

a/e RISK REVIEW

A PUBLICATION OF THE PROFESSIONAL LIABILITY AGENTS NETWORK

CADD Part 1: Dealing with today's liabilities

[Editor's Note: *This is the first of two articles concerning risk issues for electronic files. Look for Part 2 in the next issue of a/e Risk Review.*]

Computer-aided drafting and design (CADD) software makes the delivery of architectural, engineering and environmental services more effective, efficient and accurate. Year after year, CADD and its related technologies (such as Building Information Modeling, or BIM), continue to advance and improve, enabling today's firms to deliver a wider range of ancillary client services.

While CADD certainly provides many advantages, it also poses new costs, challenges and liabilities. For example, if project team members are using different types of software and hardware, communication and coordination can be complex and prone to errors. The latest and greatest versions of CADD with all the inherent bells and whistles can also increase client expectations in terms of both project schedules and quality and scope of services. Therefore, a clear and realistic understanding must be established in terms of how CADD

files and documents will be delivered and used and what services you are hired (and paid) to provide. All members of the project—from the client, to the prime, to the contractor, to the entire team of subconsultants—must be aware of the new liabilities that arise when CADD enters the picture.

CADD Liabilities

Here are some of the common problems that can crop up with CADD in regard to potential liabilities:

- **Software defects.** The number of CADD products that have hit the market over the past 10 years is astonishing. Products are often rushed to market by software developers trying to beat their competition. Hidden software defects or bugs may not be detected until years later, after a user's design is completed and delivered and construction is in progress or complete. Consultants can be liable for resulting errors or omissions in their completed designs.
- **Incompatibility.** Files generated with one CADD program can't necessarily be correctly read by another. Even different versions of the same soft-

ware can present transfer problems. Changes in the hardware on which the software is run present compatibility issues as well. Although translating electronic files from one CADD system to another can generally be accomplished, it requires careful planning, communication and coordination.

- **Transmission errors.** The potential for transmission errors exists whether the file transfer takes place on disk, on a USB flash drive or over the Internet. The computer from which the data is transferred may have a hard disk error. The disk or flash drive onto which data is transferred can be defective. In transit, a disk can be subject to physical damage, therefore compromising data. Information sent over the Internet can be altered while passing through any number of servers. The recipient's computer may have a damaged drive. At any of these stages, errors can creep in undetected.

- **Inaccuracies.** The old adage "garbage in, garbage out" holds true in the electronic world. When your client provides you with data for your CADD files, you may have no way of determining whether it is complete or accurate. Likewise, an inputting error by your own staff can be replicated many times through a CADD program.

C o n t i n u e d

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- **Viruses.** Computer viruses can be spread through disks and Internet transmissions. Viruses in your CADD files not only result in errors, they can damage or destroy other critical programs and files while spreading throughout your and your clients' computer networks.

Clients present risks as well

Suppose you deliver a "perfect" CADD file to your client. There are no design errors, software defects or compatibility issues. The data is accurate and transferred smoothly to the client with virus- and problem-free transmission. Even with this scenario you're not home free. How your clients and others use your files presents a whole new realm of potential liabilities.

For example, a CADD file delivered to your client can be quickly and easily altered. Changes may be deliberate or inadvertent and are often made without leaving a clear trail to trace the origin. A client may make the unauthorized change, or pass the file to someone else—a contractor, for example—who changes it and then uses the modified file. If a design error results, you may have great difficulty proving the electronic file was modified.

Unbeknownst to you, an unscrupulous client may even use your CADD files as the basis for designing subsequent project phases or even starting new projects. You may end up incurring added liability and future legal fees without even knowing your design was being reused—and without receiving compensation for the reuse of your design.

Some clients may want to retain CADD files as archives of the project. Unfortunately, electronic files are not ideally suitable as archives. First, data on disks and drives can deteriorate over time. The information can also be compromised every time it is copied or there is an update in software, operating systems or hardware. A CADD file developed only five years ago may not be readable or may deliver faulty information when run on your new system. How many computers today even have a drive for a floppy disk? Despite some software manufacturer claims, not all programs and hardware are "backward compatible."

Other clients may want to keep the CADD files as project record drawings (commonly called "as-built" drawings) or for maintenance purposes. But construction drawings are rarely the same as as-builts. Construction drawings do not typically include any design and detail changes made during construction and they rarely portray the project as it was actually built.

Managing CADD risks

Fortunately, CADD risks can be managed effectively. However, minimizing your liabilities requires a coordinated two-pronged approach that enlists the support of your entire project team. In this issue we will cover the first of those two prongs: Establishing a CADD use policy.

In Part 2 of this report, we'll tackle the contractual protections that can further limit your liabilities.

Establishing a CADD policy.

Your first line of defense is to develop a written policy that outlines CADD uses and procedures. Such a policy should be shared with all employees and every client.

When meeting with a new client for a new project, be sure to discuss your CADD policy early on. Outline the risks, advantages and limitations of CADD from your perspective. Address hardware and software compatibility concerns. Set realistic expectations and time schedules for generating CADD drawings. Clarify that CADD files are not a part of the Construction Documents and that they should not be relied upon as being an accurate depiction of your design.

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The following are additional issues you and your attorney should consider when establishing your CADD policy:

- **Set specifications.** Address in detail all requirements for hardware and software compatibility. Select your CADD software carefully and follow all documentation and license agreements. Make it clear that transferring files to your client does not transfer any license for use of the underlying software. Establish procedures for file submittals—on disk, over the Internet, etc. Also establish measures for conducting pilot tests of translations and file exchanges between different programs and systems before any significant production work. Then monitor ongoing production and review drawings to make sure all project team members are following agreed-upon CADD specifications.

- **Identify all CADD deliverables.** With each project, spell out exactly what electronic files the client will receive and when, as well as the desired forms of delivery and transmission. Seek added compensation of any special CADD deliverables that increase your cost of or liability for completing the project.

- **Determine client uses of CADD.** Explain the limitations of use for your CADD files, i.e., for the client's benefit on this specific project. If the client intends to use the CADD files for determining material quantities, for facility or system management, for as-built drawings or on subsequent projects, offer extended services at an additional fee to meet those demands. Propose to update the electronic files through post-construction changes. Also discuss security issues and the

need to restrict access to CADD files on a need-to-know basis.

- **Limit third-party deliveries.** If at all possible, refuse to deliver CADD files directly to third parties with whom you have no contractual relationship, such as contractors. When necessary, deliver files to the client and let them deliver copies to others. Have your client assume responsibility for reuse or misuse by others, as well as responsibility for updating third parties if the design changes. If you must deliver CADD files to third parties, discuss your CADD specifications directly with those parties. Charge an appropriate fee for your additional work and tightly restrict authorized use through separate agreements with third parties.

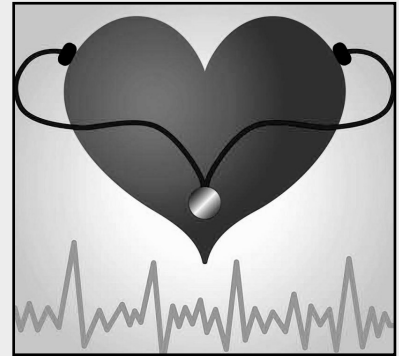
- **Establish a transmission policy.** Set rules for transferring and downloading files or information over the Internet or other networks. Immediately check the content of any file attachments received over the Internet. Most important, use updated anti-virus software for receiving information over the Internet or on a disk or portable drive.

- **Train staff.** Once hardware and software specs are set, make sure your staff is thoroughly trained to use your CADD system. Document your training efforts. This may help limit liabilities should a subsequent software error or hardware failure result in a project error. Establish internal quality control procedures for proper software use.

- **Verify accuracy.** To the best of your ability, verify the accuracy of all CADD files and data received from your client

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or other parties before releasing them to your staff. Similarly verify accuracy if you must convert these CADD files to another software program or computer operating system.

- **Making corrections.** When delivering CADD files to clients or others, agree to correct any errors or discrepancies during a limited acceptance period (e.g., up to 30 days after delivery) as part of your basic agreement. Make any corrections or changes requested after the acceptance period for an additional fee only.

- **Refuse to give electronic seals and signatures.** It is far too easy for someone to modify the content of a file on which you originally placed your electronic seal or signature—or to copy your electronic seal or signature and place it elsewhere. For maximum pro-

tection you should remove your seal, signature, company logos, title blocks, proprietary symbols and other identifying marks from any electronic file you deliver to your client.

- **Document delivery of files.** With every receipt or delivery of a CADD file, print a hard copy of every drawing and keep a log of all files and their authorized usage. It is also advisable to keep a permanent record of all procedures, drawings and transmittals made through the life of the project, along with a duplicate set of files on disk and hard copies on microfilm, Mylar or vellum.

**Part 2:
Contractual protections**

Following the procedures outlined here will go a long way toward controlling CADD-related liabilities.

However, a key tool to minimize liabilities is your contract language.

In Part 2 of this report, we will address contractual protections as well as the important issues of design ownership and copyright.

Can we be of assistance?

If you have questions about this article, please call on us for assistance. DRA is a member of the Professional Liability Agents Network (PLAN).

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