted after 1/1/2011. The decision was highly unusual because it would have required facility operators to retrofit the already permitted, recently installed generators with expensive filters.
- The SCAQMD subsequently received numerous complaints from the regulated communities and engine manufacturers/suppliers. In the latest public meeting, the AQMD has apparently softened its position on the effective enforcement date from 1/1/2011 to 1/1/2012. The removal of the retroactive requirement from the proposed amendment positively affects many facilities that have installed a new generator dating back to 2007.
- While the SCAQMD has made concessions on the effective date, it has also added more stringent provisions to the originally proposed amended rule. It has bundled the so-called “sensitive receptor” such as hospitals and convalescent homes, with school grounds (as in currently effective Rule 1470) in which particulate filters are non-negotiable under any circumstances.
- Currently the proposal will also expand the definition of “schools” from the traditional K-12 to also include preschools and child care centers. Particulate filters will also be mandatory if the engine stack is within 328 feet of residential homes or hospitals.
- The other facilities that are not captured above: instead of installing a particulate filter, the applicant may elect to perform a health risk assessment to prove the cancer risk is below the threshold (1 in a million). How-

ever, if the calculated risk is above the limit, a filter will still be required.

The California Hospital Association, in conjunction with the California Society for Healthcare Engineering, Inc. (CSHE) has joined to oppose this proposed amendment until such time that the reliability of the additional requirements can be established. This opposition was submitted in writing to SCAQMD on June 16, 2011 and subsequently resulted in the SCAQMD meeting with representatives from CHA/CSHE to further discuss concerns related to the proposed amendment.

The above was intended to outline the current state of the proposed amendments to rule 1470 and I am sure that this has also raised a lot of concerns and questions among those who may be considering installing a new generator. Unfortunately this issue has not yet been finalized so we will continue to work towards an acceptable resolution. This issue currently will only affect those who are regulated by the South Coast Air Qual-

ity Management District (SCAQMD) but as we have seen in the past amendments such as this will ultimately affect hospitals statewide. The SCAQMD may make further amendments from now until the October public hearing. If your facility does plan to install a new diesel generator in the near future, it is important to monitor the regulatory development closely.

I have been asked by Pat Silvestri, CSHE State President, to form an AQMD task force to keep a close eye on this and other potential issues that could affect healthcare facilities across the state. This task force will monitor potential new or proposed amendments to existing regulations and keep CSHE updated accordingly. Watch for future updates to be delivered via the CSHE News and potentially from Joyce Jones via email. Feel free to contact me @ [devin.hugie@providence.org](mailto:devin.hugie@providence.org) if you have questions, concerns, or need additional information on this or other AQMD related issues.



## CSHE Welcomes 56 New Members

### CENTRAL COASTAL

**Ramer, Lee**  
Ventura County Medical Center

### CENTRAL VALLEY

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Hackley Architectural Signage, Inc.

**Diem, Robert**  
Aqua-Serv Engineers, Inc.

**Sheehy, Adam**  
Hilti, Inc.

### INLAND

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HCI Systems

**Long, Travis**  
Aqua-Serv Engineers, Inc.

**Luna, Robert**  
Market Contractors LTD

**Robison, John**  
Mazzetti Nash Lipsey Burch

**Sandoval, Jared**  
Doheny Eye Institute

### KINGS RIVER

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Antelope Valley Surgery Center

**Lewis, Michael**  
Lewis C. Nelson & Sons, Inc.

**Sutton, James**  
Tulare Regional Medical Center

### LOS ANGELES

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Advanced Filtration Concepts, Inc.

**Leader, Geoff**  
Aqua-Serv Engineers, Inc.

**Long, Christophe**  
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**Nicholson, Earl**  
Kindred Hospital - La Mirada

**O'Brien, Julie**  
VFS Fire & Security Services

**Perez, Manuel**  
Tarzana Treatment Centers

**Reyes, Victor**  
Kindred Hospital - San Gabriel

**Reynolds, James**  
South Coast Mechanical, Inc.

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Nu Flow America

**Soupos, James**  
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Western Waterproofing

**Metcalf, Barry**  
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**Reiser, Jay**  
Miyamoto International

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Hilti, Inc.

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Aqua-Serv Engineers, Inc.

**Gilbert, Cary**  
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**Goebel, Edward**  
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**Whitehall, Chris**  
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Carter Brothers, Inc.

**Eller, Tom**  
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**Glover, Kenneth**  
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**Hendricks, Orrett**  
Johnson Controls

**Kahn, Ali**  
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**Martinez, Rene**  
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**Lukina, Greg**  
Cahill Contractors, Inc.

**Mezuel, Jackie**  
Alliance Environmental Group, Inc.

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