HOW AND WHY BUILDING ENVELOPES FAIL

The building envelope. At its simplest definition, it's the exterior or shell of a building that repels the elements. At its most complex definition, it’s an engineering system that meshes elements such as structural integrity, moisture control, temperature control, and air pressure boundaries into a single design strategy.

When the building envelope system is designed and constructed properly, very few occupants pay attention. But when the building envelope fails (and even the best built projects do in time), everyone notices the building’s aesthetic loss, interior damage and, in some cases, life-threatening structural failure and eventual litigation. (Figure 1)

In this article we will share some investigations of cladding, glazing, and roofing failures to help you design and construct envelope systems that meet the structural standards necessary to provide durability, aesthetic quality, and protection from the elements.

What is failure? In 50% of the cases investigated around the country, failure comes in the form of moisture that penetrates the building exterior or is trapped within the envelope system during construction or occupancy. Moisture intrusion either leads to mold growth (figure 2) or slowly degrades the integrity of the envelope system to the point of structural failure. In most cases, rain penetration is the primary source of moisture intrusion. Condensation and entrapped moisture were also prevalent on the buildings investigated.

Other common building envelope failures involve non-structural aesthetic issues, including glass delamination and material finish failures, as well as structural and life-safety concerns, such as cracking and component separation. In the most extreme instances, these issues can be life threatening.

What are the main reasons envelope systems fail? The most commonly seen causes that contribute to failure are:

Design Deficiencies. Architects occasionally specify materials or design systems that are inappropriate for their intended use. Common mistakes include specifying materials that are incompatible with materials with which they come into contact or have inadequate performance criteria for thermal movement, structural capacity, or water penetration resistance. Issues also arise when subcontractors try to reduce weight, size, or amount of building envelope components (aluminum, glass, sealant, flashing, etc.) required on a project. This can lead to inadequate performance or capacity of the materials specified. (Figure 3)

Material Failure. It’s also common for property specified materials to fail to meet the published performance levels. This could be a result of errors in the manufacturing, handling, or storing of the product or components within the product. Common examples include, degrading sealant adhesion, laminated glass delamination, and metal fatigue. While the anticipated performance levels are often based upon measured statistical performance, the strength of materials varies. (Figure 4)

Poor Workmanship. During construction, the problem of poor workmanship is exacerbated as a result of having many inexperienced, unsupervised, and untrained personnel working on projects. It is common to find building envelope components not installed per the manufacturing specifications. Word to the wise: Putting the right people in the right job goes a long way toward proper installation and overall profitability.

Acts of Nature. Even with flawless installations, bad things can happen to good work when environmental conditions exceed those that were anticipated during design. The effects of hurricane-force wind loads, driving rain, and extreme temperature fluctuations can overload a properly designed and constructed building envelope, causing damage to the system and making it vulnerable to further deterioration. While failures of this type cannot be stopped, many can be prevented through routine inspection and maintenance to identify small problems before they become big ones.

So what happens when you think failure has occurred? An investigation approach is no different than when a person is sick and goes to the doctor. The investigator will first check the symptoms using noninvasive methods to uncover the extent of the problem. In some cases, more-invasive tests need to be completed to identify the cause and the available treatments or failure. While failures of this type cannot be stopped, many can be prevented through routine inspection and maintenance to identify small problems before they become big ones.

Regardless of the cause of failure, a systematic, step-by-step investigative process provides the best results to uncover the truth. By doing this, remedial repair actions can be selected to properly address the root cause of a problem and not just the symptoms. As such, any investigative needs to include the following steps:

1. Identification of symptoms and understanding the problem
2. Review and evaluate the original design intent
3. Verification of as-built condition
4. Determine current condition (i.e., identification of component deterioration)
5. Evaluation of deviations between original design, as-built, and current condition
6. Identification of potential causes of failure
7. Determination of appropriate diagnostic investigation and testing for each of the identified potential causes (destructive vs. non-destructive)
8. Analysis of results of selected investigative and testing methods
9. Implementation, evaluation, and testing of trial repairs
10. Preparation of report indicating the results of the failure investigation and recommendations for repair alternatives
7 Ways to be a Better Leader

Whether you’re spearheading a new initiative at work or helming the charity auction at your child’s school, you can learn a thing or two by following these simple suggestions.

What attribute does a lead need most? They should see themselves as the protector of the group. For example, a good boss makes sure that their employees have all the tools they need to do their jobs. A good PTA president publicly acknowledges volunteers for their effort so that everyone feels appreciated. If people feel unsafe—that is, as if their leader is trying to undermine or take advantage of them—they’ll concentrate on protecting themselves and, as a result, focus less in the task at hand.

What’s a common mistake that leaders make? Thinking that they should have all the answers. No one knows everything, and good leaders are comfortable with that. They’re grateful to be surrounded by people who can help them hash things out. When something they organized, from a field trip presentation, doesn’t go perfectly, they aren’t afraid to discuss with the group how to adapt it for the future.

Say you’re in a group without an assigned leader. What’s the best way to step up? Whether you’re at the office or elsewhere, say to the group, “I’m happy to ensure that everything goes smoothly. I want everyone here to have what they need to make things happen.” If it’s clear that you’re there to serve and to give, you’ll naturally find yourself in a leadership position. If someone objects, let that person take over. An effective leader cares most about everyone doing their best to get the job done well, even if that means taking a supporting role.

Once you’re in command, how do you gain the trust of team members? Give them a lot of independence, but check in on each person periodically. In other words, let people succeed and let them fail while providing training and guidance. When a new project needs to be launched, put someone in charge of it. If the project succeeds, let that person know what a great job he did. If the project fails, instead of getting mad, say, “OK, let’s figure out how to rectify it.”

How can you get slackers to chip in? You might be thinking, “What’s your problem? But you should ask, “Is everything OK?” When a person checks out, there’s often a reason. If a group member seems to be riding the coattails of hardworking people, give her a solo task that will impact others. For instance, have her find a venue for a party that the rest of the group will plan.

How do you encourage creative thinking? When possible, kick off a project with a brainstorming session in which everyone can speak freely. There should be no such thing as a lousy idea. No matter what is said, respond with something like “That’s not a bad idea. Let’s build on it.” Suggestions are seeds; the group works together to decide upon the best plan.

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Some of the Web is Dark. The “dark Web” is so-named because content contained therein isn’t discoverable by search engines. That’s all. A lot of good stuff hides on the “dark Web” or the “deep Web” — including academic research and protected corporate files. And it’s huge: In 2001 (an eternity ago in Internet time!), Michael Bergman, a professor and entrepreneur, published a paper suggesting the dark Web is at least 400 times larger that the Web you can reach with Google.

Evil Lurks in the Shadows. Although the dark Web isn’t inherently bad, a lot of people choose to use it to obsure criminal behavior. Because it’s harder to track and identify users on the dark Web, its corners have become a haven for identity thieves, child pornographers, drug dealers, and arms merchants. Now-shuttered organizations like the Silk Road — a Craigslist list evil doers — helped people buy and sell illegal items with relative ease, for example.

A Web of Onions. The benign part of the dark Web works simply by excluding content from search-engines. What’s not indexed, simply grows dark. But the seedier and more dangerous part of the dark Web uses technology like The Onion Router (TOR) to deliberately obscure a user’s location and identity. TOR encrypts technology and sends data through many different nodes to conceal who is doing what, and why.

Myths of Budget Travel

According to recent studies, just 9 percent of Americans travel abroad (actually abroad, not to Mexico or Canada). Among many factors—including that professional, salaried Americans average only two weeks of vacation per year and seem to have a difficult time even using that—I believe a major reason for this is we wrongly believe that if we want to travel comfortably and enjoy our vacations, we must spend a lot of money on them. Budget travel is then equated with being uncomfortable or backpacking, but that simply does not have to be true. It’s time to stop buying into the myths that keep Americans from planning inexpensive travel overseas.

Myth #1 You’ll have to sleep in a room with five strangers. If the word “hostel” is used, what immediately comes to mind? Uncomfortable bunk beds, dorm-style smelly bathrooms, strangers sleeping above you? But that isn’t necessarily what a hostel has to be like. Yes, many hostels cater to young backpackers who simply need a place to sleep and are willing to share that place with other travelers they don’t know in order to save money—but some of these same hostels have private rooms as well, and many don’t even fit the stereotypical notion of a hostel. When staying at a hostel always book a double private room, sometimes they come with their own bathroom, other times they are shared. It’s essentially a hotel room but a lot cheaper. You can also find inexpensive rates through websites like Airbnb and Booking.com.

Myth #2 It involves wearing an enormous backpack that could fit two small children. Let’s dispel the backpacker stereotype entirely. There’s nothing wrong with traveling this way, but no one enjoys looking like a tourist when abroad and a giant backpack is one way to signal that from miles away. Also there’s no reason to change the way you dress when abroad. Many times with relative ease, for example.

7 Urgent Things About Ransomware and the Dark Web

“Dark Web.” The term evokes imagery from a suspense thriller, complete with spies, a gritty hero and evil technology overlords intent on dominating the earth. Contrary to the sensationist hype about the dark Web and its various offspring like ransomware, the underlying tech itself is neither good nor evil. Nevertheless, a lot of people do use dark Web resources to conduct illegal sales and steal from innocent but unprepared Internet users.

Will That be Cash or Bitcoin? Illegal marketplaces generally don’t accept personal checks, and you can’t send a bundle of Franklins by email, so crypto currencies — currencies based on computer algorithms instead of government mints — are right at home on the dark Web. Bitcoin remains one of the most popular crypto currencies. The U.S. government thinks that $1.2 billion of the $2 billion in bitcoin circulating in late 2013 passed through Silk Road’s illegal-trading bazaar.

Why the Dark Web Can Touch You. Criminals using TOR and paying in bitcoin affect people who may never visit the dark Web. Bitcoin can be converted to U.S. currency, so identity thieves steal identities to open fake accounts (or hack into existing accounts). That’s where spyware and phishing attacks come in, and that’s why you should run strong antivirus and refrain from clicking links or running programs that you don’t recognize.

Ransomware. Some hackers have gotten more brazen. Instead of just sponging on you, they’ve developed malware like CryptoLocker that silently encrypt your whole computer. You’ll get a warning that you have a small window of time to transfer money (sometimes by credit card, and sometimes bitcoin) to a specific online address, or you’ll lose all your data permanently. You’re effectively locked out of your computer, and there’s no way to fix it. Without a reliable backup, you’ll lose your data.

Staying Safe. Staying safe on the Internet is like avoiding infection on a crowded airplane: Your odds are good if you prepare, but otherwise you’ll be taking medicine afterwards. Keep your antivirus app up-to-date, don’t click odd links, don’t use smartphone apps from untrusted vendors, use secure browsing (look for HTTPS in the browser bar), limit the personal data you put online, use strong passwords, and limit credit-card online. To protect against ransomware, keep backups in places not routinely attached to your computer’s file system.

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Recipes of the Month….

BACON RANCH PASTA SALAD
1 (12oz) package of tri-color rotini
10 slices of bacon
1 cup of mayonnaise
3 Tablespoons of dry ranch salad dressing mix
1/4 teaspoon garlic powder
1/2 teaspoon garlic pepper
1/2 cup of milk
1 large tomato, chopped
1 (4.25oz) can sliced black olives
1 cup shredded sharp cheddar cheese

In a large bowl, mix mayonnaise, ranch dressing mix, garlic powder, and garlic pepper. Stir in milk until smooth. Place rotini, bacon, tomato, black olives, and cheese in a bowl and toss to coat with dressing. Cover and chill at least 1 hour in the refrigerator. Toss with additional milk if the salad seems a little dry.

FREEZER CARAMEL DRIZZLE PIE
2 (9-inch) graham cracker crusts
6 tablespoons of butter
1 (7oz) package shredded coconut
1 cup chopped pecans
1 (14oz) can sweetened condensed milk
1 (8oz) package of cream cheese
1 (16oz) container frozen whipped cream topping, thawed
1 (12oz) jar caramel ice cream topping

Place butter in a medium skillet and melt over medium-high heat. Add coconut and pecans, stirring until coconut and pecans are lightly toasted, about 5 minutes. Set aside.

Place caramel mixture in a mixing bowl and add cream cheese mixture and milk. Fold in whipped topping. Spoon 1/4 cream cheese mixture into each graham cracker crust. Drizzle each with caramel mixture. Saute until coconut and pecans are lightly toasted, about 5 minutes. Set aside.

Place butter in a medium skillet and melt over medium heat. Add coconut and pecans, stirring until coconut and pecans are lightly toasted, about 5 minutes. Set aside.

In a mixing bowl, whip together condensed milk and cream cheese until fluffy. Fold in whipped topping. Spoon 1/4 cream cheese mixture into each graham cracker crust. Drizzle each with 1/4 caramel topping. Repeat layers with remaining cream cheese mixture and caramel. Top each pie with coconut and pecan mixture. Freeze overnight.

July 2014

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Paragon Services Engineering Has A New Team Member!
Please welcome MaryJane Fairchild. MaryJane will be heading our Human Resources Department as our new Human Resources Manager, replacing Autumn Sangrey.

Please take a moment to say “Hi” and welcome her to the Paragon Team!

If you have HR related questions you may contact MaryJane at mjfairchild@paragonservices.us.com.

July 2014 Events

- 7/1—Lobster Festival (Orange County)
- 7/1—Stern Grove Free Concerts (San Francisco)
- 7/4—Fourth of July (Observed)
- 7/5—Fillmore Jazz Festival (San Francisco)
- 7/10—Twilight Concerts (Santa Monica Pier)
- 7/12—60th Annual Over-the-Line Tournament
- 7/12—Film Night in the Park (San Francisco)
- 7/13—Sunday Streets (San Francisco)
- 7/13—Grease Sing-a-Long (Hollywood)
- 7/17—Del Mar Racetrack Opening Day
- 7/19—San Diego LGBT Pride Festival
- 7/24—Comic-Con International (San Diego)
- 7/26—US Open of Surfing (Huntington Beach)

FIREWORK SHOWS IN CALIFORNIA

SANDIEGO
Big Bay Boom (Embarcadero)
Sea to Shining Sea (Sea World)
Ocean Beach (Newport Avenue)
San Diego County Fair
Red. White, and BOOM (Legoland)
Oceanside (El Coronaz Site)
Camp Pendleton Beach Bash
Grand Tradition (Fallbrook)
El Cajon (Kennedy Park)
National City (Kimmball Park)

LOS ANGELES/ORANGE COUNTY
Alhambra (Almansor Park)
Burbank (Starlight Bowl)
Calabasas (Calabasas High School)
Carson (Home Depot Center)
Hollywood (Hollywood Bowl)
Huntington Beach (Huntington Pier)
Long Beach (Queen Mary)
Los Angeles (Dodger Stadium)
Pasadena (Rose Bowl Stadium)
Studio City (CBS Studio Center)

BAY AREA
Alameda County Fair
Berkeley (Berkeley Pier)
Concord
Cupertino (Quinlan Community Center)
Emeryville (Emeryville Marina Park)
Oakland (Coliseum)
San Francisco (Pier 39)

FUN FOURTH OF JULY CRAFTS

USA DOOR BANNER
Press high-tack fabric adhesive to the back of blue canvas fabric. Print a shape of the mainland from the Internet, trace on canvas, and cut out. Remove adhesive backing; follow directions to adhere to a red canvas rectangle. Cut felt in the shape of your state; layer stars to mark your hometown. With embroidery floss, whipstitch around the state and make French knot in the center of the stars. Sew a rod pocket at the banner top, insert a wooden dowel, and hang with ribbon.

PAPER FIREWORKS
For each rocket, roll scrapbooking paper into a tube and secure with glue. To make the nose cone, cut a slit to the center of a paper circle; overlap ends and adhere together using glue. Glue a ribbon strip inside the rocket to resemble a fuse, and glue a long dowel inside the tube to support rocket.

STAR-SPANGLED BICYCLE
Set out some tape, miniature flags, and other red, white, and blue craft supplies, such as construction paper and streamers, and let the kids dig in.
- Tuck flags into the bike handles.
- Tie patriotic ribbons around the bike basket.
- Cut cardstock stars and tape them to or thread through the wheel spokes.

MR FORCE ONE
2 ounces Hpnotiq Liqueur
1 ounce citrus vodka
Juice from lemon wedge
Lemon-lime soda
Lemon spiral for garnish

Fill tall glass with all ingredients and add ice. Stir well.
Garnish with a lemon spiral.