

ISSUE

32

SPRING 2019

Lodging Engineer

The Electronic Magazine for Hotel Engineers

1st Person



**Interview with
Samuel Garcia
Chief Engineer
The Pacific Terrace
Hotel**

Featuring:

- * 3 Tips to Elevate Your Hotel's Guest Experience
- * How to Reduce Legionnaires' Disease Risk
- * Enhanced Sprinkler Protection for Hotels in the Wildland-Urban Interface
- * Silicone Tape One of the Best Kept Secrets of Hotel Maintenance
- * Summerize Your Sprinkler & Irrigation Systems

**NAHLE Announces
Summer Webinar Series:**
"How to Drive Revenue For
Your Hotel With Professional
Outdoor Lighting"
&
"Reducing Legionnaires'
Disease Risk
from Hotel & Resort Properties"

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Lodging Engineer

LODGING ENGINEER™ reports about people, events, technology, public policy, practices, study and applications relating to hotel and motel engineering, maintenance, human communication and interaction in online environments.

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Robert Elliott, Editor



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**HOTEL
HOLIDAY**

1st Person Interview

Samuel Garcia
Chief Engineer
The Pacific Terrace Hotel

By Robert Elliott



I am happy to say that I met you as a result of you signing up for our training program for hotel engineers, the Certified Director of Engineering (CDOE). As we spoke I realized you work at a really nice property that I think our readers would find interesting as well learning about you and your staff and, the ownership of a California beach-front property. Can we start with you telling our readers a little about yourself and how you got started in hotel engineering and maintenance?

In 2013 I applied and started here as the maintenance supervisor. I had recently just decided I wanted a career change. I felt like I was getting burned out working in the commercial abatement, hazmat and demolition field. I was a project manager/superintendent, I also did scheduling...all sorts of things. I've always been a hands on type of guy. Since I was a kid, I always like to take things apart.

Could we start with you describing your property for our readers?

It is 73 room boutique hotel. We are ocean front and have only seven rooms that are considered non-view. All others have a view of the ocean and that includes our junior suites, master suites, family suites, coastal suites and sunset suites. They all vary in sizes and square footage. Our large suites are about 900 square feet. They have Jacuzzi tubs, walk-in showers, his and hers sinks, separate bathroom and toilet area. They also have a separate bedroom and a living room with a kitchen and kitchenette with a bar, two balconies and you are right on top facing the sand and ocean. We don't have a full kitchen or restaurant, but we provide room service for dinners and other meals. Say a guest wants a special dinner, we will go and get it and bring it right to their guestroom. We do have a kitchen area. We provide a buffet breakfast, drinks and snacks throughout the day.

Basically, our hotel is three story wood stick with stucco with an underground concrete garage for parking. We have an asphaltic built-up flat roof with reflective gravel. The hotel is shaped in a U so almost all rooms have an ocean view. The rooms have glass windows and sliding doors. The glass is all insulated, double-pane, soundproof and weatherproof. And, our property has two elevators. It's not that easy to get lost here.

Any amenities or unique features you want to mention?

Since we are in San Diego there are plenty of golf courses and most are within a few minutes drive. We have plenty of attractions; Belmont Park, Sea World, the San Diego Zoo to name a few. There are boating docks within a few minutes drive. There are plenty of restaurants here and actually a lot of them are within walking distance of the property. And something important to hotel engineers as we're not tourists, there are a lot of coffee shops nearby....

Does your property have any meeting space?

Actually we do, it's called the Cayman Room. It has a pretty long conference table that comfortably seats up to 18 people. It has a fixed screen TV, WiFi, and a speaker phone system that accommodates conference calls.

"This creates a family type atmosphere and corporate structure which is a pleasure to work to under."

You are owned by Richard Bartell of Bartell Hotels. Could you speak about this group and their structure?

There are eight properties local here in San Diego. Most, or at least six or so are beachfront properties. Five of them have fishing and boating. Our property here, in my opinion, is one of the nicest ones, though not to say the others aren't just as nice. **I understand...it's hard to work there and not be a little biased.** The Bartell properties are managed by the Bartell family and don't use the services of a hotel management company. This creates a family type atmosphere and corporate structure which is a pleasure to work to under.

Can you talk a little about the staff you manage and your property's staffing?

We have approximately 70 employees here at this property among all the departments. In our engineering and maintenance department, I have myself as the chief and five full-time maintenance engineers.



I'd like to think there are some chemical effects of being an oceanfront property. Do you have specific preventive maintenance activities to combat corrosion?

Corrosion is a problem. If I buy a new light fixture and set it outside within a year it will be gone. So I am constantly looking for new products or materials and specialty epoxies designed for extreme atmospheric conditions. You have the sun baking it during the day and then you have the salt and sand and moisture. It will rust everything within months, for example the metal antennas on the rooftops.

"For preventive maintenance we're always touching up and painting."

Do you find that any specific paints work better than others in these conditions?



I'm in the process of trying different types of paints right now. I do use Dunn-Edwards paints. I work a lot with epoxy primers. It is a two-part primer and takes a little longer to work it but we do apply it over all of the railings and our balcony railings. We sand them down, apply the primer and once it dries we apply the exterior paint on it. It has helped, but still within a year or so I have to do touchup or repainting everything. Once again just because the sun fades everything out and we give it an update. One of the first things I wanted to do when I arrived at the property was to use oil-based paints, but it is illegal here and they don't allow us to use oil based paints on the property.

What do you subcontract out at your property?

We sub-out our plumbing like what we get from our backflow, annual backflow testing and compliance. On sewer lines and plumbing we do that once a year, that also gets sub'd out. Any type of glass work I have that's sub'd out. Any major repairs in a room when we have to do a remodel. Like last year, we upgraded all of our vanity areas and that was subcontractors who actually did the work. Also, all the new electrical, new plumbing, new sinks and granite counter-tops were subcontracted.

And everything else is just maintenance and that is what we do. We do most of this in house, if something breaks we take care of it. My guys can do a little stucco, a little drywall, and tile.

Lodging Engineer

Who do use for supplying your inventory, like Home Depot or Grainger?

I use both of those companies. And, I use American Hotel for certain things. I usually buy according to whoever gives me a better deal.

Why do use one company over the other?

It depends on what I need. When it's more industrial I go with Grainger obviously. For electrical, I do have our own providers and that's all they deal is electrical. And we deal directly with them. Grainger's specialty is more industrial and electrical. Or, I go through an electrical supply company. For plumbing, I go through other companies, like Standard Plumbing, or I use Plumb Master. And for day to day things or in case of emergency I have Home Depot as they are just a short drive away.

What do you use HD Supply for?

I get AC filters from them, for example. All our guest rooms have two phone lines in the room, one corded and one cordless. I do orders over the phone with them, they give me a really good price on specialty type purchases. I buy other types of supplies from HD Supply too like door latches. And, I get crew maintenance things from American Hotel like brooms, shovels, cleanings supplies, what ever is needed for maintenance supplies. Oh, and sometimes I get from them microwaves.

Savings on utilities has been an important issue for the industry. Are you doing anything with energy management?

All the electrical lights here on the property are LED. We've replaced everything, all incandescent bulbs, everything. All our guest rooms have occupancy sensors so the lights shut down if there is no movement in the room.

So it's an electrical sensor that's turning the lights out and lowering the temperature, things like that?

Correct. You open the door, the AC will turn off automatically because, unfortunately, some guests leave their balcony door wide open with the AC blowing full blast while they are enjoying the sunshine and cool air outside. This is hard to prevent.

Can we talk about water distribution for your hotel?

We have a system that automatically, like a chemical feeder, has sensors that tell you as soon as something goes wrong like the water temperature goes below a certain level or it adds on the bio side or sets off an alarm to go check on it. I don't have to be tracking it going and reading gauges and things like taking a chemical analysis of the water on a daily basis because the meter will automatically send it out for me and then I get a report once a month with updated data.

Do you have any any concerns or take any precautions regarding water quality?

That is one of the areas where my water expertise is not that high. All I have is the Certified Pool Operator for that part, but everything else I sub out to a company called Clear Water Technologies, they're located here in San Diego. They come out and check the city water, ph and alkalinity, they check all that.



Obviously you have a lot of nice furniture with different types of upholstery. Do you do furniture repairs in house or do you sub that out?

It depends on what type of upholstery it is. We do our own chairs and stuff like that. We do repairs on our headboards and foot-boards. I sub out bed-frames because it requires more highly skilled workers. If it takes my guys more time to do or if it is not our specialty I will send it out. I'm also concerned with getting it in and out of my hotel property. It may take longer, especially if it is heavy, like some wood furniture. This could be a real liability for my guys. I don't want one of my guys to hurt his back or something. I want to do all we can to avoid any accidents.

So with a scrape or dent in the wood you might put a stain on it but if it is damaged you look outside for somebody else to do that?

I do always have extras here for the rooms so in case I need to I can replace it quickly. And then the damaged part I can just call up the contractor and they can come and get it and take it with them. So I like to have a system in place. I always have extras for everything.

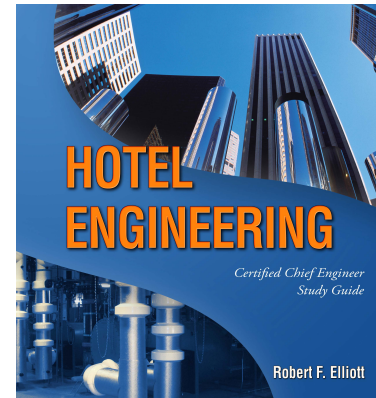
What do you do with older furniture, bed frames, stuff like that? Is there a market of some sort where you can sell it or discard it?

We do sell them, but we pretty much put it for sale for our staff here at the property. And they give a really discounted price so our staff can enjoy the nice furniture that we have and anything that doesn't sell we pretty much give away or donate. Usually they sell pretty fast as we only have 73 rooms.



How did you come across applying for Nahle's certified engineering program?

I've always believed in training and with the proper training anyone can succeed. I started asking around when I started working for the property a couple of years ago y j g p" they implemented a new program and it was designed for all employees, it's called "It Starts With Me." They're trying to get more staff go r q y g t g f " c p f " involved in the property and getting to "know how to treat the guest. I was speaking with Mr. J c t q r f " E q q m asking is there any kind of training that teaches hands on electrical, plumbing that applies just to the hotel industry? And he says, "Well, I don't know but I'll look around." So, he helped me out there a little bit and I just started asking some questions looking around. I spoke with chief engineers from other properties from our same group and none of them have this or know about this training. So he brought it up to me, he said , "I heard there is a chief engineer training, you have to look it up on the Internet." So I went there and I found you and I said that is what I really think I should do to help me get my people better prepared to deal with any type of aspect here in this industry.



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National Association of Hotel & Lodging Engineers

"It Starts With Me."

What do you see in terms of the industry itself and for maintenance professionals specifically in hotels and the challenges? Getting staff and competing w/ contractors, any challenges here?

For us, manpower is a big problem because the reason is there are a lot of guys out there that know a thing or two like how to change a light bulb and they can do little basic items like that, but when it comes to doing it in a fast efficient manner and leaving it with a high-end cosmetic appearance at the end like doing the caulking or the grout at the showers and the bathrooms they have to know how to remove the old grout and put in new grout and make the lines nice and straight and seal it afterwards. It is hard to find that kind of personnel that know how to do that type of work and that are willing to work in the hotel industry because they can go to construction and they will get paid a lot more in that industry for the same type of work. And that is the kind of challenge that we have here because the hotel k p f w u t { "does not pay that much."

Is there one thing you find very interesting or challenging working at a boutique hotel on the beach in San Diego?

One thing I would like to mention, that I think is unique to this property since we do have a 97 to 100% occupancy rate through-out the entire year, that's the challenge for us. We only have a few hours to perform any kind of maintenance or repairs in a room because the room is already booked. So between check-out time and check-in time is basically the amount of time I have to go in there and do preventive maintenance. I'm doing the touch up, just any little thing like greasing up the moving sliding glass doors, doing HVAC au we have water sourced heat pumps inside each room. So we have to flush out the system, we're changing out the air filters, we're cleaning the coils, cleaning the condensate line. So it's multiple things and we only have a few hours before I have to turn it over to housekeeping so they can wrap up what they got to do, because at 4 pm we have a guaranteed check in time. So that's a little bit of a strain on a fast pace work environment we have here.

That's an incredible occupancy rate that certainly speaks to your hotel.

Yes, it's something we are all very proud of here.

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JIM MORRIS
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for Hotel Properties

With over 20 years of outdoor lighting experience, Jim champions innovative outdoor lighting techniques for hotels, resorts and other hospitality venues.



TOM MCCOMBS
Field Support
for Hotel Properties

Tom's primary focus is educating his clients on selecting the right combination of lighting solutions for guest safety, property highlighting, and greater exterior space functionality.



By **JIM MORRIS**
Outdoor Lighting Perspectives

3 TIPS TO ELEVATE YOUR HOTEL'S GUEST EXPERIENCE

with Outdoor Lighting

What are you guests saying about your property when they arrive at night? Do they feel safe and secure walking around the property? Are they able to enjoy your outdoor spaces after the sun goes down?

These are all important questions to ask yourself about your hotel property, as they can make a big impression on your guests and their experience—in either a good way or not. Professional architectural and landscape lighting is essential to differentiating your hotel from the competition and enhancing the guest experience. By simply implementing the following three easy tips with a professional outdoor lighting partner, you can help drive revenue for your hotel by attracting guests, generating positive reviews and better utilizing your outdoor spaces.

1 LEAVE A LASTING IMPRESSION

with a beautifully illuminated exterior

You only have one chance to make a first impression—so be sure it is a positive one! A stunning front façade can make a lasting impact on your guests. Make them say “wow” when they arrive at night by highlighting your building’s architecture and landscaping. With the proper lighting, you can show off unique features of the hotel, set expectations for your client’s visit, and give them a preview of what’s to come inside—all while standing out from the competition.

“WHEN YOUR GUESTS FEEL SAFE AND WELCOMED, THEY ARE MORE LIKELY TO REFER YOUR HOTEL TO A FRIEND, REPEAT THEIR VISIT AND LEAVE YOU A GREAT REVIEW.”

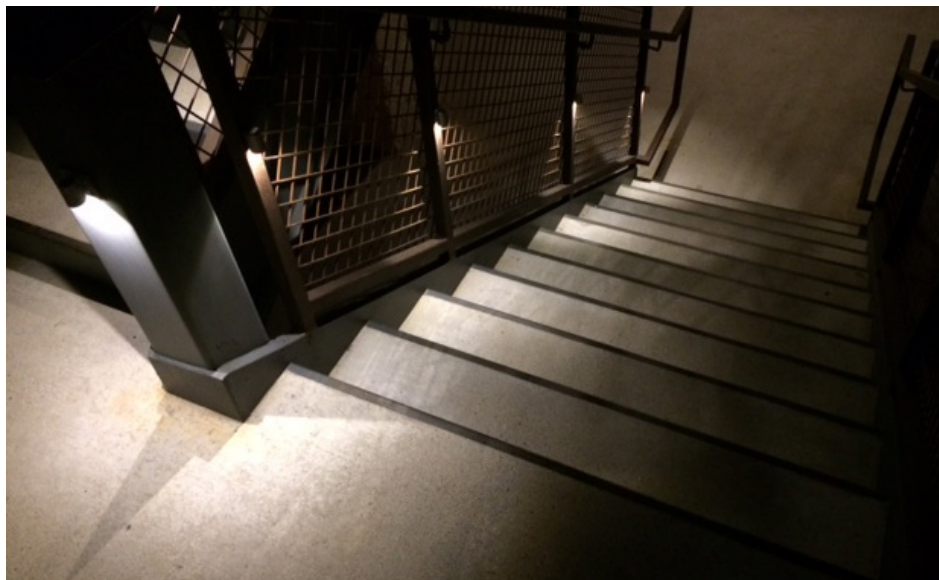
The exterior of your property is the first and last thing that your guests will see, so you want to ensure it’s sending the proper message, especially at night. Not only does professional outdoor lighting create a better experience, but it also helps the guest feel safe and secure

2 CREATE A SAFE & COMPLIANT ENVIRONMENT *with pathway lighting*

Not only does inadequate safety and security put a hotel property and its guests at risk from problems like theft, but hotels can also be held liable for accidents or criminal acts committed on their property. One act of violence against a guest can destroy a hotel's reputation. That's where outdoor lighting can come in.

One major study found that outdoor lighting can cut crime by up to 39%.¹ Adding outdoor lighting can help eliminate any dark or heavily shadowed areas on the property—detering intruders from lurking about.

Whether it is walking to the car, exploring the property or walking to another building, pathway lighting is one way to help ensure safe passage for guests. Not only does it help prevent trips and falls, but it is also good news for your insurance. Some insurance companies will offer discounts for updating or enhancing outdoor lighting systems.



3

CREATE SPACES FOR GUESTS

to gather and enjoy the night

Outdoor gathering spaces are key to providing your guests with a unique experience and can help differentiate you from the competition. An experienced outdoor lighting company can custom design a plan for your outdoor lighting space to add beauty and functionality to impress your guests.

HERE ARE SEVERAL WAYS YOU CAN HIGHLIGHT KEY AREAS OF YOUR HOTEL:

BISTRO STRING LIGHTING

Provides warm light for outdoor events including weddings, event receptions and outdoor dining areas.





UP LIGHTING

Highlights unique architecture and features of your building including stunning trees, beautiful garden spaces or focal points such as fountains or statues.

DOWN LIGHTING

Creates a beautiful flood of light on any outdoor gathering space or walkway.



Outdoor landscape lighting is one of the most effective ways to add beauty and value to your hotel property. By illuminating key outdoor areas, you can leave a lasting impression on your guests, help them feel safe, and provide outdoor areas to enjoy long after the sun goes down.

By providing these benefits to guests, you can increase ROI for your hotel by extending the usability of your outdoor spaces and improving your guests' experiences while on your property. With a better experience, you can bet that guests will tell their friends and maybe even leave you a raving review. By implementing these three simple tips with a professional outdoor lighting partner, you can be sure your guests will experience the difference.



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¹ LEDs Magazine – By Ray Molony, Publisher, Lux and Lighting Magazine, March 13, 2018. The Impact of Street Lighting on Crime in New York City Public Housing, October 2017 University of Chicago Crime Lab New York

NAHLE's Summer Webinar Series

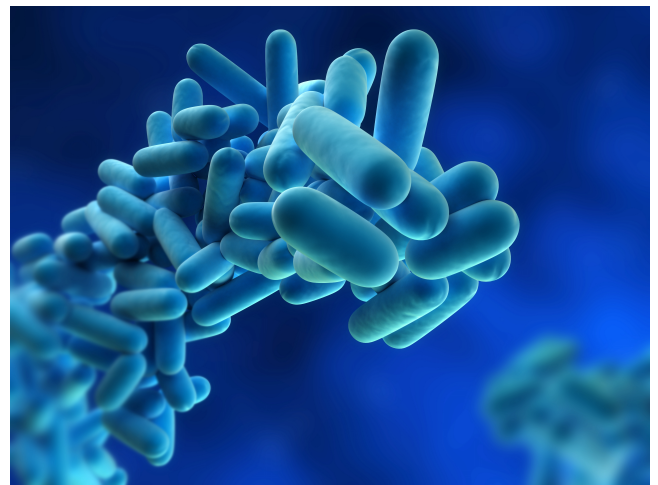
Announces our 2nd Educational Webinar

June 7: 12 noon EST

Reducing Legionnaires' Disease Risk from Hotel & Resort Properties

Objectives: Hotel and lodging professionals will learn:

- What Legionnaires' disease is and how it's connected to building and cooling tower water
- What lodging engineers can do to reduce the risk of Legionnaires' disease stemming from the properties they manage
- The basic components of an effective water management program
- How to find practical resources to create and implement a water management program for their facility



Speakers

William "Chris" Edens, Centers for Disease Control & Prevention (CDC). Chris is an epidemiologist and member of the *Legionella* Team of the CDC's National Center for Immunization and Respiratory Diseases.

Bill Pearson, BPEARSON Consulting, LLC. Bill is Vice Chair of ASHRAE Standard 188 "Legionellosis Risk Management for Building Water Systems" committee and a Certified Water Technologist (CWT) with more than 40 years' experience in the water treatment industry – specializing in *Legionella* risk management. Bill has written numerous publications covering various aspects of water treatment and legionellosis and is the primary author of the Association of Water Technologies (AWT) *Legionella* 2019 position statement and guidance document.

Patsy Root, IDEXX Water. Patsy is a member of ASHRAE Standard 188 "Legionellosis Risk Management for Building Water Systems" committee. She has 12+ years' experience in water microbiology, water-related regulations and environmental laboratory accreditation and is a long-time participant in standards development for laboratory accreditation with TNI, Standard Methods for the Examination of Water and Wastewater and ASHRAE.

You can still **REGISTER HERE** for our webinar:

**"How to Drive Revenue For Your Hotel
WITH PROFESSIONAL OUTDOOR LIGHTING"**

Friday, April 26, 2019
2:00-3:00pm EST

How to Reduce Legionnaires' Disease Risk from your Properties



by
Kristin Majeska,
IDEXX Laboratories

Two and half months after a Legionnaires' disease outbreak was traced back to his New Hampshire beach property in July 2018, the Sands Resort and its owner were still in the headlines. Sixteen people were hospitalized, and one death was associated with the resort. The resort's hot tub was identified as the most likely culprit, although testing also revealed contaminated showerheads, taps, and a water heater.

A mid-scale hotel in central Texas, a luxury hotel in downtown Chicago, a casino in Las Vegas and many more properties have faced similar headlines. Legionnaires' disease is big story and with good reason: one out of ten people who are diagnosed die from the disease.

But it doesn't have to be this way. According to the U.S. Centers for Disease Control & Prevention, nine out of ten Legionnaires' disease cases could have been prevented by effective water management programs. The CDC recommends that building owners and managers develop and use a water management plan. A Water Management Plan (WMP) should include testing water samples for the pathogen *Legionella pneumophila*, which is the primary cause of Legionnaires' disease.

Legionnaires' disease is a form of pneumonia caused when *Legionella pneumophila* in water becomes aerosolized, and the tiny contaminated water droplets enter the lungs and infect a susceptible person. For example, Legionnaires' disease victims may have inhaled moist contaminated air from a shower, hot tub, decorative fountain or nearby cooling tower. Because pneumonia is a disease of the lungs, swallowing water that is contaminated with *L. pneumophila* is much less of a risk. *L. pneumophila* growth in a building is a function of factors such as water stagnation from inconsistent use or "dead-legs," low disinfectant residual, and conducive temperatures. An effective water management plan controls *L. pneumophila* growth and aerosolization risks on a property.

Lodging engineers understand their facilities inside and out. That knowledge is key to reducing Legionnaires' disease risk; protecting the health of hotel guests and employees; avoiding costly outbreak investigations, remediation, and lawsuits; and protecting the reputation of the property itself.

Water management plan basics

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Standard 188:2018, *Legionellosis: Risk Management for Building Water Systems* is the only ANSI accredited standard for reducing *Legionella* risk. ASHRAE Standard 188, and the accompanying ASHRAE Guideline 12, *Minimizing the Risk of Legionellosis Associated with Building Water Systems*, lay out the criteria and steps for effective water management plans. Once a standard is established in an industry, it becomes a "standard of care" and it becomes much harder for courts to dismiss claims of negligence if the standard is not followed.

Although responsibility for developing and executing a water management plan most often falls to a property's head of engineering, ASHRAE Standard 188 recommends forming an interdisciplinary water safety management team to create and regularly review a WMP to ensure *Legionella* risks are being adequately controlled. The team should include the person most familiar with the site's water features and plumbing, the water treatment provider and members of the property's general management and communication teams, among others.

An outside consultant is often helpful to expedite writing a WMP and ensuring all areas of the standard or guide are followed. However, familiarity with the specifics of a facility, and understanding and buy-in from the on-site team are equally important because local facilities staff will be implementing the routine controls, performing maintenance and know when repairs or renovations are to occur that may impact the plan's success.

The ASHRAE Standard 188 WMP includes seven major steps. You can find more information on each step [\[here\]](#) as well as in the [CDC's toolkit](#) "Developing a Water Management Program to Reduce *Legionella* Growth & Spread in Buildings".

Seven Major Steps of a *Legionella* Water Management Plan

1. **Create a water safety management team**
2. **Describe the water system and cooling towers**
3. **Identify areas of risk**
4. **Decide where to apply control limits**
5. **Determine corrective actions to be taken when needed**
6. **Perform verification and validation**
7. **Document and communicate all activities**

"A hotel in Waco, Texas was hit with a \$1 million lawsuit in damages from an attorney who claims he fell ill after spending six days on the property and that the hotel had a history of outbreaks."

What needs to be included

Before assembling your team, decide which properties your plan or plans will cover. The ASHRAE Standard 188 identifies types of water systems that require inclusion in a WMP, including decorative fountains, misters, water features, humidifiers, and cooling towers. The standard also lists building characteristics that should be considered, for example, buildings with centralized hot water systems or more than 10 stories. But you'll want to take a hard look at your specific buildings. A national study just released by Environmental Protection Agency (EPA) researchers found sporadic detections of

Legionella pneumophila at 38% of 108 cold water taps at a range of locations. There wasn't a meaningful difference in *L. pneumophila* detection frequency between buildings of different sizes and uses, or even between single-family homes and office buildings. Newer buildings weren't exempt either — office buildings less than 20 years old were as prone to *L. pneumophila* detection and persistence (multiple detections at the same sampling site over time) as older buildings⁴.

Consistency is also important. Even if a WMP isn't technically required for a specific building per ASHRAE Standard 188 guidance, it's still a good idea to review your portfolio to ensure you are taking precautions in all properties, such as maintaining and documenting temperature or disinfectant residuals, or flushing. A guest or their family will find that hard to accept if they fall ill from Legionnaires' disease from exposure at a property where consistent controls were not in place.



Cooling Towers



Hot Tubs

A single WMP may include multiple buildings with different uses, but only if they are located at the same site. Even if you manage multiple buildings with very similar characteristics, they'll each need an individual plan if they are at different locations. This level of specificity enables the water safety management team to factor in the site's water sources and location relative to those sources as well as changes or repairs to the building that may have been made over time.

Getting it done: water management plan resources

A working group of ASSE International, the plumbing and mechanical services certification body, is currently drafting the “*Professional Qualifications Standard for Legionella Water Management Specialists*”. In the interim, when looking around for an advisor,

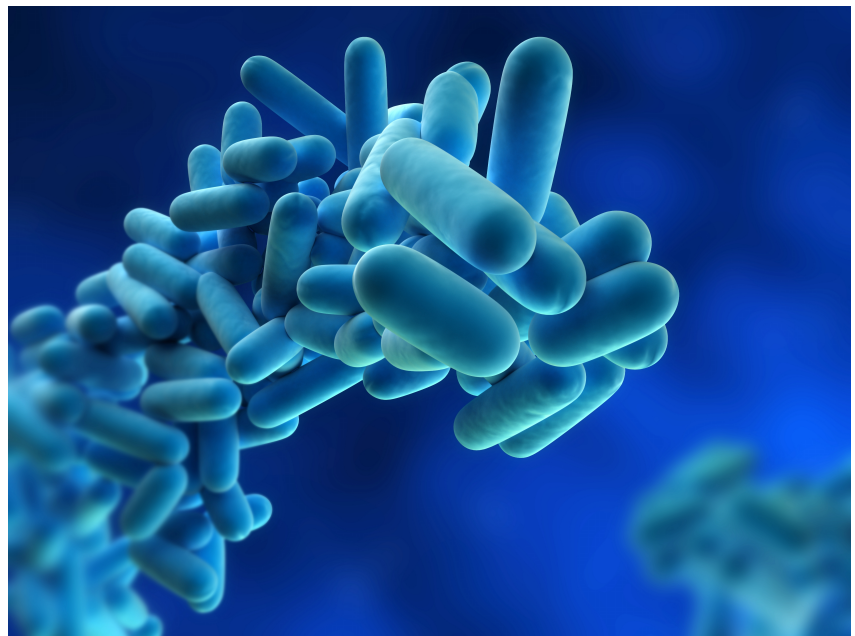
Consider the CDC’s recommendations for assessing potential WMP consultants:

- * Environmental assessment expertise
- * Remediation expertise
- * Water management expertise
- * Knowledge of codes, standards, and regulations

If you are responsible for multiple facilities, you may also want to consider a water management plan software application. HC Info’s LAMPS system is one option for developing WMPs tailored to specific sites and also offers cloud-based hosting for multiple plans, including verification and validation testing results, in one place.

How to make sure your plan is working

Like any plan, once written, a WMP is only as good as its thoughtful execution. Your WMP needs to be a regularly updated document based on what the team is learning about the system and data from monitoring. First, it’s important to verify and document that the controls and actions in your plan are being completed as scheduled, for example, flushing, cleaning, and maintaining a certain water temperature at extreme points in your systems. If verification shows the planned activities are not taking place, the team must address these oversights.



Legionella pneumophila

Do you need to include routine microbiological testing in your plan or are regular water chemistry tests enough? The best way to know for sure if your plan is accomplishing its purpose, controlling the risk of exposure to *Legionella pneumophila*, is by regularly testing for the deadly bacterium itself.

According to the American Industrial Hygiene Association (AIHA) working group on this topic, “*Proactive sampling and analysis for Legionella should be included as an integral part of any building water program.*” And, they explained their rationale in concrete terms: “*By implementing administrative, engineering and protective measures, based upon empirical measurement of the organism responsible for the disease in question, health risks to worker and building occupants can be reduced*”⁵. AIHA guidance documents released in 2016 provide examples of recommended sampling and testing frequencies which range from monthly testing for cooling towers and indoor fountains to annual testing of incoming municipal water⁶.

As incident after incident demonstrates, the cost and effort of regular monitoring as part of a WMP pale in comparison to the tremendous potential costs of months of testing, remediation, and reputational effect, as well as likely legal costs, in the event of a disease outbreak connected to your property.



Decorative Fountain

“We all know bacteria grow in our water systems. And we know that hotels aren’t always at 100% occupancy. Unfortunately, when water’s not being used or moving, residual disinfectant is lost, and aided by favorable temperatures, bacterial growth can occur. When that bacteria is Legionella, exposure from our building water systems can cause a pneumonia that’s deadly. Fortunately, the building engineering team can do a lot to reduce that risk.”

*-
Bill Pearson, water management plan consultant and subject matter expert in Legionnaires’ disease cases, including hotel properties.*

The WMP should indicate the interval between water testing, sampling points and maximum thresholds for testing results to trigger different levels of action. Those actions can range from a “simple retest and monitor closely” to a disinfectant or temperature change, or to a significant remediation and/or a decision by the water safety management team to update key-stakeholders.

A positive *L. pneumophila* test result can also lead to re-thinking the control measures designated by the water safety management team for that system or area of the building. In fact, in the absence of disease, a positive culture test result for *L. pneumophila* can be a valuable opportunity to dig into what might be happening and make the necessary adjustments, before a guest or employee gets sick. For that trending to be meaningful, it’s important that the testing be performed by an accredited laboratory using a highly reliable test method. The team needs to have confidence that any reported change in *Legionella* concentration over time is due to an actual change in the water quality at that sample site, rather than due to a variation in the testing media, or different protocol decision or subjective bacteria estimates made by different analysts at the laboratory.

Culture tests have the advantage of detecting only live, viable bacteria. This enables the water safety management team to assess whether *L. pneumophila* which were present at one point have been killed and are no longer able to cause infection because they do not show up in a culture. In this respect, culture tests can answer whether a control or remediation step is working. Culture tests are reported in number per liter or milliliter, (whether in colony-forming units or most probable number (MPN), the same units as action limit guidance found around the world. Having these action limits for reference helps the water safety management team make the right calls for its facility.

Choosing your laboratory partners

As new testing methods have emerged, more and more accredited laboratories are well prepared to provide [Legionella testing](#). Some laboratories also provided additional services such as on-site sampling or sample pick-up or they can arrange for your water treater to handle this function. When choosing a laboratory, look for national or state accreditation and consider the reliability of their methods, their turn-around time and level of services they offer in your area.

Routine testing of water samples for *L. pneumophila*, as for any bacteria, should be performed using a laboratory accredited to a national or international standard (e.g., ISO 17025, AIHA/EMLAP or TNI) with demonstrated proficiency in enumerating the bacteria of interest. This means the laboratory is able to provide data of known and documented quality.

This practice aligns with the recently updated ANSI accredited standard ASHRAE 188: 2015, Annex C.⁷

A hotel in Las Vegas that proactively tested for and found Legionella pneumophila, took remediation action and notified its hotel guests of the situation had a case against it dismissed by the district court judge.

Don't wait to get started!

Your guests and employees count on the engineering team to ensure they are staying and working in a safe environment. There are resources to guide effective water safety management planning. And with ASHRAE Standard 188 and ASHRAE Guideline 12 publicly available, there's both the expectation that a facility will reduce its Legionnaires' disease risk with a water management plan that includes routine testing for *Legionella pneumophila* and the opportunity to do so!

Author: Kristin Majeska, IDEXX Laboratories. IDEXX develops and manufactures the Legiolert® Test, an MPN-based liquid culture method that uses bacterial-enzyme technology to specifically detect and quantify Legionella pneumophila in water. Visit idexx.com/ReduceYourRisk to learn more about the Legiolert® Test or to talk with a water safety expert about your property.

¹Centers for Disease Control and Prevention. Legionnaires' disease. Vital Signs. www.cdc.gov/vitalsigns/pdf/2016-06-vitalsigns.pdf. Published June 7, 2016. Accessed April 2, 2019.

²Legionellosis fact sheet. World Health Organization. www.who.int/en/news-room/fact-sheets/detail/legionellosis. Published February 16, 2018. Accessed April 2, 2019.

³ASHRAE. Legionellosis: Risk Management for Building Water Systems. Atlanta, GA: American Society of Heating, Refrigerating and Air-Conditioning Engineers; 2015. ANSI/ASHRAE Standard 188-2015.

⁴M.J. Donohue, D. King¹, S. Pfaller¹ and J.H. Mistry, "The sporadic nature of *Legionella pneumophila*, *Legionella pneumophila* Sg1 and *Mycobacterium avium* occurrence within residences and office buildings across 36 states in the United States", *Journal of Applied Microbiology*, Published March 20, 2019 <https://onlinelibrary.wiley.com/doi/full/10.1111/jam.14196>

⁵American Industrial Hygiene Association. Comments on BSR/ASHRAE Standard 188P Legionellosis: Risk Management for Building Water Systems. www.aiha.org/government-affairs/PublicPolicy/ASHRAE%20FINAL%202011-10-14.pdf. Published November 10, 2014. Accessed April 2, 2019.

⁶American Industrial Hygiene Association. LEGG15-781: Recognition, Evaluation, and Control of Legionella in Building Water Systems. Falls Church, VA: American Industrial Hygiene Association; 2015:16.

⁷American Society of Heating, Refrigerating and Air-Conditioning Engineers. ASHRAE Addendum g to ANSI/ASHRAE Standard 188: Legionellosis: Risk Management for Building Water Systems. Atlanta, GA: American Society of Heating, Refrigerating and Air-Conditioning Engineers; 2018.

⁸Taylor v. Aria Resort & Casino, LLC, No. 11-CV-01360-KJD-CWH (D Nev July 27, 2012).



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by
Thomas G. Daly
MSc CSP CLSD

Enhanced Sprinkler Protection for Hotels in the Wildland-Urban Interface

In the early '80s a series of well publicized fatal high-rise hotel and office building fires in the

the United States resulted in the code development community instituting requirements for enhanced fire detection and suppression equipment and systems in high-rise buildings, hotels included, in the nation's building and fire codes. While that effort largely affected only new construction, many states¹, cities² and counties³ passed statutes and/or ordinances imposing those enhanced requirements for existing hotels as well. Many hotel owners and operators⁴ also voluntarily retrofitted thousands of hotels with such equipment and systems in the '80s and '90s.

The result? By the mid-90s fire deaths, injuries and significant property damage in hotel fires had plummeted to the point of statistical insignificance in the overall picture of fire losses in the United States⁵.



Fast-forward four decades. For existing and newly constructed hotels, within or at the wildland-urban interface (WUI), the threat from catastrophic fires is now largely from the outside, the result of structure exposure to massive wind-driven wildfires. That is especially true if such hotels are located within designated 'extreme/very high' or 'high' wildfire hazard zones⁶.

Since 2010, hundreds⁷ of people have been killed and injured, more than 50,000 structures have been destroyed and millions of acres of timber and animal habitat have been lost to wildfires. The period of 2015-2018 represents, to date, the pinnacle of historical losses of all types in western states wildfires in the United States. The largest loss-by-dollars fires since 2015 have all been wildfires⁸. The 2018 Camp Fire in Butte County, CA alone resulted in at least 86 fire deaths⁹ and destroyed more than 18,800 structures, historically California's largest wildfire ever.

¹Louisiana, Nevada and Florida were among states that did so.

²For example, New York City Local Law 16 (1984)

³The County of Maui, HI did so in the mid-90s.

⁴Hilton Hotels Corporation, the Sheraton Corporation, Westin Hotels & Resorts and the Marriott Corporation were among hotel industry members who mandated sprinkler systems, fire alarm systems and smoke alarms in all of their hotels, new and existing, regardless of height, in the mid-80s.

⁵See https://www.washingtonpost.com/news/post-nation/wp/2017/06/15/risk-of-high-rise-fire-deaths-in-u-s-has-dropped/?noredirect=on&utm_term=.cec92fc21218

⁶See, for example, the California wildfire hazard zone maps and update http://fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_maps

⁷See <https://phys.org/news/2018-11-deadliest-wildfires-states-1990s.html>

⁸See the NFPA report <https://www.nfpa.org/News-and-Research/Data-research-and-tools/US-Fire-Problem/Large-loss-fires-in-the-United-States/Largest-fire-losses-in-the-United-States>

⁹For a brief description of this fire's carnage see [https://en.wikipedia.org/wiki/Camp_Fire_\(2018\)](https://en.wikipedia.org/wiki/Camp_Fire_(2018))



The Caughlin Ranch Fire, November 18, 2011 Reno, NV.

We saw internally sprinklered hotels (among other types of occupancies)¹⁰ of Type IV construction burn to the ground in the Tubbs wildfire in Santa Rosa, CA in October 2016, the result of external exposure to that wildfire.

Traditional sprinkler systems inside buildings are no defense to this continuing wildfire threat. Earlier the fully sprinklered (internal) Two Elk Lodge on the top of Vail Mountain burned to the ground in October 1998, the victim of domestic terrorists, who torched the outside of the Type III heavy timber constructed facility. When rebuilt the following year external exposure sprinklers were added around the entire perimeter of the larger facility under the eaves.

So, what about external sprinklers?

The Standard for the Installation of Sprinkler Systems, NFPA 13, allows for, but does not require, external 'exposure' sprinklers. Some guidance is provided as to design requirements¹¹, but the expectation is that the building is otherwise sprinklered and the exposure sprinklers are in addition to standard sprinkler protection. External sprinklers are typically horizontal sidewall, extended coverage, corrosion resistant types, often closely spaced.



Nonetheless, external sprinklers alone have a proven record of success in wildfires. The 2007 Ham Lake and Gunflint Trail fires in northwest Minnesota proved the effectiveness of external sprinklers. In those fires dozens of homes equipped with external sprinkler systems generally survived those wildfires where adjacent homes without external sprinklers were lost¹².

In the more recent 2018 Camp Fire in Paradise, CA., one forward thinking homeowner who deployed external sprinklers and maintained defensible space saw their home survive while those around them burned to the ground¹³.

Western States routinely classify areas in their wildland-urban interface by their wildfire risk, producing maps¹⁴ to be used by local building and fire officials to evaluate the risk vis-à-vis applicable code requirements for structures.

Of the western and mountain states all but Oregon and Idaho adopt the International Wildland-Urban Interface Code (IWUIC), in addition to their state building and fire codes, to further address requirements for structures built in wildlands.

¹⁰On October 8, 2016 the fully sprinklered Hilton Sonoma Wine Country hotel and the adjacent Fountaingrove Inn and Equus Restaurant in Santa Rosa, CA were destroyed by the Tubbs fire, see https://www.youtube.com/watch?v=Ab0_X4b-KAA

¹¹See NFPA 13-2016 Secs. 7.7 and 11.3.2.

¹²For details of those successes, see 'External Sprinkler Systems and Defensible Space: Lessons Learned from the Ham Lake & the Gunflint Trail', J. Johnson, T. Downing and K. Nelson, Department of Forest Resources University of Minnesota, April 15, 2008.

¹³See this account of the success of external sprinklers in combatting wildfires, <http://www.philly.com/news/nation-world/paradise-california-camp-fire-homeowners-prevention-20181201.html>

¹⁴See the California state-wide map here http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_statewide;

However, that code has only been in existence since 2003, so millions of existing structures were built without regard to the wildfire risk.

A recent code change proposal for the 2021 International Wildland-Urban Interface Code to require external sprinklers for new Type III, IV and V¹⁵ (non-fire resistive) buildings, otherwise requiring sprinkler protection throughout and located within 'extreme' and 'high' wildfire hazard zones, went down to defeat.

NFPA's *Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural and Suburban Areas* (NFPA 1141-2017) requires sprinkler protection for residential buildings¹⁶, but not external sprinklers.



The Camp Fire in Butte County, CA., from space November 8, 2018, courtesy of NASA

At a minimum hotel owners, investors and operators considering building a lodging accommodation within or at the wildland-urban interface should consider the small marginal cost of adding exposure sprinklers when the hotel otherwise requires an internal sprinkler system.

For existing sprinklered hotels in the WUI, adding external sprinklers to an existing sprinkler system is generally possible at a modest cost and may improve their insurability.

How many more lodging accommodations must burn to the ground?

¹⁵See NFPA 220 (2018) Standard on Types of Building Construction, Chapter 4 for the definition of each type of construction.

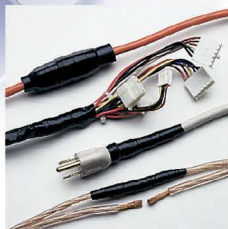
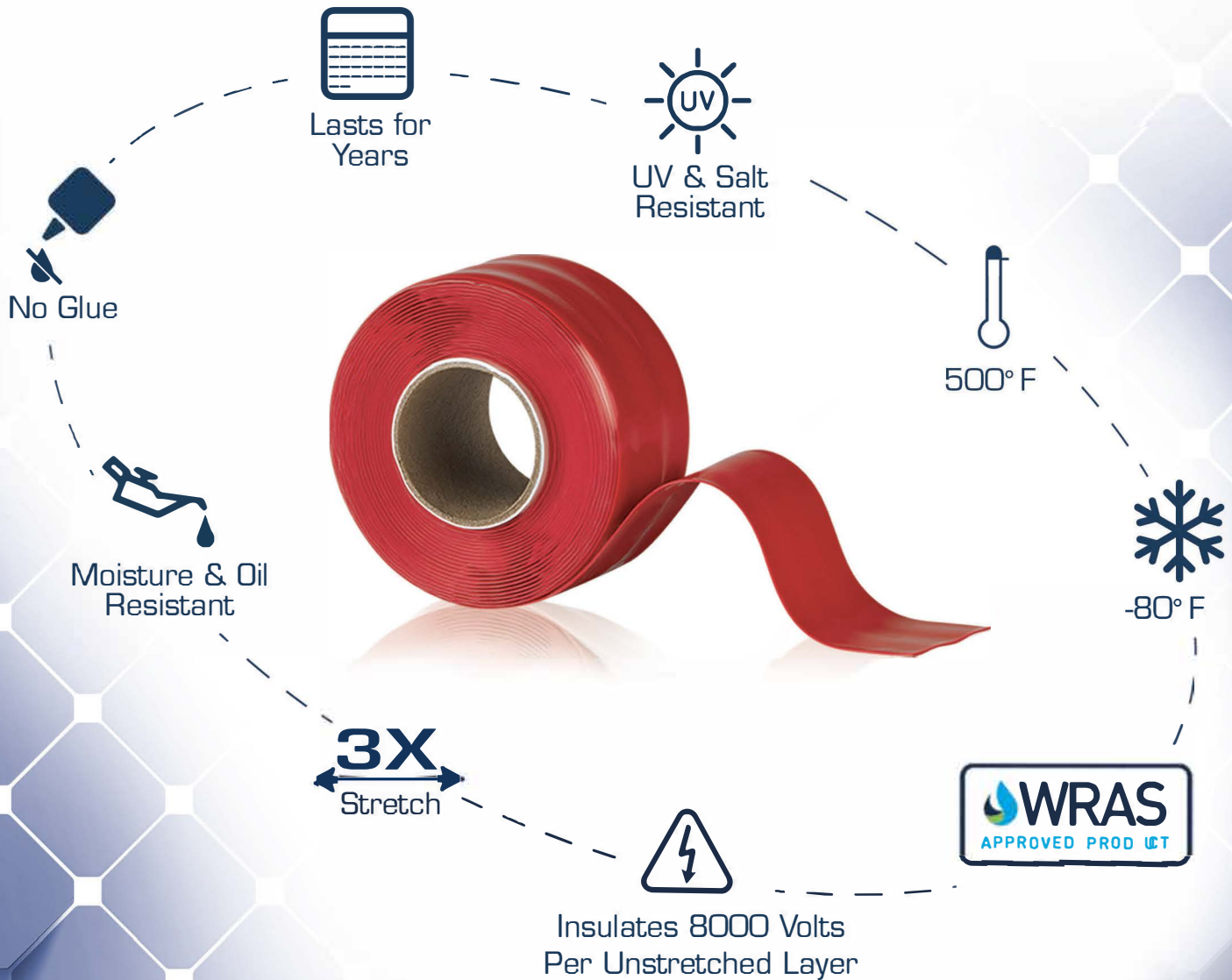
¹⁶See NFPA 1141 (2017), Sec. 8.1.2.

Thomas Daly is the President of the Hospitality Security Consulting Group, LLC and the retired Vice President Loss Prevention for Hilton Hotels Corporation (now Hilton Worldwide).

He is a past Chairman of the NFPA Lodging Industry Section and a past member of the NFPA Technical Committee on Automatic Sprinklers.

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The night clerk wakes you from a dead sleep. They have discovered a severe leak and it needs attention right away. When you get to the hotel, you stare at a repair that can't be fixed because it is more severe than anticipated and will require a contractor. If you're lucky, you can shut off the source without customers knowing—but what if you're not? What if it's a hot water line servicing part of the building? That could lead to annoyed guests.

As important as it is to have the front of the house picture perfect for your guests, sometimes it's the things that they can't see that could affect their stay the most. These are the things that you are personally responsible for overseeing.... a hole in the sprinkler system, leaking pool fittings, or even unsightly rust on things like golf carts or deck furniture. All of these can influence a visitor's stay and adversely affect their opinion of your facility. It is paramount to have every tool in your arsenal available to you and your team.

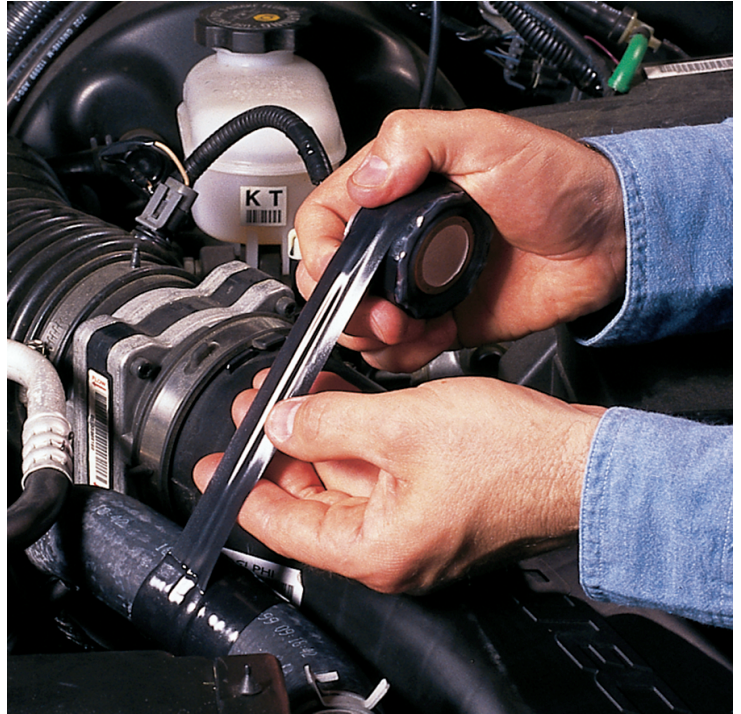
That is why something as simple as a roll of silicone tape is such a versatile tool to have. Non-adhesive, self-fusing silicone tape is used in hotels across the country. Silicone Tape can withstand temperatures over 500°F and remains flexible to -80°F, which means a roll of tape can repair a damaged water heater pipe in a humid boiler room or assist in repairing freezer connections in the kitchen. Self-amalgamating tape has no adhesive which means it won't leave a sticky residue on what it is applied to and is even easier to remove. So whether you are using it to reinforce a connection or secure a temporary item, removal is a snap.



With many older facilities doing remodels, you may run into issues with connecting PVC and copper lines together. Silicone tape is a perfect addition to help ensure a water tight connection. Of course the issues that hotels deal with in Nebraska are different from those in Florida. However, adding a product like this into your tool box can not only extend the life of your equipment, but also assist in preventative maintenance.

The list of uses for this product is endless. Have a roll of white handy for those quick room repairs when you have a full house and every space is needed. If you don't have time to repair that leaking P-Trap in a room, send your team member up to wrap the connection with the tape. It will buy you the time needed to get through the rush and prevent customer complaints due to leaks or water damage.

If your facility is near the ocean, you likely deal with rust on outdoor equipment including pool & spa connections, water lines, or even Utility Vehicle parts. In fact, you may even base your budget on what needs to be replaced because of what the unsightly rust does to the property's equipment.



Silicone tape is available in numerous colors, so finding a color to wrap around your outdoor equipment is easy. Wrapping silicone tape around these parts protects the metal from the elements, prevents the start or spread of rust, and if you purchase more than one color, allows you to quickly identify equipment.

The tape can be purchased virtually anywhere, including most big box retailers. However, in order to ensure the freshest tape possible, it is always beneficial to go directly to the manufacturers of the product. The tapes typically have a 5-year shelf life if stored in a sealed bag in a cool dry place. However, to receive the best adhesion possible it is beneficial to get tape less than one year old. Companies like X-Treme Tape focus on this type of silicone tape specifically, which means that their product is consistently turning over. You know that when you purchase a roll, it's the freshest available.

Purchasing tapes can differ among companies as can the product's specifications and benefits also differ. Products made in America typically have a shorter shelf life than foreign competitors. Finding a silicone tape on the market that has 'play,' allowing you to reposition a wrap without tearing or damaging the property's equipment, can be hard to find. This reposition or 'play' allows you to get that perfect wrap, no matter what. Silicone tape that is available perforated on the roll is especially helpful if you require tape for specific applications that require a consistent length of tape; cutting down on waste and saving you money.



Silicone tapes are also available as UV resistant. If you need bright colors like red, orange or yellow, you can rest assured that the color won't fade at all. To showcase the durability of this product, a nut was put on a piece of pipe and thrown in the ocean. After 2 months of complete submersion during high tide and air exposure during low tide, the tape was removed and it was discovered that the nut still moved freely around the pipe.

Before:



After:



Barnacles and rust covered the entire pipe, including over the tape. When the tape was removed, it was as though it had never been subjected to the ocean or salt. The UV light from the Florida sun didn't fade the tape or compromise the integrity of the wrap. As you can see in the 'after' photo, there is a sharp contrast between where the tape covered the pipe and where it did not. Now imagine that kind of protection on your equipment! I highly encourage you to put silicone tape to the test at your property.

The preceding is a paid advertorial by MOCAP. Publication of this article does not reflect an endorsement by NAHLE, LLC or Lodging Engineer magazine as to the performance of Xtreme tape, silicone tapes or the accuracy of this article.

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'Summerizing' your Hotel's Irrigation and Sprinklers Systems

With summer right around the corner, it is important to do some basic checks now on your property's irrigation system so that you will be prepared to keep your hotel's landscaping both visually appealing and well hydrated over the coming months. High on your list of priorities should be practicing water conservation. This can best be achieved by maintaining a proper balance of water usage, chemicals and irrigation practices on your hotel's property. These practices, when coupled with proper sprinkler maintenance, will result in a greener and healthier looking property and, perhaps most important, happier guests that come back again and again.

Landscape irrigation accounts for a significant portion of any property's water usage. An irrigation system that is poorly maintained can lead to inefficiencies that result in correspondingly higher utility bills. Often inefficient systems produce large amounts of water usage that never even reaches its intended source. Excessive watering is



also often lost to watering below your plant's root zone and to evaporation and runoff. Proper maintenance of your property's irrigation systems is one of the most effective ways to reduce wasted water. Applying the correct amount of water to your property's landscape will not only reduce your utility bill and improve plant health, but it will also help reduce pollution and unsightly ponding from run-off and over-irrigation. It is important that your sprinkler system meet the demands of summer and provides an economical balance of water to ensure proper hydration. Conservation requires special care and maintenance to ensure that your property's lawn and landscaping stay healthy and well hydrated throughout the heat of summer.

You should check your property's irrigation system at least twice a year, once at the beginning of the season when you first fire it up and then again after a couple of month's operation. Ideally, one should check their property's systems on a monthly basis. Here are some tips to consider, but always consider checking with a professional to make sure your system is functioning as intended and efficiently. And, always consider safety first.



When you first start-up your sprinkler system consider the following steps:

- Turn the water on
- Make sure your system's controller is plugged-in and functioning
- Update the Day and Time
- Change the schedule to reflect the current season and irrigation needs
- Check the connection of all wires
- Check your system's timer and make sure it is working correctly
- Make sure your system's rain, wind, and soil moisture sensors are plugged-in and working
- Provide new battery back-up(s)
- Inspect all sprinkler heads
- Adjust or replace sprinkler heads as necessary to maximize efficiency
- Remove grass found around sprinkler heads to allow for optimal water coverage
- Turn each irrigation zone on and look for non-working zones or system damage
- Flag all problem areas and create a report for follow-up
- Perform a full system efficiency analysis and address noted areas of deficiency

As with any dormant system whether its a string of Christmas lights or a sprinkler system you never know if its going to work until you turn it on. In some cases, such as with your hotel property's irrigation and sprinkler system. It's not always the way you think you left it or it was when you last used it. Regardless of why or how it happened, it always pays to know a little about trouble shooting your system and when to call in a professional for additional input or expertise.

A Beginners Guide to Trouble Shooting a Sprinkler / Irrigation System

Water Pressure: A common problem is not getting enough or getting too much water pressure. This can happen for a variety of reasons, but usually it can be attributed to either your sprinkler system itself or the local water pressure in your area. Too much water pressure can result in over-watering of your property and it can also cause undue wear or damage to your nozzles and sprinkler heads. On the other hand, not enough water pressure can result in not enough water reaching the intended target area. Insufficient water for your grass can leave brown spots. Ideally, your property's spray heads should operate at 25 to 30 PSI, while rotor heads require more energy and operate at 30 to 50 PSI.

High pressure can also cause problems such as misting from spray heads or too rapid rotation. Installation of a pressure regulator or installing and regulating pressure heads can help eliminate high pressure problems.

Low pressure in a system can result in dry or brown spots in your grass indicating poor water coverage. Often if a sprinkler head fails to pop-up this can often be attributed to low water pressure. You can also reduce the pressure on a sprinkler head through pressure-reducing valves. The distance your sprinkler head is from the water source is directly related to its pressure. For long distances or low pressure areas, you can increase water pressure by several methods such as adding a booster pump, watering during off-peak times, or reducing the number of heads in a zone. When in doubt, it's best to check your sprinkler's manual for further instructions or contact your landscaping or plumbing contractor.

Leaks or Broken Pipes: Another factor that can affect your system's water pressure is a leak or break in your system's pipes. This can also bring water to undesirable areas in your property's landscape and cause unsightly over-watering and ponding on your sidewalks or trails. You can also often seal up small leaks by using a proper adhesive-taping. However, big breaks typically require you to replace entire pipe sections. Often the best thing you can do if you have a major leak is to consult a plumber. One trick that should only be used in extreme cases and with appropriate authorization when trouble shooting an underground leak and you can't determine or locate its source, is to cap off one end of the system. Then simply let the pressure build until it causes a more severe rupture that is more easily recognized and consequently fixed. Be careful trying this remedy as it could cause other problems you weren't expecting.

While some repairs or adjustments may seem easy others may require the help of a landscape professional. Many repairs such as adjusting the spray pattern of a sprinkler head or updating a nozzle are relatively simple and can be mastered easily by your staff. Irrigation maintenance is one of the most important factors in reducing water waste in the landscape and your property's utility bills. Additionally, a well-maintained and properly adjusted system makes for a healthy and beautiful landscape.

It is a great feeling to come to work and the first thing you see, the property grounds, puts a smile on your face and a sense of accomplishment. Be careful though when practicing proper landscaping or water management as they have been known to lead to other maladies such as excessive smiling, acts of kindness and even moments of prolonged lucidity and logic.



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