

2005 COMPUTERWORLD HONORS CASE STUDY

BUSINESS

ELECTRONIC PRINT FILES ALLOW USERS FROM ALL SKILL LEVELS, FROM ALL PARTS OF THE WORLD, TO VIEW AND COMMENT ON SETS OF CONSTRUCTION DOCUMENTS FROM THEIR HOME OR OFFICE COMPUTERS WITHOUT THE NEED OF PAPER OR PRINTING. [20055283]

SUMMARY

Electronic print files allow users from all skill levels, to all parts of the world to view and comment on sets of construction documents from their home or office computers without the need of paper or printing.

APPLICATION

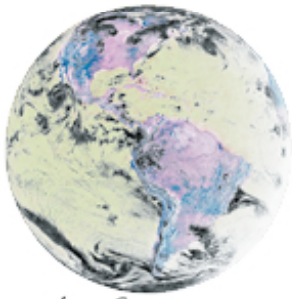
Based in the heart of the wine country in the city of Santa Rosa, California, MKM & Associates handles a large range of structural engineering projects, including residential, commercial, and public works. On a typical project initial design drafts are created by the project engineer, printed out in full sheet sets, and handed off to a staff engineer for review and markup. This working set is then passed to a structural technician who revises it in an AutoCAD® software program based on the engineer's redlines. Once complete, a fresh set is then printed out for another round of reviews, this time by both the engineer and the client. The number of review cycles depends on the size and scope of job, but three to five cycles is the average. This means that on nearly every job, MKM has to print out full-size sheet sets and deliver them to job sites or client offices a minimum of three times.

Like any company saving time and money are primary goals. Mark Douglas & Robert Grandmaison of MKM & Associates found a solution to accomplish both these goals in one product. In DWF Composer, we saw a solution that could help us conserve paper and cut time waiting for prints. While the majority of jobs are based in Northern California, MKM frequently works on projects as far away as Hawaii. Printing and distributing print sets has long been a significant overhead cost for the firm, as well as a time drag on the overall design process. For an average house design, MKM must print out often four sets of copies for the building department permit submittals, along with the usual two extra sets for the contractor and owner. Outsourcing such deliverables by plotting hard copy reproducible in-house and then sending those out for reproduction incurs additional costs as well as delays the delivery process. Using DWF files rather than printing means that MKM can now email viewable, WYSIWYG, electronic sheet sets in many cases rather than messenger them. So not only was MKM saving money on every job, but eliminated the two- to three-day lag time necessary with paper-based review.

Perhaps the most significant benefit MKM results from the change in the way they process field reports. Previously, MKM's structural engineers would drive out to the job site, observe the project, and then type up their notes and comments in Microsoft Word. Writing and explaining comments observed for construction in process at a jobsite could take four hours or more. But with DWF Composer, an engineer can put comments within the context of the design, which makes things much easier for both the engineer and the contractor who may need to address those comments by changes in the field. In fact, MKM can do the same amount of work in half an hour or 45 minutes- with much clearer communication to those who receive the information. And, the design can return right back out into the field by way of electronic transmittal of DWFs shortly after after an engineer checks returns to the office.

Moreover, MKM has realized benefits from DWF and DWF Composer in its print processes as well. Printing PDFs had always been a troublesome chore. MKM had been using PDFs to send out design files to a local print house. But because PDFs are so large, they couldn't use email and had to FTP everything. DWF files are so much more compact that they can simply be sent via email, which is a lot quicker and easier for most users.

DWF Composer has also allowed MKM to easily access plan rack information electronically. By publishing multi-sheet DWF files of projects during their creation process, engineers can review work and place comment fields within the electronic plan rack set. Then they can add comments as necessary for clarification, required revision, or field notes during construction. Incremental changes can be kept as separate DWF files to provide a record of changes, which facilitates better tracking and billing. And by having electronic plan sets readily



A Search for New Services



Robert Carrigan,
Chairman of the Chairmen's Committee

Ron Milton,
Vice-Chairman of the Chairmen's
Committee

Dan Morrow,
Chief Historian

available for review by anyone in the office, MKM engineers no longer have to track down cumbersome, dog-eared plan rack stick sets that someone may have inadvertently left at his/her desk or lost in the field.

BENEFITS

Autodesk® DWF™ Composer has the potential to completely replace paper-based design review with a purely digital process. A powerful, easy-to-use file viewing and redlining application, DWF Composer facilitates team communication by enabling anyone to view and print DWF and DWG files, and send round-trip comments directly back into AutoCAD® 2005.

IMPORTANCE

Structural engineering construction documents can range from single sheets of drawings to hundreds. Providing a way to quickly get construction documents out to the field and to our clients is our goal. Using electronic print files like DWF's allow a low cost solution for any company to transfer files over the internet or to clients.

ORIGINALITY

The use of DWF at MKM was introduced by Structural Technicians Mark Douglas & CAD Manager Robert Grandmaison. The eager engineers and fellow structural technicians have made the transition to DWF streamline relatively simple and painless. MKM & Associates uses DWF's for many types of projects. Sending files out to a print house allows MKM to save on reproducible costs and also save time waiting for prints to arrive back to MKM. Back checking designs in DWF format with DWF Composer is fast and limits the amount of mistakes in the field for contractors and owners alike. MKM anticipates using 3D models of designs to allow clients to view aspects of a project's design before construction begins. DWF's are easy to learn and easy to implement in any office. DWF files also have hyperlinking ability that allows a contractor viewing DWF's to simply click a detail bubble and hyperlink the viewer directly to the corresponding detail on an entirely different sheet within the same multiple sheet set file. Using this saves time for users having to search through hundreds of sheets to find what they need.

SUCCESS

Of course, implementing a digital design review process necessarily entails bringing all stakeholders in the process onto the same file standard and application. That process has already begun as several MKM clients have noticed the cost benefits and time saving aspects of DWF and have gotten on board by using and sharing DWF files to expedite the review process and coordination of information.

DIFFICULTY

Dealing with engineer's daily routine of paper and pencils was MKM & Associates biggest obstacle. Trying to teach engineers who have used these tools for 20+ years was a hard task to overcome. Showing everything that DWF Composer has all at one time would easily overwhelm a user. Instead, small portions of the program were introduced over a period of time to show how they can save time and frustration from everyday tasks. Placing a shortcut hyperlink on their computer desktop allows them instant access to their plans compared to them shuffling through hundreds of plans throughout their desk.