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Limiting CADD Liabilities Part 1: Risks and Remedies

The following material is provided for informational purposes only. Before taking any action that could have legal or other important consequences, speak with a qualified professional who can provide guidance that considers your own unique circumstances.

Virtually every design firm in North America now uses computer-aided drafting and design (CADD) software. Architects, engineers and other design consultants have found that CADD can make the delivery of services more effective, efficient and accurate. CADD technology continues to improve, enabling design firms to offer better drawings and a wider range of services.

Despite its many advantages, the growth of CADD has been a mixed blessing for design consultants. While CADD certainly increases productivity and enables firms to provide a wider range of design and ancillary services, it also poses new costs, challenges and liabilities.

For example, CADD can complicate communication and coordination among design team members if they are using different software products and hardware systems. CADD can also increase client expectations in terms of both project schedules and scope of services. Therefore, clear understanding must be established in terms of how CADD files and documents will be delivered and used.

CADD Liabilities

Here are some of the most common problems associated with CADD that can lead to potential liabilities:

Software defects. The number of CADD software products that have hit the market over the past ten years is astonishing. Unfortunately, defects and bugs in purchased software have been all too common. Products are often rushed to market by software developers trying to release the latest bells and whistles. Hidden software defects may not be detected until after a design is completed and delivered and construction is in progress. Even if a product defect is discovered after the fact, designers can still be held liable for any errors or omissions in their completed designs or deliverables.

Incompatibility. Files generated with one CADD program can't necessarily be accurately read by another. Even different versions of the same software can present problems. Changes in the hardware on which the software is run presents compatibility issues as well. Although translating electronic files from one CADD system into the format of another system can generally be accomplished, it requires careful planning and coordination among the parties. A recipient of your CADD file may not operate the file transfer protocol correctly, resulting in errors and omissions.

Transmission errors. The potential for transmission errors is enormous, whether the transfer takes place on disk or over the Internet. The computer from which the data is transferred may have a hard disk error. The disk onto which data is transferred can be

defective. In transit, the disk can be subject to physical damage or magnetic forces, compromising data. Information sent over the Internet can be corrupted while passing through any number of servers, modems and other hardware. The recipient's computer may have a damaged hard drive or disk drive. At any of these stages, errors can creep in undetected.

Inaccuracy. The old adage “garbage in, garbage out” holds true in the electronic world as well. When your client provides you with CADD files, you may have no way of determining whether the data is accurate. Likewise, an inputting error by your own staff can be replicated many times through a CADD system. Translation problems between two systems can add inaccuracies as well. Although information received in electronic form is often viewed as inherently more accurate than a hand-scribbled note, in truth it is not.

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 programs and critical files while spreading throughout your clients' computer system.

Client Usage Presents Problems As Well

Suppose you deliver a “perfect” CADD file to your client. There are no software defects and no compatibility issues. The data is accurate and transferred smoothly to the client with no transmission errors and virus-free. 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, an electronic file you deliver to your client can be changed as soon as it is received. 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 file was modified. Many clients are lax regarding who has access to the CADD files, how many copies are made or how the files are modified. They may even lose track of which version is your original design.

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. Using copies of a site-specific design to construct other projects can be disastrous. 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 the design.

Some clients may want to obtain CADD files as archives of the project. Unfortunately, electronic files are not ideally suitable as archives. First, the magnetic charge on a disk or tape deteriorates over time. After several years a computer disk can become unreadable or altered. Even CDs and hard drives can deteriorate or become damaged. The information in an electronic file can also be compromised every time there is a subsequent upgrade or change in software, operating systems or hardware. A CADD file developed only five years ago may not be readable or deliver faulty information when run on your new system. Despite some software manufacturer claims, not all programs are "backward compatible."

Other clients may want to keep the CADD files as project record drawings (commonly called "as-built" drawings). But construction drawings are rarely the same as as-builts. Construction drawings represent the design of the project at the time of the bidding or at the time the construction contract was signed. They do not typically include the design and detail changes made during construction and they rarely portray the project as it was actually built. Unless the client understands the differences between these two sets of documents, he or she may become a dissatisfied customer. (Similar problems arise when clients use CADD files for building-maintenance purposes.)

Managing CADD Risks

Fortunately, CADD risks can be managed. However, controlling liabilities requires a coordinated two-pronged attack that enlists the support of your entire design team. In this issue we will cover the first of those prongs: Establishing a CADD use policy. In part two of this report, we'll tackle the contractual protections that can further limit your liabilities.

Establishing a CADD Policy

Every design firm can benefit from a written policy that outlines CADD uses and procedures. Such a policy should be shared with all employees and every client. The policy should cover everything from software purchases to distribution, use and storage of CADD files.

When meeting with a client for a new project be sure to explain your CADD policy. Outline the risks of CADD from your perspective. Discuss the advantages and the limitations of CADD drawings. Address compatibility concerns. Set realistic expectations and time schedules. Following are some issues to consider when establishing your CADD policy:

Set specifications. Discuss in detail with all parties using the CADD files the requirements for hardware and software compatibility. Select software carefully and follow all documentation and license agreements. Outline the procedures for file submittals -- on disk, over the Internet, etc. If files must be translated, make pilot tests of translations and file exchanges before any significant production work. Then monitor ongoing production and review drawings to make sure all project team members follow the 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. If the client intends to use the CADD files for determining material quantities, for facility management, for as-built drawings or on subsequent projects, offer extended services at an additional fee to meet those needs. 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, such as contractors, with whom you have no contractual relationship. Deliver files to the client and let them deliver copies to others, if necessary. 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, charge an appropriate fee and tightly restrict authorized use through separate contracts with these parties (addressed in Part 2 of this report).

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 files received over the Internet. Most important, use (and update) anti-virus software for receiving information over the Internet or on disk.

Train staff. Once hardware and software specs are set, make sure your staff is thoroughly trained to use the 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 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 or other parties before releasing them to your staff. Determine the degree of precision of the data and rely on it accordingly. Then verify again all translations whenever files are converted from one system to another. For your CADD files, agree to correct any errors or discrepancies during a limited acceptance period as part of the basic agreement. Make any corrections or changes requested at a later date 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. As a rule 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. If you must provide seals or signatures, document every file you deliver, including dates of each transaction and a hard copy of the contents of the file.

Document delivery of files. With every receipt or delivery of electronic files, require a hard copy of every drawing represented by the CADD files and a transmittal that lists all files and their authorized usage. Also 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 in this report will go a long way toward controlling CADD-related liabilities. However, a key tool to minimizing liabilities is your contract language. In Part 2 of this report, we will provide sample contract language and address the important issue of design ownership and how to protect your copyrights.

Can We Be of Assistance?

We may be able to help you by providing referrals to consultants, and by providing guidance relative to insurance issues, and even to certain preventives, from construction observation through the development and application of sound human resources management policies and procedures. Please call on us for assistance. We're a member of the Professional Liability Agents Network (PLAN). We're here to help.