



**MECKLENBURG COUNTY**  
**Land Use and Environmental Services Agency**  
**Code Enforcement Department**

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# Memo

September 5, 2002

**To: Tom Turner, Charlie Watts, David Daignault**  
**From: Jim Bartl**  
**Re: EPS survey of Architects and Engineers**  
**Cc: Kari Lanning**

As you know, following our May 21, 2002 presentation to the BDC on Electronic Plan Submittal, we circulated a survey on Electronic Plan Submittal to the professional community via our electronic mail list. We received a response from 49 professionals, representing approximately 14% of the list. A copy of the chart summarizing their comments is attached for your reference.

To help you digest this information, we offer you the following observations

## 1. The raw numbers

- Projects willing to submit via EPS
  - Small @ 381 (82% of total)
  - Large @ 82(18%)
- Project sheet submittals via EPS
  - Small @ 14,666 (63% of total)
  - Large @ 8,738 (37%)

**Note 1:** the adjustments for projected EPS submittals vs. total projects responding are about the same between small and large project groups. **So in both cases, about 32% of the A/E volume responding said they wouldn't use an EPS system in any case**

- Small @  $14,666/21,453 = 68.36\%$
- Large @  $8738/12,881 = 67.84\%$

**Note 2:** small projects were defined as less than 50 sheets in size; large projects were anything over 50 sheets.

**Note 3:** in the study data, the average submittal set size for projects using EPS would be:

- Small @ 38 sheets
- Large @ 106 sheets

## 2. A/E Comments made:

The following list summarizes comments from most common to least, with the number of times sighted in parenthesis

- Resolution of electronic seal (11)
- Security of drawings regarding internal/external access (10)
- Effective communication of comments (4)
- Ability of plan review to navigate and understand the drawings (4)
- Universal software (4)
- Need to improve custody of documents and minimize lost drawings (3)
- Fear of extra A/E work (3): items sighted include
  - Scanning hard copy submittals
  - Purging drawing info not to be submitted
  - Increased A/E work required to meet a common submittal standard
- Drawing confidentiality/client confidentiality (2)
- EPS can't be the only way to submit (1)
- Protection of copyright (1)
- Drawing archive (1)
- Maintain human contact (1)
- Large file size problems (1)
- Confirmation of receipt of drawings(1)
- Backup system available when/if EPS crashes (1)

For the record, two of the A/E's indicated they had no qualms about using an EPS system. Conversely, 2 A/E's indicated they didn't think EPS would be effective and wouldn't use it. In total, 9 A/E's responding (roughly 20% of the total) indicated they wouldn't use EPS if it was available. As noted in the previously discussed "raw numbers", they represent about 32% of plan review volume calculated in sheets.

I think our next step is to get together to discuss candidly what this information from the A/E's means to the BDC. As I noted to you in our 5/21/02 discussion, EPS is not cheap. We (the Department and BDC) have to decide if the demand and potential use is large enough to merit a significant investment (likely in the millions of dollars). If the answer to that is "yes" the next question is whether we want to lead the way, or let someone else blaze the trail and assume the initial costs, which are likely to be significant.

Kari will call you to setup a meeting to discuss this.

Name of Firm or Architect	In your office, do you currently produce documents electronically?		if yes, what electronic format do you use?	How many of your projects per year are submitted to MCCE for building permitting?	What's the average drawing set size (in sheets) for these submissions?	What's the average construction cost for these projects?	If the Department had an EPS system, allowing submission of permit application drawings by internet, what percent of the projects noted in the above questions would definitely use EPS?	What percent of these projects would possibly use EPS?	Do you have any concerns regarding your permit drawing submission and plan review being conducted electronically?		if yes, please explain
	Yes	No							Yes	No	
Architechnique	X		Softplan	1 to 5	20	\$ 1,000,000	0	0	X		I do not want to see this as the only option for submitting plans.
Phil Kabza	X		Autodesk Arch Destop 3	10	30	\$ 700,000	100		X		Protection of Odell copyright and client confidentiality
Jerry Currie	X		AutoCAD 2000i	15 to 20	12	\$ 300,000	50	10	X		We do our in-house review on hard copy because quick reference to coordination sheets is easier while looking at a paper set rather than opening several electronic windows. We usually find inconsistencies that are overlooked on electronic screens. This may be a factor of "...because that's the way we've always done it". I have no qualms about submitting in EPS because of convenience and printing costs, etc.
Neil Dixon	X		ARRIS from Sigma Design w/ DWG & DXF	8	125	\$ 15M	Smaller, upfit type	20%	X		How will mark-ups be handled? Communication of comments is key.
Larry Walters Gantt Huberman Architects	X		AUTOCAD 14 and 2000	10	20-200	\$ 10M	75% others are express review, how does this work?	Don't understand the difference	X		The continuing issue of seals on submitted drawings with signatures, do we have a solution? Would marked up drawings be provided by the reviewer for the architect or will all comments be in written format as was the original plan?
Charles M. Watts Watts Leaf Architects, PA	X		AutoCad 2002	20	Small-6 Large-40	Small-\$40K Large-\$12M	0	10% (some small projects only)	X		1. Confidentiality 2. Ability for plan review to navigate and understand what is on the sheets 3. Preparation would mean that files would need to be purged of information not needed to submit. This is normally on drawings in areas that are not printed. This is an extra step in the plan preparation.
Constantine Vrettos	X		AutoCad 2000	4	25	\$ 2,000,000	100%	100%		X	

Jim Venker	X		AutoCad 14	50+	20	\$ 100,000	75%	75%	X	The department has had some history of losing documentation over the years. How will this process improve custody of documents? How will you be sure that you have received documents with a "wet" seal or under the direction of a registered professional?
Robert Kipp Mayer OMNI Architecture	X		MicoStation V8 for the drawing sheets and Microsoft Word and AIA/EDS for the project manual pages					As few as possible	X	Assuming signed and sealed documents are required, the design professional's signature and seal would be electronically published and the uniqueness and security of the traditional signed, sealed, and building official stamper set would be gone. While pdf read-only files would have to be sent, security is not absolute with this method. Also, if there are hard copy inserts in the drawing sets such as a survey or in the project manual such as geotechnical report, then these would require scanning into an electronic format before sending to you since these signed and sealed documents normally are distributed in hard copy. Asking the authors of these for electronic copies should generate the same question that I have presented.
Steven Meyer	X		AutoCad and Microstation	30-40 firm-wide	16-200	\$70K-10M	50%	50-75%	X	What software will be utilized in the review process? What level of security will you provide from both internal and external access?
Tim Payne	X		AutoCad	150	007-10	\$ 300,000	0	50%	X	Under N.C. Statutes, an engineer cannot digitally sign his/her seal, nor would I want to transmit my seal (signed or unsigned) electronically.
Little & Associates	X		AutoCad	20+		\$ 5,000,000	100%	100%	X	
Bill Monroe	X		Microstation	30	20 Upfits-8 Bldgs-120	\$200K-10M	100%	100%	X	If folks have concerns then use seals separate of drawings/s applications??? Or seal first set to be put in field?
Bruce A. Brodt	X		AutoCad	6	12	\$ 500,000	Don't know	50%	X	Security and propriety
Bob Davies	X		AutoCad 14	One at most		\$ 1,500,000	100%	N/A	X	
Gary Franceschi	X		Datacad	006-008	30	\$2-5M	Don't know	80%	X	
Michael Dunning	X		Microstation	32	60	\$450,000+	60-70%	70-85%	X	Secure transmission of drawings back and forth, clarity and format of reviewer comments, how are drawings archived by the department? Sedd and simplicity of the process, universality of the software/file types required
Vincent Ciccarelli	X		Microstation	20		\$ 3,500,000	50%	80%	X	

John Urban	X		AutoCad	20+	15-20	\$ 250,000	15-20%	20%	X		Alteration, modification, misuse, transfer of files, compatibilities, etc.
Gary Beard	X		AutoCad 2000	002-003	3-225	\$20K-12M	100%			X	
D. Cash	X		Microstation, Word	5	50-100	\$1-5M	0	25%	X		Problems in layers and translations are difficult to know without hard copies for review and documentation
Nancy Everhart	X		AutoCad 2000	4	10	\$ 800,000	100%	100%		X	
Brunson Russum	X		AutoCad 2002	4	50-70	\$2-5M	100%		X		Security of drawing files (Thanks for staying on top of current technology)
CPJ Issac	X		AutoCad IT	003-004	15	\$ 200,000	100%			X	
Stefan Pienkny	X		AutoCad 2000	10	80	\$ 5,000,000	95%	100%	X		Makes sure proper security procedures are in place and proper software installed to protect integrity of the document. Also it is important that human contact is maintained through out the process. Preliminary review and follow up so that Building Standards knows to expect the project submittal is essential.
John Walker	X		AutoCad 2000	03-005	3-300	\$10K-22M	0	0	X		Sharing of electronic documents has been a major topic of discussion and source of concern in the profession for a number of years, with no clear resolution to liability issues. To my understanding, the general legal precedent is that the hard copy drawings are the contractual documents. Most information I have read from professional organizations and professional liability insurers caution that electronic file transfer and sharing should be accompanied by disclaimers referring the user to the hard copy documents as the contract documents. From a more practical standpoint, as an architect who has worked with and shared electronic files with numerous consultants over the years, I have seen many issues that would make it difficult to do electronic document review. Here are just a few: Almost invariably we have to do some sort of manipulation on drawings received from outside consultants to be compatible with our systems and drawings. Some examples are: different offices have their