The Electronic Age

AIA Small Projects Forum

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IN THIS ISSUE

Editorial

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If you already renewed your AIA membership, I hope you selected the Small Projects Forum as your Professional Interest Area. If you have not renewed, I urge you to consider doing so.

The Small Projects Forum serves to develop knowledge and information that benefit architects engaged in the practice of, or interested in, small project work. This report, the first of four that will be published this year, addresses the topic "Practicing Architecture in the Electronic Age." We hope that it will help SPF members take advantage of available and evolving technology to increase both productivity and profitability.

The topic of Report #19 will be "Publicity and Marketing" and that of Report #20 will be "Construction Administration." For the sixth year, we will publish a summary of convention seminars that we feel to be of interest to the small project practitioner. Local advisors contribute the content of all reports, articles, tips, and graphics that are relevant to the small project practice.

By October of this year, we hope to archive, index, and offer through the AIA Web site all reports that have been issued to date. Due to overwhelming response from members, we will continue to issue the reports by mailing hard copies to SPF members. However, you also will be able to search electronically for articles that you remember from past issues, in addition to discovering others that you might have missed when the reports were first distributed.

Many local advisors have organized monthly discussion groups for their components. The programs often are based on a review of the latest report. If you don't have access to such a group, talk to the local advisor from your component about starting one. If your component doesn't have a local advisor, consider becoming one yourself. If you don't feel that you can make that commitment, suggest to your component's program chair that you would be willing to moderate discussions if he/she would schedule them. Peer networking, whether based on SPF reports or on other topics pertinent to their practice, is of great benefit to the architects working on small projects. In addition, continuing education credits may be earned if participants submit an AIA/CES Self-Report about the program.

Our Electronic Age

Charles G. Poor, AIA
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It wasn't that many years ago that the extent of our digital office amounted to word processing and accounting.

As we moved ourselves toward a CAD practice, we found most interesting a study by the Boston Society of Architects titled *CADD and the Small Firm.* We diligently studied "The CAD Office Scenarios" in order to design our firm's own operating system. We'll call it "SPA 2000, version 1.0." In the spirit of those CAD office scenarios, we offer the following workday descriptions:

- In a typical day in our electronic age, we walk downstairs to our home office, coffee in hand, and boot up our computer network (ether). Old serial port computers and printers are linked through an AsanteTalk adapter. We check our email on AOL and file relevant mail in appropriate job files, swap project files and specifications, and merge drawings and data from computer to computer through our SPAnet. A look at the desktop calendar (PandoCalendar 4.1) helps us recall the day's appointments and deadlines.

- We snapscan a few color prints using ColorIt 3.0 with a FotoLook 2.09.6 plug-in and convert the document into a gif file using GraphicConverter 3.7.1. This image is imported into Adobe PageMill 3.0 as we update our firm's project page. We upload the revised project page to our firm's Web site through Verio Web

Hosting, where we check our account and the number of site hits we've had for the month. We move on to size a few beams using MacBeam, used with an Excel spreadsheet, and complete a contract document detail on PowerCadd 4.0.

- Having completed the drawings, we spool the plot to a file that is compressed with StuffitDeluxe 5.0 and then attached to an email that is sent via modem to our digital imaging service. In a couple of hours, the drawings will be delivered to our doorstep to be sent out for bids and permits.

- A client calls asking for a list of roofing subcontractors. We search AddressBook 4.0, copy the resulting list to email, and send the list to the client. On another project, we fax a couple of design options to another client. They fax marked-up comments back to us, and we fax back a final design for authorization.

- Using the Internet, we research GE Monogram appliances, download some data scanned with Norton antiVirus 5.0.5, view pdf files by using Adobe Acrobat 3.0, translate some PC documents using MacLink 11.0, and finish drafting an appliance schedule.

- We open SweetSource using Virtual PC 3.0 and import a dxf file to complete a window and skylight detail in PowerCadd 4.0.

- We put together a proposal using project comparisons and detailed job reports from BestBooks, then fax the proposal to a potential client.

- We finally get a few moments to incorporate a Quicktime movie of a design from VectorWorks 8. We render the design with RenderWorks 8 and export it to StrataVideoShop 3.0, along with sound files we created with sonicWORX Artist Basic 1.0 and with some CD sound tracks. We print it to video through our PowerMac's Audio/Video Panel and send it to a client for an absentee presentation.

- At the end of the day, we back up all our work with Iomega Backup by Dantz.

It's a rare day that we take a quiet walk in the woods, when our power shuts off and our electronic age seems miles away.

The Electronic Age

Ted A. Mondzelewski Jr., AIA
AIA Philadelphia

When our firm entered the electronic age in 1985, we did so with the thought that, sometime in the near future (maybe 10 years), we would be producing most of our drawings using computer systems. Our hope was that the systems also would be affordable eventually (maybe in five years) so that a firm of our size (± 20 people) could have a full-fledged CAD department.

During the 1980s, the systems were so large and expensive ($150,000–$250,000) that businesses were formed by entrepreneurial types willing to make investments of that magnitude and be computer or CAD service providers.

One sales seminar I attended sounded very encouraging at first, i.e., "just send us your rough sketches (to California where, oddly enough, all of these companies were) and in two weeks we'll send you back the full set of working drawings. Oh, by the way, make sure the rough sketches are hard-line drafted on Mylar, completely dimensioned, and, oh yeah, make sure the project is either a hotel with multiple floors and no more than two typical room types. The cost to you will be approximately $25,000–$50,000 per project." Then these entrepreneurs went into some vague explanation about return on investment. I picked up my stale doughnut and went back to my office discouraged, my dreams of my own CAD department dashed.

I really don't know if it was Steve Jobs, Bill Gates, Yogi Berra, or what, but within two years, systems with CAD were available **complete,** with just a little more power, speed, and resolution than my first Etch-a-Sketch in the price range of $35,000–$50,000. Plus, one of these systems could fit in *my* office!

We plunged in because we truly felt that these systems were on a fast track to continually improving and becoming the useful tools that computers can be. The real appeal to me was the way all information put in the computer could be saved for future reference, i.e., how many windows, square feet of roof, etc. We began with the ARRIS Sigma system, hired a CAD operator (recruited from another firm's CAD department), and, thank God, had a hotel project that could help me justify the cost to my soft pencil partner.

The system worked out well, but little did I know what lay ahead. We produced several projects, upgraded the software, abandoned the digitizer for a menu-driven mouse, and bragged in our brochure that we were CAD literate ("we" meaning one guy in the basement of our office and 15 architects looking over his shoulder).

As the projects became more compatible with our new tool, it seemed that they required more than one CAD operator. The typical project would have the CAD operator clicking and typing, and one to three *registered* architects over his shoulder spouting comments: put the arrow there, cross-hatch this way, etc. What I learned was that most CAD operators at that ancient time, circa 1990, were computer guys with very little knowledge of architecture. It was after the fourth time of telling my one-man CAD department how wide a three-foot door was that I decided architects—to fully benefit from the coming electronic age—had to Buddha up to the bar and become "one with the computer." This *oneness* required us to actually learn the software by ourselves—oh my.

The good news was, just as we hoped, the systems were cheaper by approximately $10,000, and they were faster. Another benefit was the lowering of our health insurance premiums for eliminating respiratory ailments and pneumonia caused by smoking outside in zero temperatures waiting for the next "regen," whatever that is.

Fueled by architects' basic curiosity, intelligence, and enthusiasm for new things and new ways, AutoCAD has emerged as the VHS of preferred systems. To keep up, our firm has always believed in continually upgrading our system; and to our amazement,

this cost has not outweighed the benefits. I can't even imagine not producing *all* our projects, from home additions to $100 million corporate centers, with this now not-so-new technology. We no longer mention that we are CAD literate in any firm promotional piece because that would be like saying, "we're now using molar instead of 1000H."

Our technology has represented a significant investment in our firm that our ever-increasing client-base continually appreciates. Faster, more accurate, and above all, ultimate schematic drawing phase friendly, we are convinced the computer not only helps us to produce drawings, but it helps us to produce better design as well.

Have I told you about our new plotter...? Well, that's another story!

Electronic Resources for Specification Writing

Eugene A. Groshong
Arcom MASTERSPEC

Specification writing in the electronic age is, in many ways, easier than in the past. Word-processing programs represent one aspect of this improvement. Electronic cut and paste is faster and cleaner than the old method, and spell checking helps eliminate many errors. Revisions can be applied globally throughout the set of specifications by using find and replace functions; even if each replacement needs to be confirmed, the knowledge that no changes were missed is very reassuring.

More advanced tools also are available for specification writing, such as the MASTERWORKS™ program included with MASTERSPEC®

SMALL PROJECT™ specifications. This program is a set of macros for use with a word-processing program. The macros accomplish many typical editing activities with much less effort. Using MASTERWORKS, a whole paragraph and its associated subparagraphs can be deleted in one operation. Another feature allows the user to proceed through a specification section, jumping from one optional text element (bracketed choice) to the next and accepting or rejecting options by clicking the mouse. Header and footer changes, as well as other formatting revisions, can be accomplished for an entire set of specifications at one time rather than on an individual basis for each section. Reports can be generated that list sections containing requirements that relate to the following:

- Allowances
- Alternates
- Demonstration and training
- Extra stock and materials
- Submittals
- Warranties
- Other similar provisions.

For larger projects requiring more extensive specifications, other programs are available to edit quickly a more comprehensive master specification. One such program is the LINX™ program that's available for use with full-length version MASTERSPEC. This type of program is a database containing specification text elements that are linked together for easier editing. As an example of this linking, text elements in Section 04810 (Unit Masonry Assemblies relating to brick) are linked together in such a way that if the project requires only concrete masonry units, all text that is applicable only to brick will be

deleted in one operation. In the future, this system will be tied to keywords in CAD programs so that using the word "brick" on the drawings will include Section 04810 in the specifications and will initiate the editing process by deleting items not identified in keynotes.

Getting back to the present, another aid to specifying that has come about in the electronic age is the virtual library. Although manufacturers' use of online catalogs is not yet universal, it is certainly widespread. One of the difficulties of the virtual library is the lack of a card catalog or a Dewey decimal system. However, there are a few aids to finding manufacturers' Web sites, such as *www.afsonl.com, www.arcat.com, www.sweets.com,* and *www.4specs.com.* These Web sites list only the manufacturers' sites that they receive income from. No individual sites will list *all* of the manufacturers that you will be looking for, but they will list many. You can keep manufacturer listings as favorites in a folder called *product search,* and then keep the Web sites of the manufacturers you use in folders listed by product or by CSI's 16 divisions.

Electronic Tips for Small Projects/Small Firms

Michael Tardiff, Director, Professional Practice, AIA National

Bookkeeping Software

An overwhelming majority of small architecture firms use Quicken or Quickbooks Pro as their accounting software. There is an excellent book available: *Architects' Guide to Quickbooks Pro.* This is a comprehensive reference guide for customizing Quickbooks Pro to fully meet architectural accounting needs, including the following:

- Project budgeting and tracking
- Payroll
- Time management
- Reimbursable expenses

The book includes a diskette with a sample company file, which can save you many hours setting up your books. If you use Quickbooks, or are planning to switch to Quickbooks from Quicken to take advantage of the business accounting features, you should not be without this book. You can order it from any bookstore (ISBN: 0967092108, Authors: Karen Mitchell and Craig Savage) or any online bookseller.

Useful Web Sites for Small Firms

Project Management Institute
http://www.pmi.org
PMI allows you to download, at no cost, the 175-page *Guide to the Project Management Body of Knowledge.* This invaluable resource, while not limited to architectural project management, provides a wealth of information about effective project management.

Preview Travel
http://www.previewtravel.com
This is a good online travel site. It gives small firms the leverage of a full service travel agent. It locates the top 10 lowest fares for any travel itinerary across all airlines, and it offers the same service for hotels and rental cars. Information is generally reliable, accurate, and up-to-date. Occasionally, reservations cannot be confirmed online, in which case, the site asks you to call an 800 number with the indicated confirmation number.

U.S. Postal Service Zip Code Lookup

http://www.usps.gov/ncsc/lookups/look up_zip+4.html

Get the full nine-digit zip code for any address in the country. The site is a must-have resource for any office manager or administrative assistant. For the Postal Service's home page, type *http://www.usps.gov.*

Online Telephone Directories

555-1212.com, Inc.

http://www.555-1212.com

Most up-to-date and comprehensive nationwide online phone directory, but it can be a little sluggish.

U.S. West Dex

http://www.uswestdex.com

This site may not be quite as current as 555-1212.com, but the search process is faster. Try this one first, then go to 555-1212.com for the 5 percent of the listings you can't find here. Also includes direct access to maps and directions to the selected address.

AIA Tip

Robert T. Abell, AIA
AIA Chicago

After much mismanagement of our electronic files, particularly related to our AutoCAD drawings, our office is attempting to get organized. The AutoCAD feature we are utilizing is the X-Ref. The X-Ref allows users to cross-reference information between multiple documents.

In the past, our draftsmen would make multiple copies of plans and details that were used within the same document or between multiple documents. Duplication doesn't facilitate timely revisions; it creates construction site headaches if you revise a detail in one place but miss it elsewhere. Ultimately, it increases the time and effort to complete a project. The X-Ref feature allows you to cross-reference the same plan or detail into multiple parts of a drawing or into multiple documents, while allowing you to control the information describing that detail in one place.

An example of how X-Referencing can expedite a drawing is the creation of an interior office layout that has a repetition of private office types. Instead of creating the plan as a series of intersecting lines and walls, the program inserts the offices as X-Referenced blocks. The program creates a separate drawing for each office type and files it into an office type folder for the project, then inserts each office type as an X-Referenced block into the base plan and copies, mirrors, and rotates as required. You should go through this process at the space planning stage, even prior to knowing the furniture, electrical, lighting, and door layouts. When decisions have been made regarding these items, the draftsman inserts this information into the specific office type drawing. When the base drawing is opened up, each office with that name has been updated.

You can apply this method to developing a drawing that may have a repetitive detail. You can create a separate drawing of the detail and insert it into the larger drawing or multiple drawings as an X-Referenced block. You can revise the detail once in the base drawing and the program will update that detail throughout the project documents.

This method requires the draftsman to be organized and to think about the project in broad terms from the beginning. This way, the draftsman can ensure that the project runs efficiently from space planning through construction.

TIP: Stay High-Tech

Camilo Parra, Assoc. AIA
AIA San Antonio

In today's technology-based world, it is important to stay in the vanguard of emerging developments. By now all of your PCs should be networked, AutoCAD and Office 2000 should be installed, and the Internet should be the preferred method of communication. The risk of not staying high-tech is too great: fall behind the competition in technology and you lose money. The arguments against upgrading technology and software in the office are myths. Most of these arguments center on cost-effectiveness. The truth is you cannot afford to cut costs on technology—no bucks, no Buck Rogers.

In a small firm where I worked, the partners erroneously believed they were saving money by not networking the computers. When more than one person worked on a project, which was often the case, the only way to keep drawings updated was by exchanging disks. This process used an excess of 100 disks a month! And often, two people made the same changes to the same drawing without knowing. Networking is an efficient way to store files so that different people can work on them at different times. With the cost of networking rapidly dropping, it is a more economical solution than utilizing thousands of disks and wasting time duplicating efforts.

Everyone has pondered whether to upgrade software. Is it worth the trouble to train employees, and what about the cost of the upgrade? Imagine the situation if you do not upgrade. You may be trying to upgrade years down

the road and training employees after several upgrades have already been issued. Software companies make it difficult to interface old file versions with the new ones. However ironic this may seem in the electronic age, they are, after all, in the business of selling software. When a client requests that files be delivered in the latest version and you are not there yet, you can potentially lose business.

The Internet is another valuable resource. If you are not on the Internet today, hurry up! Sites like *www.dialpad.com* offer free long distance. The latest venture from Autodesk, *www.buzzsaw.com*, proposes to eliminate job site meetings and have every meeting go through cyberspace. And with the direction that e-commerce is heading in, even small firms should have a Web page. It may prove difficult, if not impossible, to always be in the vanguard. But at least one step behind is better than two.

Architecture and Computer Technology in the New Millennium

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Hayden Architects
Mark L. Robin, AIA, SPF Local Advisor
AIA Middle Tennessee

Well, Y2K has come and gone, and we're still here. The thought of losing information or of losing the ability to use our programs on a daily basis leads me to reflect on where we have been and where we will go with architectural technologies of the future. When asked to write an article, I considered what I could add that would be helpful to other architects visioning the new century.

First, here's a brief history of where I've been. I started with PC-based computers and CAD in 1990. The best technology was a 386 PC and AutoCAD release 9. After the first couple of AutoCAD training sessions, I realized that I needed to rethink my concept of drafting. I learned early on to carefully plan what was to be duplicated and could potentially be reused throughout the design process. The drawing process was suddenly more precise and less forgiving than sketching. It also had the ability to send the designer, who was trying to be too complete and detailed early in the design process, into a bottomless pit.

Today, with detail libraries, templates for index sheets, typical toilet plans, core plans, etc., we have at our disposal a toolkit for quickly assembling basic components of a building plan. Despite many advances, computer drafting still has much to improve upon. CAD software programs and their add-ons ultimately rely on the user's knowledge of the system and how each command works. I have found that many CAD users tap into only about 30 to 40 percent of the features in the programs. Many of the wonderful automation tools, such as multiple window and plumbing fixture insertions, get shelved for easier copy and array commands. Most programs today are more user-friendly, but they still lack the grace and simplicity of hand-drafting.

The CAD programs of tomorrow will move from being electronic pencils to becoming true three-dimensional data-models. They will allow you to extract two-and three-dimensional information for floor plans, elevations, sections, and details. Two packages that handle some of these

functions today are Ketiv's Archt, acquired last year by Visio Corporation, and AutoDesk's AEC Desktop. Both of these programs will advance in the future, allowing the designer to input countless details into the model and to simultaneously update and track information across multiple-linked drawing files. Three-dimensional models will be the norm for extracting this building information. Computers will be much faster and able to handle the larger volumes of data exchange.

All this information will change the process we go through today to communicate to the client. Architects will be able to design a building and to immediately send that information via the Internet to a client located anywhere in the world. Internet plug-ins, such as AutoDesk's Whip and Volo-View, will become vital tools allowing designers to export much of the information to the Web. Presentations of three-dimensional models will become less austere looking, and they will be easier to generate. Modeling and rendering packages will have plug-ins to link to various manufacturers' Web sites. Three-dimensional models of their information will easily be mapped into the model with a virtual link. The roles of the draftsman, the designer, and the project manager will blend—giving one architect the power of three. We will be able to take clients on a walk through a virtual model of their building while pushing and pulling walls, and punching openings, doors, and windows as we go along. This design process will bring clients and architects closer as project collaborators.

Other advancements in Web-based technologies will allow everyone, or just selected team members, to view project information as needed. The ability to check for code compliance and accessibility will go far beyond what exists today. Architects will be alerted to conflicts before those conflicts become a problem in the design. All these technologies will allow the architect to design a richer building. Communications between all team members will shift to a total virtual environment that is linked by secure or open networks. The need for architects to email copies of files to consultants, contractors, manufacturers, and suppliers will disappear. Instead, they will all be able to tap directly into the architectural model database via the Internet, adding and extracting their information as needed. Contractors will be able to extract materials, component quantities, area, and volume data for input into cost estimating software. Changes to the model and communications documenting these changes would be tracked throughout the design and construction phases, thus streamlining the entire process. Large-print hard copies of all of this information will be at the fingertips of the architect, client, and contractor via affordable, low-cost ink jet printers such as the new HP CAD Jet printer, which prints in a 13"x 19" format that is ideal for small to mid-size projects. Eventually, we will see a shift to 100 percent electronically distributed information, bypassing printed media.

Computer hardware will continue to improve in this century, allowing us to do things that are unimaginable today. Toward the middle of this century, the shift from electron to photon based computer chips, like the transistor of the 1960s and the microprocessors of the 1990s, will lead us into another technological leap. Imagine information traveling at the speed of light. Unburdened by the bandwidth and heat sink problems of today's computers, software developers will be able to create packages that truly will allow the architect to virtually model an entire building.

Brave New World

Donald R. Wardlaw, AIA
AIA East Bay

It's a brave new world now that clients have email. Three years ago, almost none of my clients had email; now they all do. A few years ago, Adobe Systems introduced a product called Acrobat, and I thought, ho hum. What's so great about that? Then I got an inkling that Acrobat might be used to send printable CAD files to people who did not use or have access to the CAD program I use. But at that time, it could not be used with pages larger than 11" x 17". A year or so ago, a colleague showed me how he was creating Acrobat files of full size drawings. Finally, I saw beauty in it.

Anyone can view—and, if they wish, print or edit the text of—an Acrobat file if they have a piece of software called Acrobat Reader, which is freely distributed on the Internet, *www.adobe.com.* The software works on both Macintosh and Windows computers. To create an Acrobat (a.k.a. "pdf") file, you use a program called Acrobat Exchange (which sells for about $200). In essence, it makes a print of whatever document you are viewing, which the reader can then view. It does not matter what application you are creating the image in, be it a word processor, spreadsheet, page layout, paint program, CAD program, image editing program, 3D modeling program, Web browser, etc. They all come out looking exactly the same.

Acrobat also creates compact files because it has built in image compression, so it is easy to send the files over the Internet. Now, if I have a drawing that I want to show to a client, I can send it simply and quickly. The Internet helps to minimize travel time on projects, is a nice way to convey project archive material to clients, and is a useful method for sending information to the job site since the image quality is superior to that of a fax.

Acrobat has some other nice features. First, most people already have Acrobat on their computers, whether they know it or not. Second, it has grown very popular due to the Internet. Many manufacturers now provide product data in Acrobat format. All the IRS tax forms and publications are available for free download in Acrobat format. Third, it is very easy to use, even for people who maintain a healthy distance from their computers, because the navigation features (pan, zoom, scroll, and page turning) are simple.

There are also some cool features for people who go a little deeper:

- You can put little post-it type notes around the image that, when clicked on, reveal a note you have created

- You can include Web links to take users directly to that site

- You can include Quicktime™ movies

- You can use passwords to protect a file so that only those with the password can view or download that file.

Acrobat has become a tool I depend on.

Yes, We Still Draft by Hand

Laura Montllor, AIA
AIA Long Island

Several years ago, after much research, debate, and considerable anxiety, our firm decided to remain a hand-drafting *only* office. We are not electronic phobic. In fact, we've adapted our practice to what seems to be the future trend. In 1986, we made an excellent business decision to buy the hardworking little Mac Plus (a whole 1 MB!). We now have a Mac G3 and a terrific color printer, with which we:

- Desktop publish our own brochures, announcements, and newsletters

- Gleefully email our correspondence with peers, consultants, and clients

- Appreciate the advantages of Sweets on CDs and quickly available online product details

- Are currently planning a new Web page.

But for us, the advantages of hand-drafting still outweigh, by far, the allure of CAD. There are two strong reasons behind this decision: our **market** and our **abilities.**

Our market is composed of 90 percent residential renovations. Our clients select us because we have experience, because we are local, and because I, as the principal architect, am personally available to them. Luckily, our clients want an architect who is an artist. Our clients love the prestige of artistically drawn plans and find pencil drawings desirable. The houses we work on are most often

pre-1950s and have strong architectural character. We design renovations of unique distinction that respect and retain a structure's original character. Hand-drafting is best suited to these few specialized projects since CAD seems to demand more repetition.

Our **abilities** are the other reason for remaining a hand-drafting office. My partner, Richard Box, and I both enjoy drafting and are good at it. From my limited experiments, I found CAD to be very slow and difficult. I see no real benefit to doing schematic drawings on CAD.

For schematic designs, I draw plans and elevations with a standard HB and fill with colored pencils. I have dabbled with freehand drawing software and a few 3-D programs, finding them to be tremendous fun but more time-consuming than my quick, hand-drawn sketches. CAD users often remark on the time wasted by redrafting base plans and elevations. On the contrary, I find that redrawing several times gives me a more in-depth understanding of a building's character, especially in the schematic design phase.

The argument for using CAD on construction documents makes sense, but, in our view, every project and site is unique and demands more than just a standard cookbook solution. Our firm does not do a great volume of work, focusing on 8 to 10 major projects a year. Because we do not plan to add personnel to our office, we will never be producing the volume that CAD thrives on.

Hand-drafting is not an antique oddity: the practice is still used by a substantial segment of the small project practitioners. The 1998 SPF survey shows that 28 percent of respondents used pen and pencil to produce drawings. A majority (five out

of nine) of those attending our local, Long Island Chapter monthly SPF meetings run drafting-only offices.

With increasing numbers of architects using CAD, hand-drafting is more of a rarity and also is more valuable. We can use this **hand-drafting capability as a strong selling point.** I believe that there always will be a place for hand-drafted and hand-crafted architecture and that, in the future, our talents will be of even greater value than they are today.

P.S. Our firm has made a commitment to remaining a hand-drafting office, and I know we are not alone. If you too are interested in this approach, I can be reached at *MontllorL@aol.com*, or pick up a pencil and write to me!

Multitasking

Jerald Morgan, AIA
AIA Vancouver

Sitting in front of a computer all day long wasn't what I had in mind when I made up my mind to seek a career in architecture back in the early 1980s. Pencil and paper were always in reach, I had no idea what RAM was, and I sat on a stool all day with my legs stretched out below me.

Computers for drafting or design were in their infant stages when I finished college, but I did not see any computer in an architecture office, except for the secretary's word processor, until about 1988 or 1989. While I was amazed at the fact that a computer could draw lines at all, I was also amazed at how slow these machines were. On the other hand,

I was really impressed by the word processing and bookkeeping that computers were doing.

Most of us in the architectural profession, I presume, have incorporated computer aided design or drafting into our offices. Even more of us, I would bet, use a word processor. What a luxury it was 15 years ago to use a backspace key instead of whiteout to correct typing errors on the old Smith Corona! Now we can add or remove an entire sentence from a specification rather than retyping the entire page. We can complete specifications in a fraction of the time it used to take because we are reusing most of the same sections with simple modifications that we can make in minutes on the word processor.

Architects working on small projects often are sole proprietors. I have been a member of this category for several years. As such, I find myself working on several projects simultaneously almost every day. In this capacity, the most cost-effective computer solution I have found is a multitasking platform. With Microsoft Windows as my operating system, I can minimize a floor plan and type a telephone memo when the phone rings. When I am done, I can send a fax from my computer to the contractor, structural engineer, and client simultaneously, then go right back to a drawing I was previously working on. It wasn't too long ago that I would have to close my drawing in a DOS-based CAD program, open a word processing program and type a memo, print it out, go to the fax machine to send it out, and stand there sending it to all the different parties. When I was done, I had to

restart my CAD program, wait for it to load, and then start drawing, only to have the telephone ring again. Windows has made me much more efficient in this manner, allowing me to work on many tasks at the same time.

Last of all, I used to use about one yellow notepad a week while drafting letters, scribbling telephone messages, outlining proposals, and performing various other tasks. I had a secretary who would try to figure out my handwriting and type it in a letter. In the past six years, I have typed every single letter I have created. I save enormous amounts of time that I previously used for proofreading every letter twice. Our office secretarial staff is now free to do more things, once again making us tremendously more efficient.

Multitasking software is an investment worth every penny to the small project architect. Finding ways to use it to its fullest capability is our challenge as we try to deliver projects as quickly as possible to earn a living.

Architect's Virtual Office

Bethany Ramey, AIA
AIA Austin

From the start, I have wanted to direct my own firm. I want the freedom to manage my own time and my own projects. But other personal responsibilities meant I could not immediately rent office space, add equipment, or hire people until I could definitely afford it. I decided I would work at home.

Many erroneously consider working at home as largely a woman's issue. In the past, it did not carry a professional image. Image and presentation mean a great deal to architects.

Home-based work can make it easier for parents with young children to work flexibly. Working from home, however, has become a key component of many workplace strategies, including those of large corporations. The idea of a home office in 2000 extends to a much wider range of professionals regardless of gender.

For several years, my consultants and I have passed drawing files and specifications back and forth via floppy disks. Early on, I had small projects that I could handle by myself. Later, as larger projects came along, it seemed I could *never* just stop working. How could I provide the best service in a timely fashion while continuing to work alone? How could I find more work if I could not handle my current commitments?

Staffing for growth does not work well for new or small firms with an uncertain cash flow, a lack of space, and no extra workstations. My choice was to seek out interested architects and engineers who were self-employed at their own homes or small offices. If each had his/her own workstation, software, and an Internet connection, they qualified as contract labor and were happy to be on their own as consultants. Their roles to support my projects carried no financial risk to them.

In a 1994 response to a city Request for Qualifications, I outlined a plan to staff my office with other self-employed architects. One worked out of California and one worked here in Texas. We did not form a joint venture, since I was solely responsible for the project. We did, however, function as though we were under the same roof—the virtual office. But the roof did not have to get bigger.

I was fortunate to have a design team of self-starting experienced individuals. Not only did they understand their responsibilities on the project, but each was well acquainted with the CAD software, how to share files, and how to send them over the Internet. In 1994, it sounded like an innovative workplace strategy. The city decided to try us and our idea for contracting A/E services using this technology.

I am now able to work on larger projects without the expense and responsibility of hiring employees. We all have our own schedules. Our team has utilized AutoCAD, email, FTP files, Web site postings, and electronic databases. We stay on a project from schematic design through construction.

The design team integrates electronically into a state-of-the art system that allows my firm to deliver projects on an equal basis with medium-sized firms. The various locales for members of the team have continued to be local and long-distance. By telecommuting with each other, we can, not only share drawings, but can also utilize electronic databases. We share project data such as site information from raster images, codes available online, specifications, formats for Supplemental Instructions, Requests for Information, Submittal Review forms, etc. Modifications may be made and solutions may be reached as if all parties were in the same office.

Very soon I look forward to project meetings that may be conducted via high bandwidth interoffice connections. We would see video images of the participants (hopefully not in their pajamas), and paper documents pro-

jected to each consultant, the owner, and the contractor. Text and graphics will be available immediately. Modifications may be made and solutions reached as if all parties were meeting at a long table in a trendy office. When the project team agrees upon changes, digital copies can be printed at each location.

More and more, there is online support for home offices. There is online support from the AIA as well. Internet sites exist that resemble executive office suites where basic secretarial services can be obtained. Drafting services and specification writing are available over the modem as well.

Telecommuting makes sense. It is not for every architect or for every project, but telecommuting is an option to the practice of an individual or small firm. Firms as we knew them years ago may be breaking up. Effective high-performance, self-employed individuals work from remote offices but in real-time.

Studies show that a large percentage of people are more productive in off-hours and in their home environments. Some of these self-employed people have recently come from large architecture firms where burnout could be soothed only by flexibility.

In social terms, the virtual office means a new system for sustaining social development and improving quality of life. Beginning one's day does not involve endless hours of real-time commuting. The self-employment expenses are offset by the freedom. A financial benefit to each self-employed professional is a legitimate home-office deduction.

As telecommuting grows in the electronic age, the only OSHA issue might involve tripping over the cat.

Web Deliverables

Eugene M. Hollander, AIA
AIA Connecticut

Two intriguing services available via the Web are worth our attention: Extranets and distance learning. Both have been around for a year or more but have recently begun to catch on:

Extranets are personalized Web sites that can work for you both in managing the flow of your project documents and in communicating to all interested project participants. In our Report #16, August 1999, D. J. Jansenson included a good article on how you can set up your own project Web site for project document management and communications. Now, a more sophisticated type of Extranet takes this to the next level, employing software to track, manage, and more.

Mostly used for larger projects in the past, it is inevitable that we shall soon see applications for small practitioners' work, because all manner of communications within the project community (owner/client, consultant, building official, contractor, and more) can be served by ONE effort. Think of the time saving to start. If all the project members know the information needed is available in one place on a specially defined Web location, then it becomes their responsibility and their time spent to collect the information, not yours!

And that is the tip of the iceberg. Depending upon the sophistication of the software available, one can exactly track every single document for a project. That includes drawings,

specifications, submittal information, and client and contractor correspondence. The result is an audit trail, or record, of every request for information, including who got it and when. This is invaluable for protection against lawsuits and other potential disagreements between the many parties. The project management function alone can justify the cost of such a service. And there is a cost! Currently there are nearly 100 individual services that offer some kind of Extranet service exclusively to the construction market. The AIA's Project Center is one example. They all differ in functionality and fees, so careful evaluation is in order. Here are a few sites that I have looked at:

- *www.buzzsaw.com*
- *www.iteamwork.com*
- *www.eProject.com*
- *www.Bullwhip.com*
- *www.bricsnet.com*

Beyond the possibilities outlined above, consider the combination of Extranets and **bots** (robotic messengers) that sweep through the Net culling information. The time spent researching product information could be relegated to a function of the project Extranet. In addition, our entire method of soliciting a construction bid could take a paradigm shift. Imagine, if you will, a process modeled after the popular Ebay auction service. Contractors, screened for acceptability, could access the needed project information and submit a bid much as an auction player might. The process would be automatically generated from the Extranet, and the resulting

bids would be distributed to the appropriate parties. There are, of course, many hurdles to overcome—e.g., security—but the future of this application holds much promise. Stay tuned.

Distance learning is another interesting new Web service delivered to your doorstep! Consider the time and money spent to attend a course or conference. Now all that is possible in the comfort of your home, office, car, or boat if wireless is available. The AIA has just started a Continuing Education service using this feature. I checked it out recently and, in spite of some software snafus, it was really easy to get started. The convenience, low cost, and flexibility that are available in a distance learning environment are truly remarkable.

Drafting on the Computer

Peter Wronsky, AIA
AIA Long Island—East End Section

I first worked in an architect's office during the summer between my sophomore and junior years of high school. In addition to getting coffee for the office staff, making sure that all original drawings were safe in the fireproof file cabinet at the close of the workday, and calculating the level at which the exterior walls should change from 12" block to 8" block with brick veneer, part of my job was to stamp an inked title block on the lower right-hand corner of all working drawings. I still remember the awesome responsibility of applying this prominent element to a sheet of linen, representing hundreds of hours of work by a drafter who took pride in every one of those lines, drawn with a carefully

sharpened pencil that was rolled for lines and chiseled for lettering. Details, either copied from another project or created afresh, were carefully drawn with a variety of line weights. The drawing itself was a primary source of creative satisfaction for its author. At the other end of the room, there sat a specifications typist, rapidly transforming mounds of cut-up documents, attached to 8 ½" x 11" sheets of lined paper filled with notes and arrows, into a set of specifications.

Eventually, the title block stamp became as rare as the white-lined blueprint. Copiers and transfer sticky-backs made it possible for sections and details to be reused from one project and applied to the next with a minimum of technical time. Through the use of word processors, whole paragraphs—and even divisions—could be inserted into an evolving document without retranscribing the text from the cut-and-paste pile.

However, the cost, both for software and hardware, of computer drafting made it an option available only to architects who could afford both the initial capital and the time to train their staff. Early versions of CAD were often operated by CAD experts, since few drafting personnel had computer training. Drawings were readily recognized by their uniform line weights, lack of overshoot at intersections, and bland lettering. This architect of small projects, fiscally conservative and technically inept, avoided CAD. I rationalized that for a practice, hand-drawn was the best. Who wanted drawings that looked like an engineer had drawn them? However, that thinking has changed over the past few years.

Equipped with a computer given to me by a younger sibling, fitted out with a relatively inexpensive two-dimensional program and blessed with a printing service whose owner had both unlimited patience and a pen plotter, I embarked on the design of a 3,000-square-foot house in 1993. Using a souped-up 286 with a mono-chromatic monitor, it took me roughly three times as long to prepare the con-struction documents as it would have taken me to draw them by hand. I have since upgraded the original computer twice and changed to a very user-friendly CAD program, also upgraded many times.

I now use the computer to produce all drawings, from preliminary sketches to construction documents. Being a sole practitioner, I depend on an online forum of people who exchange prob-lems and solutions over the Internet and a monthly newsletter of shared tips. My drawings have sufficient overshoot, varied line weights, and hand lettering to satisfy their harshest critic (myself!). And, I generate them in considerably less time than was required for earlier drawings labored over by hand.

Try it; you'll like it.

Convention 2000

Peter Wronsky, AIA
AIA Long Island—East End Section

There are five excellent reasons to attend the AIA National Convention in Philadelphia from May 3–7, 2000. The Small Projects Forum is sponsor-ing three seminars:

Session S21
Thursday, May 4
2:00–3:00 p.m.
A member of the Lentz Group will repeat a program from Convention 1999 on Public Relations, which received the highest rating by partici-pants last year at the convention in Dallas.

Session S165
Saturday, May 6
4:00–5:30 p.m.
Peter Piven, FAIA, a perennially popu-lar convention speaker from the Coxe Group, will present *Practicing Small Successfully,* leading a panel of local architects who will be discussing the results of a survey sent to all members of the Small Projects Forum for whom we have email addresses. When you receive the survey, please take the time to complete and return it by the announced deadline.

Session S131
**Saturday, May 6**
1:45–3:15 p.m.
In the third seminar, a panel led by Michael Zetlin, Esq., of Zetlin & DiChiara LLP, and including local advisor Laura Montllor, AIA, Margaret Sedlis, AIA, and AIA National staff members Dale Ellickson, FAIA, Esq., and Joseph Jones, AIA, Esq., will address the appropriate use of AIA documents for small projects.

The other two events sponsored by the Small Projects Forum are the **Brochure Exchange**, Friday, May 5, 5:30–7:00 p.m., and the **Sole Practitioners' Breakfast**, Saturday, May 6, 7:00–8:00 a.m.

On Friday, bring copies of your brochures and other promotional material for review by local graphics consultants at our annual brochure exchange. The breakfast will again be held on the Saturday morning of the convention. As in the past, a sole practitioner from the host chapter will share his experience with us at an informal buffet.

I hope to see you in Philadelphia at as many of these events as scheduling will allow.

We are presently considering pro-posals for the National Convention in 2001. Please contact me to suggest seminar topics that you feel would appeal to SPF members. Final submit-tals are due to the AIA by June 19.
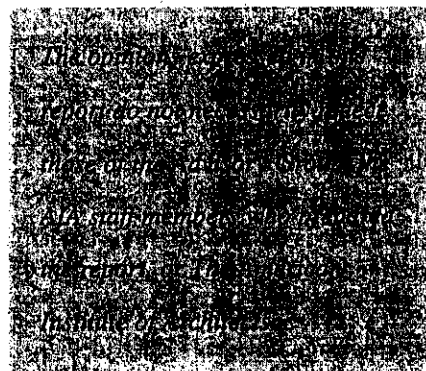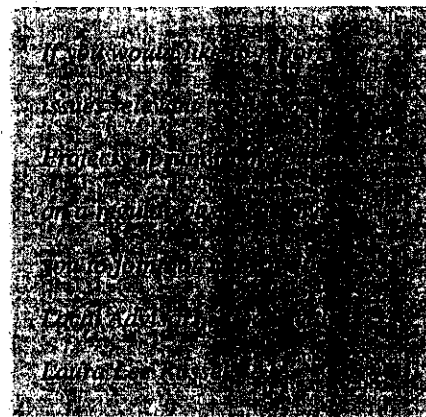
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