

From The Castle



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Sorry We're Late

I try to write this newsletter on a bi-monthly basis at least, but this year has been hectic. A lot of work is coming through, in March we billed twice what we did the year before. Last year at this time I was just getting ramped up to design buildings made from shipping containers, and now it's our major source of revenue. Of course that wasn't a very high bar, but it gives an indication of how the first half of the year has been. We've gotten very busy with design work for shipping container buildings around the country, right now at this moment I am working on jobs in Washington State, California, Nevada, New Jersey, Indiana, North Carolina, West Virginia, Louisiana, Georgia, and Florida. What this means is a bloody fortune in licensing fees, it cost me about \$1,000 to get licensed in Florida for example. However, the business of designing buildings made from shipping containers is a global deal, and you take work where you can get it. I don't know about you all, but it seems I work 3 times as hard to make half as much money.

We still are doing residential work, and I am still doing foundation failure investigations. However, I took the foundation failure investigation section down off of my website because we were getting a bit stretched. My big worry is to take on more than we can handle, miss deadlines, mess up projects, and destroy the business. My grandmother told me that I am a "worrywart" and I told Grandma I wouldn't worry so much if their wasn't so much to worry about.

So where are we at? I'm still feeling out how to bring on employees and subcontractors to handle the work, my theory is that I need A grade people. If I can't get them, I am not going to hire anyone. That makes it hard, because Runkle Consulting is a very small company, and the past three years have been hell on us like everyone else. We can't compete easily with big companies and government agencies for top quality people. However, my feeling is that is just too bad—it doesn't work to hire poor performers or even mediocre people in hopes you can somehow make them work out. You can't, and I won't.

We're also still working out of my house. Office rental is expensive, with the added costs, you can take the rent and double it to get an approximation of the total extra cost. So, the server is behind my couch, our engineering copier is against the wall in the living room, and there are two computers set up in the dining room. For the foreseeable future we are keeping it this way.

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What is the Deal With Shipping Containers?

If you do a web search on "shipping container buildings" you will see a lot of hype and fanciful designs that no one will build. The claims about these are as follows:

1. Building with shipping containers is "green". However, if you don't build with these, they don't get landfilled. At the very worst they get cut up for scrap and recycled. A house made of wood in my opinion is more "green" since the wood that makes it is renewable, and was grown on a timber farm.
2. Building with shipping containers is cheap. The jury is still out on this. I've heard claims that you can build a house for \$60.00 a square foot, but I've seen more in the range of \$100.00 to \$125.00 a square foot. What you save in framing gets eaten up with steel fabrication. The hourly rate of ironworkers is much higher than framers, and you need to hire cranes to lift everything in place. Still, it may be possible. The military training structures are going up for about \$40.00 a square foot. To be fair, there are a couple of

builders here in Atlanta that are planning on building very simple houses out of shipping containers, and they say that they can do it for \$60 a square foot. That is 40% cheaper than standard residential construction. I hope they are right.

3. Shipping containers are strong. This is absolutely true. As long as the architect doesn't forget that shipping containers don't come with an anti-gravity generator, you can make a very strong house or whatever type of building you need. I have run all sorts of calculations on shipping containers for different loads from winds, and haven't been able to make one fail. If you are building in a high seismic zone, or on the coast, this is a very strong way to build. Also, you can build long narrow houses with large open spaces very easily. I've designed the structures for two long narrow houses made of wood, and what I had to do to make them strong enough laterally was enough to make a grown framer cry.
4. You can build shipping container buildings

in very remote areas. This is also absolutely true. You can do the majority of your fabrication in a shop, and then ship your building to wherever it is needed. International Disaster Services in Macon, GA fabricated a dormitory for a medical facility in northern Alaska in Macon, and shipped the entire thing container by container up to Alaska by truck and barge. They had to beach the barges, build a ramp to the barges from the shore, and they used cranes to unload the containers and move them to the site. In this case the construction costs were about half of conventional construction. On the site they were for the most part able to use local unskilled labor.

Now, the problem with building with these is that it is all somewhat experimental. There are no books about how to build with these that provide any really useful information. There are no industry accepted standard details like you have with steel or timber construction.

What is the Deal With Shipping Containers?

On issue is the analysis—it took us a long time to figure how to do it. We build a 3d model in our computer software, put all the loads in and run the calcs. I found we need an extremely fast processor (We have computer with the Pentium I7) otherwise the calculations take too long. The computer that you might use for word processing doesn't work. For example, it takes over an hour to run calculations on our project in California on the computer I am typing at now (a Pentium Quad Core with 4MB memory). On our I7, which also has 8MB memory it takes 5 minutes.

The buildings I've seen on the Internet look like the engineer got lazy. I notice that all of them have beams all around, it appears the structural engineer ignored the container and designed a structure around it. Who can blame them? A shipping container is a statically indeterminate structure (which is as complex as it sounds), and is made from cold-formed steel, which is also difficult to design with.

Just when we were getting comfortable with the computer, we discovered that a certain amount has to be designed by hand. We had one job for a company that needed me to determine if a container that was modified by them could still carry the loads required by ISO standards for international shipping. We analyzed the model of the container in the computer, but then had to do the corners by hand.

In all of our projects we have had to keep a two way conversation open with my clients to make sure everything works. A lot of what looks good on paper we discover at construction time doesn't quite work the way we thought it would. For example, in a design we did for a container house for a design and construction in Atlanta, we wanted the upper floor completely open. We put small beams going from side to side, which looked pretty good. However, they got in the way of the HVAC ducts. So, we had to design a special set of trusses that preserved headroom, and allowed the duct to go through. It's a strange looking truss made from 2x2 angles and 3/4" rods. It's not like building a house at all.

I have to mention our project for the Department of State—we have to have a rappelling tower with hooks that have take 10,000 lbs of load. That is equivalent to a 500 lb weight coming to a near sudden stop after a 20' drop (I did the calculus to figure this out, an occupational hazard of these things is they will turn you into a nerd. I don't have my glasses taped together yet, but it's coming). We're busy working this one out.

I'm harping on design, but fabrication isn't easy either. To cut the sides away you need a plasma torch, and when these containers are fabricated they are subject to a lot of heat. After they are assembled, they cool down and develop a lot of internal forces due to thermal contraction. When you cut away the sides they

spring out of shape.

When you weld, you have to grind away layer after layer of epoxy paint. The plywood floor is treated with noxious pesticide that if you breathe it in too long will probably make your future children look like baby seals. Removing that plywood is not easy because the screws that hold it in are almost always stripped and rusted. These are not do-it-yourself items for the average Home Depot shopper.

One of the maddening issues for me is that so many people don't understand how hard this type of design work is. One potential client in the Caribbean got angry at me for the design fee I wanted, and said he "knew" I had a bunch of these designs on the shelf that I just had to send out. Well, I don't just do building designs for areas where you have a 130MPH wind load and high seismic activity and just put them on a shelf hoping to sell them someday, cheap.

That of course leads into the annoying and sometimes funny part of this business. There is a whole subculture of people out there that think you can get shipping containers at a local dock for free, and I will give them a set of plans for \$10 to \$25 (I'm not kidding). I always have people wanting me to provide my services in a "partnership" (meaning free) for consideration of future profits. One guy called me and told me the container house he was building was going to be on Home and Garden TV. He asked me "how much is that worth to you?" My answer: "Nothing. Look, does being on TV make the guys on *Dangerous Catch* get more crabs? No it doesn't. Being on HGTV won't get me more work, just annoying calls" (I didn't really say that to him, but I thought it). I actually had to tell him outright—NO! (I didn't give him a reason, I just said "No"). Of course he wasn't going to be on HGTV anyway, except in his fantasy.

I also get calls from people with grandiose ambitions of building homes for people in Haiti, building cheap houses for the homeless, or housing workers cleaning up the oil spill in the Gulf. Unfortunately, most of these people lack two basic items in any business:

1. Any kind of plan—Their plans are usually of the three step type:
 - a. Get great idea
 - b. Do something here
 - c. Make lots of money, get famous
 "b" gets them every time.
2. Money. I can't believe how many people that call me with their grandiose ideas have absolutely no money whatsoever. They actually think people will "partner" with them for future profits and provide free labor, materials, and property. I am not exaggerating here.

Usually the crank calls can be ferreted out because they all have the same characteristics:

1. The caller talks non stop and usually runs a one way conversation.
2. The caller has a grandiose scheme for making money that will get everybody rich.
3. The caller always seems to have a side idea to help humanity too. Haiti has gotten popular on this. I am surprised I haven't gotten calls about the oil spill, but now that I mentioned it, I'm sure those calls will flood me next week.

Unfortunately I wasn't so good at figuring these out in the beginning, and some still get through. The worst was a 300,000+ SF project I had "in the bag" out west. I don't know how many people I told about that one, and how this was going to make me BIG. See, I don't have to be on HGTV to feed my ego. Anyway, I got suspicious when the architect wouldn't return my calls. In fact, the architect never answered his phone, his voicemail took all calls, which is strange. My suspicions were confirmed when the promoter got upset when I told him I was going to partner with a larger firm in California. I'm learning to keep my mouth shut until the potential client sends me a check, it saves a lot of embarrassment.

Two years after starting into the business of designing shipping container buildings things have gotten a little, well, odd at times. We are getting into areas I didn't expect us to be in, and we have put in a lot of time and effort. I can't say if this really will pay off, although it does seem to be working out. It is a fun kind of thing to do, even with the oddballs that call me from finding my website (or maybe it's more fun because of them).

I'll keep you all informed as this business moves forward, and hopefully there will be more

positive news in the future.



One of the fabricated sections for the shipping container house being by a design + construction, llc 404-992-8605