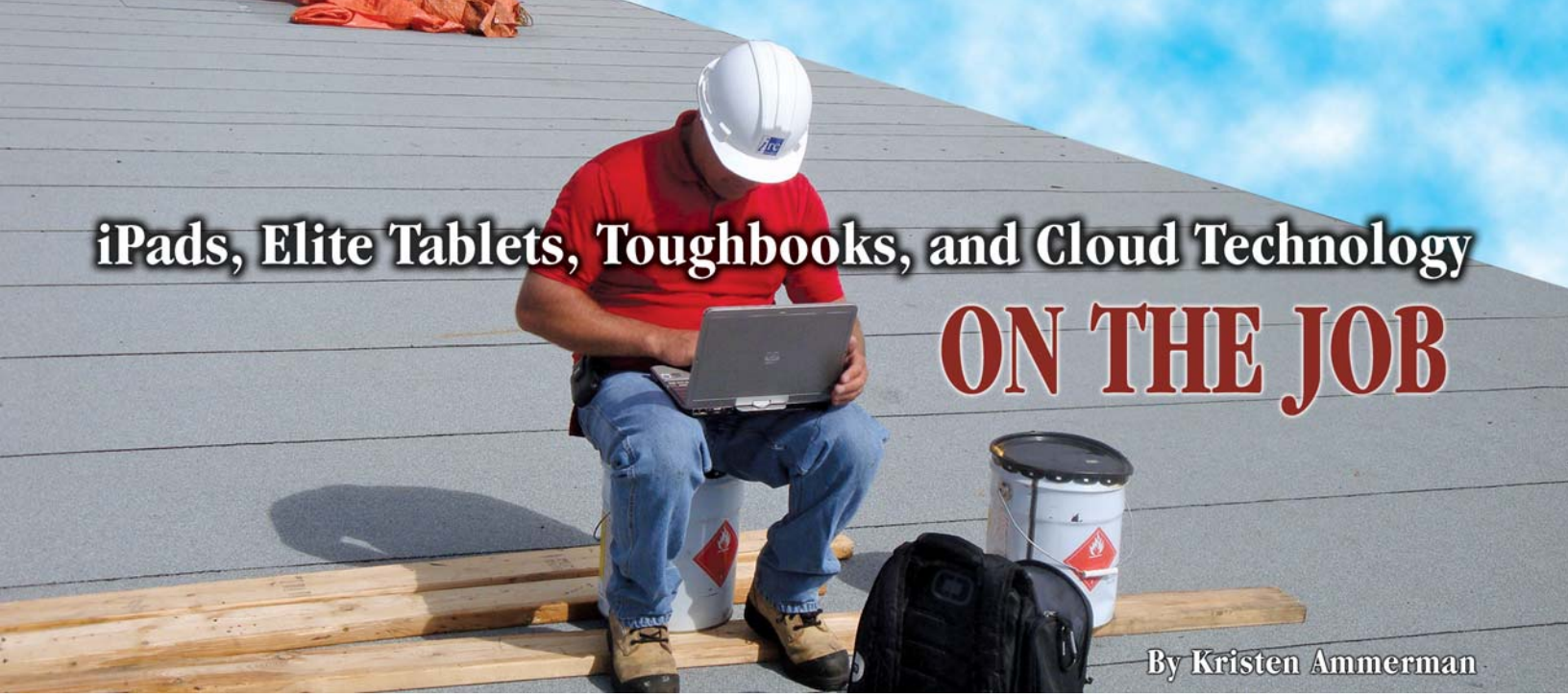


iPads, Elite Tablets, Toughbooks, and Cloud Technology ON THE JOB

By Kristen Ammerman

Remember back in the ’80s, when computer-aided design and drafting (CADD) allowed designers and consultants to cover their drafting boards and stop lugging around all those huge, individual drawings? Suddenly, detailing a chimney flashing meant searching a virtual filing cabinet on a desktop computer, clicking and dragging just the right flashing detail from a library of already prepared objects, and plopping it down adjacent to a roof plan on a desktop rendition.

And then the laptop, the Internet, and remote storage on file transfer protocol (FTP) sites seriously kicked into gear. Designers and consultants could actually access their drawings, files, and business documents wherever they were—from the jobsite itself and, with the proliferation of wireless technology, from the rooftop.

Now, Apple’s iPad and other competing tablet computers seem poised to take building envelope consultants the next step to a new height of communication and productivity.

Apple launched the iPad—a 25-ounce (700-gram) multimedia device somewhere between the size of a smartphone and a laptop—in April 2010 (though it was actually developed before the iPhone, released in 2007). In only 80 days, the company had sold 3 million units.[1]

Within just a few months of the iPad’s release, D7 Consulting, Inc., a waterproofing consulting firm, had 20 iPads delivered to its Newport Beach, CA, offices by Box.net, a cloud content management (CCM) platform company that picked the firm to test coordinated use of iPads with its content management platform.

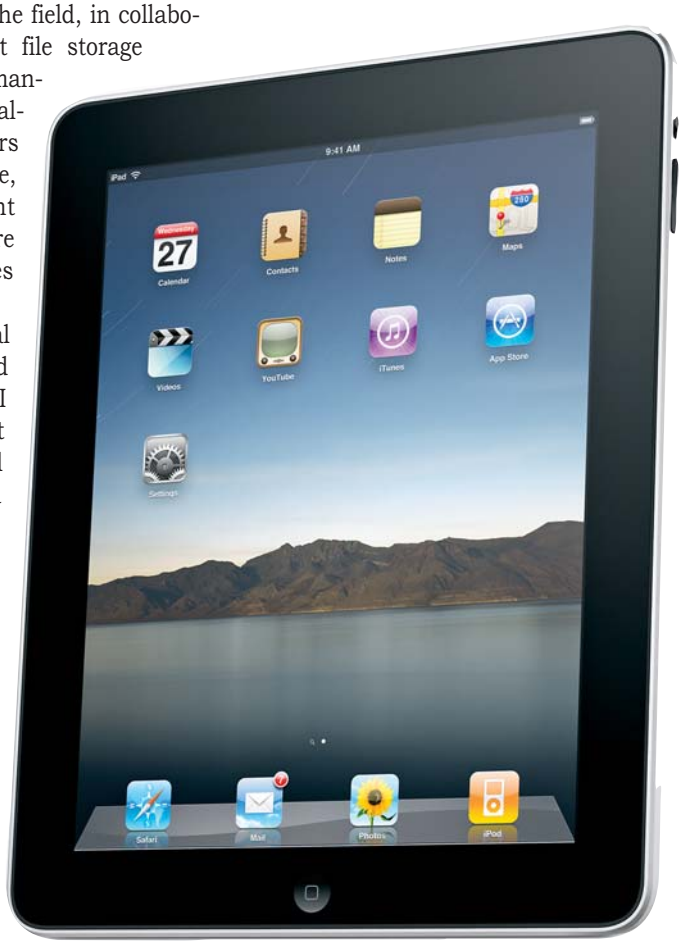
Calling the project his company’s “iPad Extreme Makeover,” D7 President Joseph Daniels, RRO, says the firm “embarked on this new strategy. . . to do more with less. . . to improve work flow and efficiency.”

Use of the iPads in the field, in collaboration with the Box.net file storage system, allows project managers, field staff, and quality assurance observers on the roof to save time, consolidate content online, and work more efficiently, D7 employees claim.

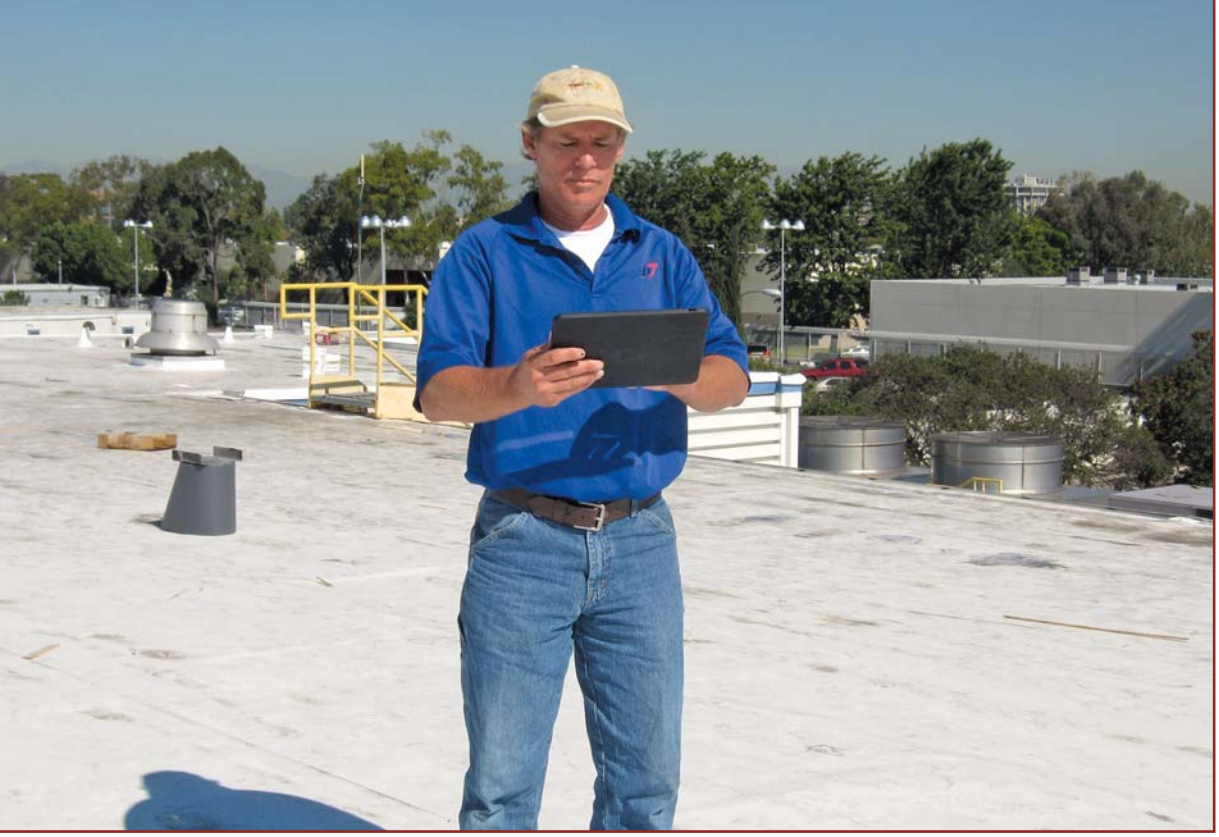
Under the traditional system, “if someone filled out a report today, I would not see that report in my office for several days,” Daniels noted in a promotional video posted on Box.net’s Web site. The typical RRO arrives at a construction site “armed with a couple of pens, paper pads, a camera, a cell phone, a voice recorder, and a binder full of reference materials, forms, pictures, and drawings.”

Prior to the iPad, they would hand write notes and then bring them back to the office, where a formal report would be typed out for clients.

Danny Westerfield, RRO, notes that the thick stack of files and drawings he previously took to the roof can now be replaced with a small (9.7-in) display touch screen that also includes a stylus, handy for drawing and annotating.



The 1004 iPad.



D7 Consulting employee working on a roof with his iPad.

Scott Swick, RRO, states, "I [can use] this to get all our details, specs, daily sheets—anything I need—out in the field, instantly." For ease of portability and protection, D7 field workers are using padded carrying cases that strap over their shoulders and also hold their cameras.

The use of the Box.net storage program in conjunction with the iPad allows a score of D7 field employees to be able to preview files, see what others are doing, and collaborate, via comment, by leaving quick notes they can "draw" and type onto the screen that can be viewed almost instantaneously by co-workers pulling up their colleagues' files from the cloud server.

"When you go into owners and they're basically seeing the technology—what we can produce in the field and how we can get the information flowing—that opens their eyes, and they see us a step above the crowd," notes Terrell Woods, design and reprographics lead with D7. Woods says the company "moves toward new technology, and with Box.net and the iPad together. . . it gives us a competitive edge." By using the iPad and Box.net technology, D7 has telescoped its jobsite-observation-to-client-report time from four or five days to same-day delivery. Often, the report is simultaneously available to the architect, general contractor, and contractor.

Woods admits it first requires the willingness of employees to try on a new technology. Beyond that, he estimates employees need about three hours to learn how to organize and transfer files, take notes, and input voice recordings on drawings and documents, find resource material, and collaborate on reports in real-time with reviewers miles away, even with a relatively tech-savvy staff.

Increasingly popular iPhone "apps" (applications) are also now available on the iPad, allowing additional functionality and assistance in performing activities on the job. Numerous manufacturers are continually releasing new apps for free estimating, measuring, and diagnostic procedures that can be used on the iPad.

DRAWBACKS

Portability and power are two of the greatest strengths of the iPad. There are a few drawbacks, however. D7 reported that one of its iPads overheated in the Las Vegas sun (but what doesn't?) then worked with-

Cloud technology involves seamless file storage and utility tools accessible anywhere.

out further problems after it had cooled.

Connectivity problems with AT&T's coverage have been reported as an issue for some but not by D7. In fact, they have found they can typically piggyback from new construction jobsites onto existing WiFi signals with no problems, according to Daniels.

Another possible drawback for setup is a current dearth of enterprise management tools available in the market, necessitating individual set up of each iPad within a work group, though that problem is expected to resolve itself quickly.

CLOUD TECHNOLOGY

Other companies are also experimenting with CCM technology, which basically involves seamless file storage and utility tools hosted on someone else's server.

John Wells, RRO, of Wells Klein Consulting Group, Inc., Victoria, BC, notes that his firm, which includes eight different home-based offices, has been using Basecamp (basecamphq.com) for its project management for about a year. Basecamp, like Box.net, is another CCM provider. "Rather than invest in a server, we all put our job files up there, and our administrative manager downloads it and uses the information to complete client reports," Wells notes. He purchased an iPad and uses it for demonstration purposes on the job, to show clients project information. "Ideally, I'd like to make our reports on the iPad," says Wells, director of RCI's Region V, but he doesn't feel that the software to make practical detailed roof surveys from the roof is there yet.

MORE RUGGED BUT MORE COSTLY ALTERNATIVE?

Still other building envelope consultants are using notebook or tablet computers onsite and marrying them with cloud technology to give their employees increased flexibility and to save valuable time, similar to what D7 is doing with the iPad.

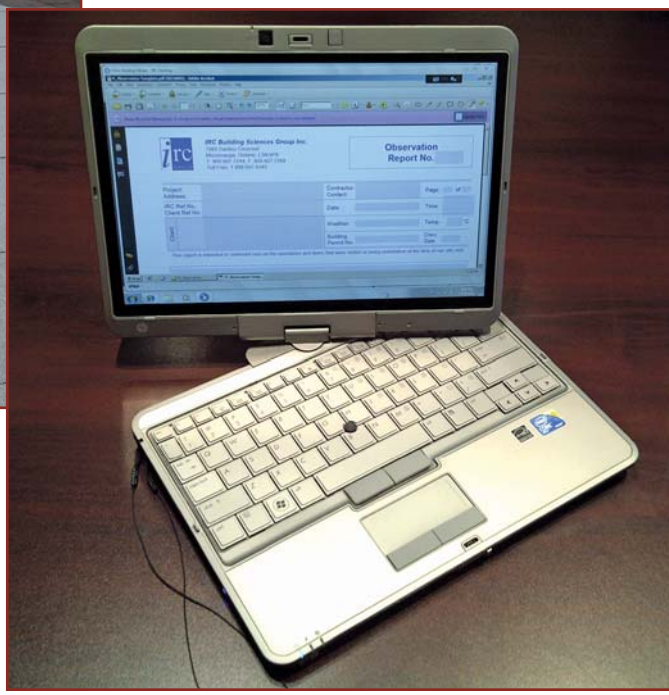
IRC Building Sciences Group, Inc., with offices throughout Canada, has been using the Hewlett Packard EliteBook 2740 for about a year now, according to IRC's Information Technology Manager George Fowler, who works out of the firm's Mississauga, ON, headquarters.

Fowler calls the Elite "roofer-proof." HP's marketers describe the 2740 as having a "durable body with a combination of stainless steel and magnesium that provides resistance to dust, humidity, and vibration at U.S. military's 810G specifications (MIL-STD 810G compliant)." Conversely, Fowler doesn't think iPads are going to be good for the industry. "They will be destroyed quickly," he opined. "With a tablet, you can close it. The iPad is just a screen." He added that now that the old LCD screens are being replaced with LEDs on the HP, visibility is good. They're also weather-resistant. Russ Hobbs, RRO, with IRC in Delta, BC, says, "You can stand out in the rain and pull them up." The 12.1-in screen beats the iPad's by about 2.4 inches, but its weight is 2.4 times that of the iPad, at 3.79 lbs (1.72 kg).

Onsite, IRC field workers can use the multitouch screen with their fingers (similar to an iPad), verbally dictate a report using Bluetooth that the computer will render into text, or write it by hand with the stylus so that the software can translate it into text.

An IRC employee creates a mobile office, complete with HP Elite, on a roof.

The HP EliteBook 2740 is used for IRC's observation reports.



With a built-in wireless card and broadband connectivity in their 2740s, IRC field reps are "100% mobile," Fowler notes. With the additional use of cloud technology (in this case, a service called Citrix Application Virtualization [citrix.com]), field reps can retrieve a roof report or other IRC report template, fill it out on the job, and simply save it to the company's site and go home without having to return to the office and complete a lot of paperwork. The report can be retrieved by anyone in the company across Canada or worldwide.

Employees can also send the report instantaneously to a distribution list with a few taps or clicks on the screen. "The foreman gets it on his hip via his Blackberry in a few seconds," Russ Hobbs notes.

A 6-cell Li-ion battery provides up to ten hours of use and can be recharged in 90 minutes in a docking station accessory. "Combining all these elements gives our inspectors a device that can remotely connect to IRC's system using 3G speeds, anytime, anywhere," Fowler notes.

The entire package costs under $2,000 per field worker, and the company now has 20 to 25 employees using the systems. "It's been a big transition for our staff. . . We're in the roofing industry, so we typically don't have the most technologically advanced people," Fowler jokes. "However, our inspectors have really embraced the new changes that ultimately make their lives easier."

Even the built-in Web cam has come in handy on occasion, Fowler says. "We've done online WebEx meetings where someone in Toronto can see what an inspector is looking at in Halifax," by turning the EliteBook around "so the boss can take a look" and see what the RRO is describing. The 2740 does not have a camera, however, to take still photos. IRC uses Olympus Stylus Tough 6020 cameras, which are dust-, shock-, and waterproof up to 16 ft.

THE GORILLA VERSION

There's an even more rugged tablet on the market, built specifically for heavy-duty construction circumstances. The Toughbook family of Panasonic tablets has been called the "anti-iPad" by a reviewer, who also called it a contest between "apples versus an Abrams tank."[2]

There are major differences, to be sure. Durability would be the most obvious. The iPad is sleek at 1.5 lbs and ½-in deep (the Panasonic Toughbook H1 Field is 3.4 lbs), but the H1 is designed to be taken everywhere and treated roughly, encased in a magnesium alloy chassis, with a 6-ft drop rating and a sealed all-weather-design (called "just short of bulletproof" by Gizmodo).[3]

The Toughbook family of Panasonic tablets has been called the "anti-iPad" by a reviewer.

The H1 Field has a brightness rating of 500 nits,[4] so it's ideal for outdoor use. The iPad boasts an LED-backlit multitouch display with IPS technology. The H1 uses dual-touch LCD display and comes with a stylus.

What about lasting power? The iPad has a built-in 25-watt-hour rechargeable lithium-polymer battery with approximately eight hours of life. The H1 has swappable dual batteries with six hours of life and charging slots in a cradle for two more batteries, allowing for continuous field work.

Perhaps the most obvious tool for a roofing and waterproofing consultant that is lacking in both the iPad and the HP 2740 is a camera, while the Panasonic H1 Field Pro has a 2.0-megapixel camera. On the other hand, how easy can it be to aim a 3-pound tablet? (As of the writing of this article, Apple was believed to be working on inclusion of a camera in its next-generation iPad.)

There is one other major difference among the Toughbooks, the HP Elite, and the iPad: cost. The iPad starts at $500, while the Toughbook H1 starts at $2,900, and the 2740 Elite comes in at around $2,000.

Two things are clear: electronic options are numerous and varied, and the market is growing daily. The scratchpad just doesn't cut it any longer.

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1 Natalie Harrison, "Apple Sells Three Million iPads in 80 Days," www.apple.com/pr/library/2010/6/22ipad.html, June 22, 2010.

2 Scott Stein, "Panasonic Tough Slate Tablet is the Anti-iPad," asia.cnet.com, Feb. 11, 2010.

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4 The nit is a unit of luminance equivalent to one candela per square meter (1 cd/m²).

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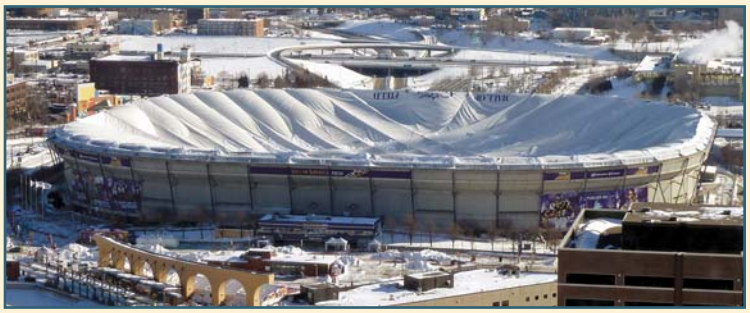
Kristen Ammerman has been the publications director for RCI and executive editor of *Interface* journal since 1996. Prior to that, she was an editor and researcher for FMI, Corp. in Raleigh, NC; managing editor of *The Wayne Independent*, a daily newspaper in northeastern Pennsylvania; and editor for the Evidence Photography International Council's technical journal. She has a BA in writing and Asian studies from the University of Arizona and is a published novelist.

Metrodome Collapses for Fifth Time

By now, most YouTube surfers have seen the viral video of the Metrodome sports stadium collapse from snow weight on December 12, 2010, causing the postponement of a Vikings-Giants game and relocation of all scheduled events to other venues, at least through March. This was not, however, the first or even second collapse of the 28-year-old Minneapolis stadium but the fifth. The first collapse of the Teflon-coated fiberglass fabric dome roof was in November 1981, prior to its official opening in April 1982. The second was in December 1982, and the third was in April 1983. A fourth collapse was only partial and delayed a game.

The roof of the Metrodome is made up of 10 acres of fabric, according to the Web site of the Metropolitan Sports Facilities Commission (MSFC). The fabric weighs 580,000 pounds and requires up to 20 fans to blow the 250,000 cu ft of air per minute to keep it inflated. Initially, it appeared that only three panels from the inflatable roof of the Vikings' home stadium had been damaged. According to John Welbes of the *St. Paul Pioneer Press*, the number could now be nine.



Birdair, Inc., the company that installed the Dome's roof in 1981, contracts with a plant in Tijuana, Mexico, where replacement roof panels were being fabricated at this writing.

— Reports from various Internet sources