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Our Latest

Due to changes in circumstances, we've changed a lot of things in how we operate. For example, over the years we've gone off and on with structural condition assessments of residential properties. We've been looking at properties where people are suspecting structural damage like foundation settlement and looking at items home inspectors raise questions about. It's been enjoyable work; I like meeting the different people and getting around. However, due to the current workload, and the ups and downs with Covid, I've had to drop most of that line of business.

What we are doing instead is focusing on our repeat business clients where we don't have to leave the office. That's building cladding and containers. Our building cladding projects are surprisingly big. As of this writing, I am working on a job where we are placing ACM panels (aluminum composite material – they are thin architectural panels used to clad buildings) are being placed on the second tallest building in Miami, FL. I'm dealing with wind loads of up to 140 Lbs./Sq. Ft. On a normal building we'll see loads on the order of 20 Lbs./Sq. Ft. for comparison.

We're doing designs for container buildings that are being used for a broad range of applications. One in Orlando, FL is for a park and will be concession stands and a stage. We're doing a project for work force housing in St. Petersburg, FL. In Arizona our buildings have been shops, small residences for Airbnb rentals, and apartments.

I don't know about you, but I've found the telephone has become quite a big headache. I get nuisance calls all day. Calls to update my Google listing (spoiler-it's a scam, you don't need to pay someone to update your business information on Google), business funding (loan shark type loans), and a whole bunch where they ask to speak to the "business owner". My business phone is on "do not disturb" and the message you get is to leave a number, or to send me an e-mail. On my cell phone, I use the Hiya app to filter my calls (it gets most of the junk out), and if I don't recognize the number, I don't answer. I let it go to voice mail. It's an unfortunate way to do business, but if I didn't do it, it would be impossible to get any work done.

Other changes are we've totally gotten rid of an outside office, this is now a "home based business". I had been concerned with catching Covid from others leasing space in my building, and the stigma of working from home has pretty much disappeared. I'm surprised how efficient it is with improvements in technology. I find that Zoom and Microsoft Teams help a lot with getting things done.

It doesn't look like the Covid pandemic will be ending any time soon, I suspect we'll be seeing ups and downs with infection rates for a while. The past few years I've learned just how much I loved certain mundane activities that I don't do so much anymore. Meeting people in person in their offices, going to professional society meetings, and traveling on business. Some of that is coming back, and I really hope that we won't have any upcoming waves of infection that push us back to isolation again.

I really hope you all have weathered this pandemic well, and I look forward to seeing you all again, hopefully soon.

Observations about Wind Damage

We've had quite a Spring here in the US with tornadoes, thunderstorms, and snow. With the work I have been doing in Florida (designing for hurricanes) and recent events, I'd like to cover some important stuff to know about wind damage based on my experience and operations.

Tornadoes

I have an intense hatred for tornadoes, I got stuck in a storm when I was out with my dog many years ago that spawned several them around me while I sat with my dog in my truck in a parking lot. My dog had his head in my chest crying in terror, and I was quite scared myself. These things have to be taken seriously. A few years ago Georgia got hit with a terrible set of tornadoes in the northwest part of the state, and I took a trip up there to examine the damage.

Most of the damage happened about 10 feet (3



This building saw some really bad damage, but note the second floor is far worse than the first.



meters) above the ground, I saw upper stories sheared off the buildings with the first floor relatively intact. A lot of stuff was thrown around, there was a large easy chair sitting in the middle of an open lot. Strangely enough, not a lot of windows were broken. What I also noticed was the buildings were damaged from the outside in, they were peeled like an apple. I contrasted it to Iraq and Afghanistan, damage there to buildings was from the inside out from bombs, artillery shells, and rockets getting inside the buildings and exploding.

What was more than a little disturbing was an apartment complex that was on a slab, and almost totally leveled. A couple people were killed in that tornado, and I have no doubt it was in that building.

What do you do?

1. Get to the lowest level of the building, and to the interior. Stay away from windows, while I didn't see many broken in my observations, don't count on that not happening. If something gets thrown through a window, you not only have that object to worry about, but the shards of glass flying at you will be a danger.
2. If the building has no basement, you might want to take cover in a bathtub. If the building gets ripped down like the one I saw in Rising Fawn, GA, that's your only hope of survival.
3. Protect your head. Wear a bicycle helmet, hard hat, whatever you've got. I've read about people covering themselves with mattresses, which will work too. A falling beam or ceiling can kill you.

Thunderstorms

I've examined a LOT of damage from thunderstorms. I haven't yet seen a house that the wind actually did the damage. What happens before that is the buildings get hit by falling trees or debris. The top floors always take the worst hit. When a house gets hit by a tree, it gets shattered where the tree hits, and all the timber splits apart like its matchsticks. I always see a lot of shattered glass too.

Lightning strikes are common in some areas, like my neighborhood. I haven't seen severe damage to houses from a lightning strike yet, but the potential for fire is there, and so is electrocution.

What do you do?

1. Do a bit of preventive maintenance. Cut down dead and diseased trees. Keep existing trees trimmed of dead limbs. Don't leave a lot of stuff out in your yard when a thunderstorm is

This is the apartment building that was totally destroyed in the tornado.



This large recliner was just sitting in the middle of the lot. Imagine the force that was able to lift it up.



Note the second floor was hit worse than the first floor, and the damage is more severe on the outside. The roof is totally gone. You would have been OK if you took shelter on the interior of the first floor. You could have gotten killed on the second floor.



A whole house surge protector can save you a lot of problems if there is a voltage surge from a lightning strike.

- coming.
2. Stay off top floors. There was an older couple that got killed in this area a few years ago. It was 9 PM and they were in bed, and their house was hit by a tree. I generally don't go to bed in severe thunderstorms, but if you absolutely feel the need, sleep on the first floor or in the basement.
 3. Unplug your computer so it doesn't get fried in a lightning strike. Stay off the land line phone, and out of the shower.
 4. Consider getting a whole house surge protector to keep your tv's, HVAC units, and computers from being fried if there is a surge in the electric lines from a lightning strike.

Hurricanes

We fortunately don't get these in Atlanta. There are multiple ways these do extreme damage. There is the wind, the rain, and the storm surge. When we design buildings for hurricanes, at issue is wind damage and damage from flying missiles. We have to use shatter resistant windows in Florida. Once the building envelope is pierced, the structure will be destroyed in short order. Not only is the wind a problem, but the storm surge is a killer.

The low pressure of a hurricane and the force of the wind causes a significant hump of water to come ashore from the ocean. Add to that the flooding from the rain, and the back up of storm water from the rise in the ocean means some severe flooding. In design of structures along the coast we have to have the main structure elevated above the expected high water level. The lower levels, if they are enclosed, are enclosed with breakaway materials so that the pressure of the water won't knock the structure down.

What do you do?

1. If you are in an area that is subject to storm surge – EVACUATE. Get out of Dodge. Leave. I don't care how tough you think you are, if the ocean floods your area, you will die.
2. The one hurricane I went through personally was in the Virgin Islands. I worked with my host putting up plywood over all the windows, so the building envelope didn't get shattered. My grandparents had storm shutters in Miami that they would close. If you must sit out the hurricane, have a good source of emergency lighting. The only entertainment we had was playing a DVD on my laptop. We had one

DVD, the Best of Johnny Carson. It got old fast. So, have some good books, or decent DVD's. Charge up all your batteries. Secure all loose stuff in your yard, or put it inside.

3. The precautions for thunderstorms apply if you sit out a hurricane. Hopefully the structure you are sheltering in has been designed for the wind loads, and the envelope doesn't get pierced, or the roof fly off. My experience was not pleasant. Not only did Johnny Carson get old fast, without power there was no AC, we couldn't open the windows, so it was hot, stuffy, and humid. It was also dark.

We're going to see more extreme weather events in the future, so it's best to be ready. In addition to the measures I recommended above, it's best to have a plan before a storm hits. Also, pay attention to weather forecasts, and don't go out driving when bad weather is predicted. Stay safe!

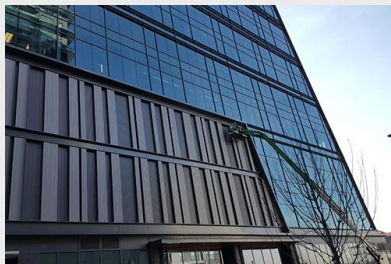


Structural Engineers

Runkle Consulting was founded in 2000 by George W. Runkle III, PE, SE. We provide structural design for structures fabricated from shipping containers, the structural design for building cladding, and forensic engineering services.

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What We Do



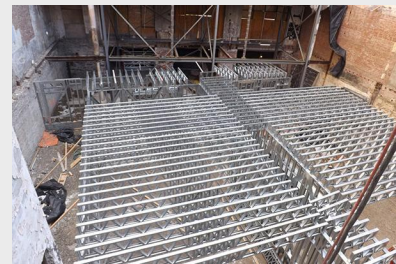
Building Cladding

We have 15 years of experience in the structural engineering of exterior building panels, store fronts, and curtain walls for commercial and government



Shipping Container Buildings

We provide design services for the design of buildings fabricated from repurposed shipping containers. Our services include the complete design package,



Cold Formed Steel Design

We have extensive experience in cold formed steel design. We can provide structural design services and shop drawings for your project.

buildings.

architectural, structural, and
MEP. Depending on the area,
we may be able to help you
find a fabricator to provide
the containers.

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