



# Visual Construction Documentation: Manage, Monitor and Control Risk

*Improve Communication, Efficiency and Quality Control*

By Robert Graham, CPA, CMA

All businesses are exposed to risk. There are many different types and definitions of risk, but in general, it is the danger or chance that something won't work out as planned. In response to risk, businesses create internal controls. The purpose is to manage or mitigate risks, to allow them to carry out their business, serve their customers and ensure they earn a profit, consistently over-time. Internal controls include company policies and procedures, hiring practices, training and safety practices, and good management. And it is when it's impossible to manage or mitigate a specific risk to an acceptable level that companies buy insurance. But the problem with insurance is, it's not an internal control, because it neither prevents, nor detects (i.e. controls) risk. It merely returns the company to the financial position it

was in before the risk-event happened. It's also expensive, relative to other types of business controls, so it is typically used as a risk mitigation strategy of last-resort, albeit an effective one.

Construction is the same as any other business in these ways. However, there are some key differences in the nature of construction that make it unique. For example, it is highly complex, expensive, time consuming (i.e. many man-hours), takes place over a long period of time (i.e. duration) and sequential. But most importantly, the worksite is remote from the design, engineering and larger management team. The owner group and their needs are usually a separate entity altogether.

Other than safety, the main types of risk to successful, on-time completion of a construction project are related to design, materials and

installation of same according to specification. The issue is defects, rework, change orders, design-changes and related items. That's why companies put such great people in the field to oversee projects, because that's where the real work gets done and that's where the risk is, so that's where they're needed. But as great as most onsite people are, there are some things no one person can do. For example, most people don't have truly photographic memories. That is, they can't recall in perfect photographic detail, the state of a construction site immediately before mobilization, or on any particular day of that project over the course of time. They can't remember exactly where the services were installed in a slab, or exactly where the mechanical, electrical or plumbing installations are in the walls or ceilings. Even if they could remember, it would





take a thousand words to describe, so it's better to let visual documentation do the talking. And if someone leaves a project in progress, then their knowledge leaves with them. Good visual construction documentation gives you that perfect memory and can help you address all of these things.

You might say, "What about traditional as-built drawings?" I think it's fair to say, we've all had our frustrations with them at one time or another. So what's the difference between a traditional as-built drawing and a visual as-built? A visual as-built is a comprehensive, photographic record

of every aspect of your project. A comprehensive photographic documentation service includes external (EIFS), internal, in-floor, in-wall and in-ceiling systems, delivered to your smart phone in real time. It is a photographic x-ray of your entire project, from the start, with time-lapse progressions (monthly, weekly) and/or critical milestones (pre-site survey, pre-slab, MEP, etc.). Reduced, custom scopes are available to target specific issues and to manage the value/cost equation.

One can compare the process of construction to the process of manufacturing cars. Car manufacturing is equally complex, sequential and there is a high degree of planning, design and engineering that goes into the process of making cars. But the big difference is all the designers, engineers, managers and owners are right there on site, on the manufacturing floor where the production is taking place. In construction, most of them are offsite. This is why the language of construction is so different and varied than other businesses, by way of requests for information, change orders, etc. This creates one of the significant challenges, or risks, in construction. For example, as Toyota created and managed its continuous-improvement, quality and efficiency program (*Kaizen*), everything and everyone was at their fingertips to do so. In construction, it's not the same. But a visual construction documentation program can help get you there in ways you never imagined, because it brings the jobsite to you, wherever you are.

The other thing about car manufacturing is they are building identical units, cars. Thousands come off the line at a time. Whereas in construction, the project is always a unique, custom design, it is a one-off. So by nature, that creates design and engineering issues and puts more pressure to resolve them efficiently and effectively each time.

Again, that's where visual construction documentation comes in to help address those challenges, or risks. It brings complete oversight to the activities of the project site, so you can know from anywhere and anytime, what is happening right now and what happened up until now. It improves the efficiency of management oversight and therefore improves quality control, quality assurance and efficiency. And if it's used properly, it gets you to your completed project faster. Because it effectively allows you to have your entire project team, onsite at all times.

The most common type of visual construction documentation is the construction webcam. This gives you a live-streaming view of the construction site. It tells you general progress to-date and what's going on there right now. But the



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disadvantages are they only have one point of view and it's difficult to verify the quality of workmanship and materials installed, especially once construction moves inside.

The other type of visual construction documentation is video. Typically video has been used for interior walk-throughs on handovers to document existing conditions. This is a useful tool, but it's like the old cassette tape, you have to look through the entire video to find what you want. Newer video product is hosted online and better-chaptered (smaller segments) than that of old.

But the newest generation of visual construction documentation involves inspection-grade, digital photography. In its simplest form, it's like you taking a picture from your smart phone and making it available for everyone on the construction team to see. But the power of a modern system is, hundreds of pictures are taken at a time, then pinned to your project plans exactly where they were taken and served-up on your smart phone in real time. This allows you to see in-detail, everything that's going on with your project now and leading up until now. It's like your project is an onion in the palm of your hand. You can peel it back in layers to remember how something was done, or if you need to solve a problem or request information. And it allows you to share that information with the entire onsite and offsite planning, design, engineering and management team by doing nothing other than giving them access, or clicking a button.

At first it can sound daunting to people. They're reluctant to put their work out there for everyone to see, that's basic human nature. They worry if they've made a mistake, they don't want people to see it. But that's the whole point of the system. It puts so many more eyes on the project to prevent problems before they start, or make it easier and quicker to spot problems and arrive at a solution. It can catch problems in their very early stages, before they become more expensive to fix. That's the nature of a preventative control. It reduces risk, saves time and money and brings greater resources to prevent or solve the problem right at the start.

For many, this represents a big change and a leap of faith. That's why anyone who is implementing a system of visual construction documentation usually starts out small at the beginning.

So where do you get started? It's a visual product, so it's best to get a visual demonstration of the product first online (webex) or in-person. Then test it out on a small scope on a project. Because in our experience, people really



begin to understand it once it's on their own project. Usually it starts with a pre-construction site-survey and it goes from there.

One of our larger GC clients started out that way several years ago and they've now hired us for over 40 projects. It was part of their mandate to develop a total quality program. Interestingly, they have used us on projects for TTC and Metrolinx. For those projects in particular, it allowed them to verify and permanently memorialize the conditions before, during and after their completed work. The visual documentation allowed them to highlight unanticipated problems (i.e. change orders) encountered during the work and this eliminated problems down the road with getting paid on a timely basis. This is the dispute-avoidance feature of visual construction documentation. Because there's no dispute over what work was done, how, when, or where. This is also the powerful dispute-resolution aspect of visual construction

documentation if things escalate and it becomes a bigger process to close a project and get paid. And in any dispute, the side that has the most information or evidence usually has an advantage over the other party.

There are so many benefits with a good system of visual construction documentation, it's impossible to explain in a short article. But once you start using it, you'll figure out the best scopes of documentation to supplement your own company internal controls, to assure and improve quality, efficiency, better control and reduce risk. ■

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