Fall 1995

Fall 1995 Sweet's Forum

Quarterly Features

Past Forum Articles

Sweet's Fax Form

Sweet's Forum

Sweet's Forum Features

Sweet's Forum - Fall 1995 Edition

Past Sweet's Forum Articles

Summer 1995 Articles

Spring 1995 Articles

Quarterly SweetSource Features

SweetSource Product Filters

New SweetSource Manufacturers

Sweet's FAX

Cruisin' the Net

Yes, we've been lurking out there again!

It's hard to refrain from joining the fray sometimes, especially when the discussions involve Sweet's, CIG, or McGraw-Hill. Our purpose, however, is not to stop, sway or change any of the commentators. Our purpose for being there is to listen and try to assess the value of the comments as it relates to Sweet's/CIG/McGraw-Hill. Can we respond to comments with value?

Without pulling full conversations and author attribution, there are several items we'd like to address quickly. Enjoy!

Continuing Education for Professionals

Education of the Future AEC Professionals

Internet

AEC Firm Libraries and Librarians

Continuing Education for Professionals

Comments:

Most professional organizations require continuing education credits to retain professional or associate membership. Costs, subject and time are the three most important items cited. If the cost and time are good, the subject isn't (plus all the variations on these themes).

Response:

CIG has recently gone through an extensive first step evaluation process on all the issues confronting our customers, and if there are any opportunities for us to participate or help.

On the continuing education front, we have developed an Information/Technology presentation on *The Construction Information Highway / The Role of Print and Electronic Media*. Who better to talk about print and electronic data than two registered architects from Sweet's who work with building product manufacturers in the development of product information for both media! This presentation has received continuing education credits from one of the major professional organizations. Following is a description of the presentation:

> The dynamics of architecture -- drawings, budgets, project management, product selection, specifications, data linkage -- are changing. The pace has quickened with the constant infusion of emerging technologies. The ability of design professionals to respond to initial design concepts and the ongoing project changes are greatly enhanced by the number of manufacturers now providing information in complementary medium: print *and* electronic.
>
> Within the context of an integrated building product information program, one of the critical responsibilities of the architect/specifier is to select and evaluate building products. Being able to research comprehensive product information which is project-specific leads to the most appropriate building assembly. The building product selection process can be approached by the design professional in basically three ways: (1) Previous Project Experience, (2) Providing a "Fake Spec", and (3) Reliance on a Building Product Manufacturer's Electronic Product Information.
>
> Automation of the design process would link a project's databases of information; and provide the architect/specifier with the opportunity to balance the development of the drawings with the specifications, construction schedules and budgets. A wide variety of software applications are available to provide full project data and drawing integration.
>
> The presentation illustrations provide practicing design professionals insights on the advantages of using both mediums (print and electronic) for product selection and specification. These architects also discuss fully automated design processes. All of this is tempered with today's reality: Print is now...the "paperless office" is in the future...and NET surfing may or may not add project productivity.

We are working closely with the major professional associations on a wide range of issues, including continuing education.

Additionally, our recent discussions with educators indicates there is a lot of interest in developing continuing education credits through educational institutions. We are investigating some possibilities and will keep you informed.

Education of the Future AEC Professionals

Comments:

Education of future AEC professionals and the value of their education has been raised in several forums (online and publications). To quote one of the CompuServe authors:

> The education part is simple. Its the school of hard knocks. This kind of education is not possible in architectural or engineering design school, because the detail would detract from the "aesthetic issues" and "creativity."

Response:

We've had some wonderful opportunities within the last 18-months to have more contact with educators. In another issue of Sweet's Forum we intend to address this much more completely. Take heart! There are some very progressive and impressive things happening out there. Following are some quick hits from two different programs and the efforts being made to move students into the work force with reality education. We are actively talking to educators (fax, email, phone) at over 250 schools.

Editor's note: Are you currently providing outdated Sweet's catalogs and SweetSource to your favorite school? Contact me via Internet at rose_austhof@sweetspub.com or Sweet's Forum Editor at Fax 616-454-4140. We are now providing current copies of Sweet's products to over 550 schools at no cost. Students still love the old catalogs to cut up, but now they can also have the current versions for reference.

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College of Architecture, University of Arizona, Tucson, AZ

Department of Building Science, Auburn University, Auburn, Alabama

John D. Mouton, AIC, Professor and Department Head

Phone: 334-884-4518

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Internet: moutojo@mil.auburn.edu

The Department of Building Science is part of the School of Architecture at Auburn University. They offer a 4-year degree and a master's. They have 385 undergraduates, 14 grad students, and graduated 96 students this past year. The program has 14 full-time instructors, plus part time and adjunct faculty.

Some of the more significant points about their curriculum are:

- Auburn has the only undergraduate thesis program (in the 88-Associated Schools of Construction). It is self-directed.
- They have a very strong use of computers and technology. 54% of the students have their own computers. A lab of 14-Pentium computers supports student class work. The lab and instructors are also networked. Partnering with major providers results in focused use of the following computer programs for the students: Primavera, MC2, TimberLine, Microsoft products, SweetSource and others. Student's understanding of computer applications and use is high upon graduation.
- They also use other real-world materials as a regular part of their classroom assignments, including: Engineering News Record, Sweet's Catalogs, and the Wall Street Journal. They also do field trips.
- They have direct links (electronically) with construction professionals for access by students.

College of Architecture, University of Arizona, Tucson, AZ

Dean Robert Hershberger, Ph.D., FAIA

Phone: 502-621-6751

Fax: 520-621-8700

Internet: rgh@coit.arizona.edu

The architecture program was started at the University of Arizona in 1961. It was accredited in 1964 and has been continuously accredited since then. They offer a 5-year undergraduate degree and a master's. They have about 400 students in the program. They graduate about 50-students each year plus awarded 15 master's degree this past year. The program as 24 full-time instructors, 6 part-time, and 15 graduate students as TA's. They average 12 students per faculty.

Some of the more significant points about their curriculum are:

- The undergraduate degree is based around the design structure with strong focus on environmental, graphics and computer graphics. They currently are building a larger shop/yard area for design-build opportunities and have been offering design-build for the last three years.
- They have a strong adjunct instructor program where practicing professional come in for a single lecture to as long as 4-weeks for a real-life look at design problems based typically on the way this specific professional works in his or her practice.
- The curriculum focus gives students strong skills in understanding and solving problems. The student has very good reality focus, and less on theory.
- As of this year, incoming students (2nd year) are now required to have their own computer. They have networked the entire college and everyone is hooked onto the NET. Currently there are hookups in all the 2nd and 3rd year classrooms. The 4th and 5th year will be done next year. Also next year they are going onto a central server.
- They are doing some partnering with real-world product and information providers, and are looking to strengthen this over the next couple of years.

Internet

Comments:

The comments about the lack of viable building product information on the NET is huge!

Response:

McGraw-Hill is implementing a web site this month. The Sweet's participation in that Web site will happen. We've been involved in rigorous research for over a year on information types and display as well as working on information appropriate to the AEC community. Stay posted and we'll let you know when we are there! We'll also try to update you on the interesting web sites you may wish to visit to make your own assessments on value.

AEC Firm Libraries and Librarians

Comments:

The filing and retrieval of building product information continues to be a major concern of the small to medium sized firms. Firms with 50 or more employees often hire a full-time librarian whose activities are project related and billable.

Response:

We are currently involved with a group of AEC Librarians in San Francisco in our research for data on their use, access and retention of building product information. Additionally, a study on AEC libraries was issued this summer in Specialty Libraries on the structure of AEC libraries. We will provide data on this subject in a later issue of Sweet's Forum once we have some good information for you. We hope to share some of the specific ways these professionals deal with information in their quest to keep it current and easily accessible.

The Construction Information Group (CIG)

The Construction Information Group is a business unit of *The **McGraw-Hill** Companies* comprised of:

Sweet's,

Dodge,

Architectural Record,

Engineering News Record and

22 regional publications

Directory of Specialty Consultants

In Association with Architectural Record and Engineering News Record

Locating specialty consultants is a time consuming process. They are difficult to locate; finding the most qualified expert can require countless hours of research. At McGraw-Hill we learned this the hard way: We found them. In fact, we spent 2,080 hours and $146,818 locating the consultants for this book. Nonetheless, we now have the most comprehensive, up-to-date guide to specialty consultants in the design and construction industry, the Directory of Specialty Consultants. This valuable resource can cut your costs associated with locating specialty consultants by at least 50 percent:

- If you're an **architect, engineer**, or **contractor**, the Directory can help locate the consultant with the expertise that could influence whether or not you are awarded your next project.
- If you're a **building product manufacturer**, the Directory is a prime resource for locating experts who can recommend your product and, therefore, maximize your sales.
- If you're a **facilities manager**, the Directory pinpoints the expertise that you need to immediately address your facility concerns.

Published by McGraw-Hill with the assistance of Kenney and Associates, a national marketing and consulting firm to the design and construction industry, the Directory of Specialty Consultants consolidates a nationwide search for specialty consultants into this easy to use reference guide. The Directory lists the firm name, address, and telephone number of specialty consultants in 43 different specialty disciplines. For those consultants who chose an expanded listing, pertinent facts about their firm are also included.

The Directory, in its first publication, lists approximately 2,200 consultants. Research includes referrals from various associations, universities, and architectural, engineering, and construction firms. Many other referrals came from the consultants themselves. The cumulative product is this useful resource.

How to Use the Directory
Add to the Directory
Introductory Offer

How to Use the Directory

Consultants Categories

Specialty categories in the Directory are arranged alphabetically. Firm names within these categories are also alphabetized. The miscellaneous category is alphabetically organized according to the name of the specialty discipline.

The specialties included are:

> Acoustics * Architectural Artist * Architectural Models * Architectural Photography * Art Glass * Audio/Visual * Building Product Consultants * Climatic * Code Compliance * Computer * Cost Estimating * Disability Accessibility * Energy * Environmental * Exhibit * Fire Protection * Fitness and Recreation Facilities * Food Service Facilities * Forensics * Graphics/Signage * Healthcare Facilities * Historic Preservation * Interior Environments * Laboratory * Lighting * Marketing and Information Research * Material Handling * Mechanization * Programming * Sanitation * Security * Seismic * Specialty Buildings * Specifications * Telecommunications * Theater * Theme Parks * Traffic/Transportation * Vertical Transportation * Water Feature * Waterproofing * Wind Tunnel Testing * Miscellaneous

Sometimes within a specialty, further identification is provided. An example is the breakdown under **Building Product Consultants**. The additional headings are:

> Brick Masonry * Building Exteriors * Cladding * Curtain Walls * Doors, Frames & Finish Hardware * Exterior Insulation and Finish * Exterior Walls * Floor Coverings * Glass and Wall systems * Hardware * Medical/Surgical Equipment * Range Equipment * Vaults

Expanded Listings

Expanded listings contain salient information regarding branch offices, percentage of billings for project types and geographic location, and representative projects. Firms with expanded listings agree to pay a small charge to list the additional information and, in some cases, the company logo. This information provides you with a quick overview of the consultant's expertise before any contact with the firm is made. Profiling both the location and previous experience of the respective firm, expanded listings further simplify the selection process.

Geographic Cross-referencing

To help those users searching for consultants in a specific area, the Directory includes a geographic cross-referencing section which lists all consulting firms according to their main office locations within the following regions: Northeast, South, North Central, West, and International. A regional map, located on the regional tab page, shows the specific states in each region.

The consultant categories appear in alphabetical order under each region. Firm names follow alphabetically within each consultant category.

Add to the Directory

If you have any corrections or suggestions for the Directory of Specialty Consultants, or if you know any additional consultants who should be included, please complete the form included below. Mail or fax it to us.

To:

McGraw-Hill Directory of Specialty Consultants
1743 West Alexander Street
Salt Lake City, UT 84119

Phone: 801-972-4400
Fax: 801-972-6747

Directory of Specialty Consultants
Suggestion/Referral Sheet

Your Firm's Name:

_____

Address:

_____

City State: Zip Code

_____

Telephone Number: (____) ____-_____

Fax Number: (____) ____-_____

Contact Person:

_____

Suggestions/Additional Referrals:

_____

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Information Sheet from Sweet's Forum, a quarterly AEC information newsletter published in SweetSource, a CD-ROM interactive product selection tool that runs on your PC.

_____

Introductory Offer

Despite the invaluable nature of the Directory of Specialty Consultants, McGraw-Hill is currently offering it at an introductory price of only $99. It is regularly priced at $150. Additional directories are $60 each.

Direct your purchase inquiries to:

McGraw-Hill - Directory of Specialty Consultants
1743 West Alexander Street
Salt Lake City, UT 84119
Phone: 801-972-4400
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Book Review - Computer Applications in Construction

Book Author: **Boyd C. Paulson, Jr.**

About the Book

For people interested in using computers in construction, this book is the perfect starting point--providing an unsurpassed introduction to computer hardware, software, and communications technology. Giving the reader a basic idea of what the pieces do and how they work together, the book's 16 in-depth chapters offer coverage of topics so important for construction engineers and managers.

Through the material, readers are given the ability to analyze systematically a potential area of need--such as a function in a department--to determine whether a computer application might help to assess the costs and benefits of alternative proposals and to proceed from that analysis to a clear specification for what the proposed solution should accomplish. There is also coverage of how computer professionals evaluate hardware and design the software and systems that will implement a given application. Furthermore, readers will learn how to manage the people, resources, time, and money required in the development process for creating a given application program or for adapting a package application to the needs specified in the design.

Other topics found in the book include: common tools used to develop application software for today's business computers; systems and applications available in the marketplace to perform specific functions, such as estimating, scheduling, cost control, and simulation; emergent technologies and how an individual, group, or company might plan ahead and take advantage of the trends.

In addition, the book provides twenty-two construction engineering and management application examples--most developed using modern computer software--and provides additional problems, guidelines, and data for the reader to use in implementing his or her own applications on a personal computer.

An Excerpt

The following is provided as an example of the type of specific information found in this book.

Part V: APPLICATION PACKAGES

Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that.

Lewis Carroll

Through the Looking Glass, Chapter 2, 1872

Chapter 5, which described the feasibility study and analysis for a new construction application, expressed strong reservations about undertaking custom software development efforts if good commercial package solutions in the application area already exist. Chapter 7 provided guidance for evaluation and procurement of these packages. But what kinds of solutions are available that apply well in construction? The next four chapters introduce key application areas and present two or three representative examples in each.

There is no attempt here to present a comparative survey of current software in each field. Such a survey would be out of date before this book could even be published. Lewis Carroll's Alice would appreciate that problem. ...

The selections of the applications for illustration in these chapters are not intended to imply endorsements. Some are indeed widely used and may be predominant in their market, whereas others illustrate a contrasting approach. Once this book has been in print for a while, the versions shown here will be quite out of date. It is the concepts and principles behind the applications that are important for our purposes. Before going out to acquire software in any of these categories, the reader should follow the procedures that were outlined in Chapters 5 and 7 and apply them to the market that exists when you read this book, not when it was written.

Only some of the most common and widely used types of commercial applications are represented here: estimating in Chapter 12, project planning and scheduling in Chapter 13, accounting and cost control in Chapter 14, and operations simulation in Chapter 15. ...

Chapter 12: ESTIMATING

When we mean to build,
We first Survey the plot, then draw the model;
And when we see the figure of the house,
then we must rate the cost of the erection;
Which if we find outweighs ability,
What do we then but draw anew the model
In fewer offices, or at last desist
To build at all?

William Shakespeare
Henry IV, Part 2, I:3

There are numerous methods for preparing cost estimates for construction projects. Estimates range in scope and detail from educated guesses to detailed contractor bids. The latter are based on a relatively complete set of plans and specifications; and a thorough, accurate, and detailed estimate is much broader in concept than merely determining costs. The estimator must practically build the project on

paper, assessing quantities not only of the contract materials reflected in the drawings but also of the temporary materials, such as formwork for concrete, and temporary plant. Such estimates may require the estimator to hypothesize alternative methods for different components of the project, determine the labor, equipment and materials required by each method, evaluate the productivity and costs, and select those methods that, taken together, will complete the project on schedule and at the lowest overall cost. Computers can assist the estimator every step of the way.

Although various computer-based estimating techniques can be used from project concept through design and into construction, we will focus on detailed estimates prepared from completed plans and specifications. This chapter explores how computers can assist in preparing the cost estimates used by construction managers, general contractors, and subcontractors. The stages at which they best apply include the following:

1. Project location and tracking
2. Collection of cost and productivity data
3. Quantity take-off
4. Establishment of work methods and productivity rates
5. Estimation of direct and indirect costs
6. Compilation, analysis, and bidding

We briefly examine several computer applications that are now at working construction estimating. Most help take the drudgery out of estimating, improve accuracy, and leave estimators with more time to explore alternatives that can reduce construction costs. Estimating software currently available commercially falls into three categories: the first focuses on data collection (steps 1 and 2); the second on quantity take-off (step 3); and the third addresses cost-related topics covered in steps 5 and 6. However; given such a wide range of applications, we can provide details about only a few and briefly mention or illustrate others. Simulation software, spreadsheet packages, and engineering design and analysis programs can assist in step 4, but they will not be emphasized in this chapter.

We begin by fitting estimating into an overall integrated computer information system for construction. We then review fundamental components and procedures of the estimating process and briefly illustrate some applications that can help at various states. Next, we examine a few advanced techniques implemented in some packages, then outline key applications and limitations of today's construction estimating software. We close with two somewhat more detailed examples; the first focuses on quantity take-off for a site-grading project, and the second on cost estimating for a building project.

...(more)

About the Author

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Boyd C. Paulson, Jr., holds the endowed Charles H. Leavell Professorship of Civil Engineering in Stanford University's Graduate Program in Construction Engineering and Management. He served on the civil engineering faculty at the University of Illinois in 1972 and 1973. He was also a Visiting Professor at the University of Tokyo in 1978, the Technical University of Munich in 1983, and the University of Strathclyde in Glasgow, Scotland, in 1990-91. He earned his B.S. (1967), M.S. (1969), and Ph.D. (1971) in civil engineering from Stanford University. He is the author or coauthor of two books and over 90 papers.

Research and Teaching

Paulson's research and teaching interests are primarily in computer applications in construction, including automated data acquisition, operations simulation, and automated process control. He has had numerous research projects in these and other areas sponsored by the National Science Foundation, the U.S. Department of Transportation, and others.

Professional Activities

Paulson's professional activities include past chairman of ASCE's committee on Professional Construction Management and the ASCE Task Committee on Computer Applications in Construction, past vice chairman of ASCE's Construction Research Council, and past chairman of the ASCE Construction Division Executive Committee. He was twice elected secretary of the Project Management Institute. He is a member of Tau Beta Pi, Sigma Xi, ACM, ASCE, ASEE, AND IEEE Computer Society.

Honors and Awards

His honors and awards include ASCE's 1980 *Walter L. Huber Civil Engineering Research Prize*, West Germany's *Alexander von Humbolt Foundation Research Fellowship* in 1983, ASCE's 1984 *Construction Management Award*, selection in 1984 as a *Distinguished Scholar* by the U.S. National Academy of Sciences Committee on Scholarly Communication with the People's Republic of China, the 1986 *Henry M. Shaw Lecturer* at the North Carolina State University, the Project Management Institute's 1986 *Distinguished Contributions Award*, 1990-91 faculty research and teaching scholarships from *The Fulbright Foundation* and *The British Council*, the 192 *Kudroff Memorial Lecturer* at Pennsylvania State University, and ASCE's 1993 *Peurifoy Construction Research Award*.

Curriculum Adopters

Dr. Paulson's book has been adopted as a standard textbook at Standord University, Purdue University, Georgia Institute of Technology and Virginia Polytechnical Institute. The book's structure is ideal as a classroom textbook since each chapter ends with a ***Problems And Essay Questions*** section.

If you are an instructor and wish to acquire the book for review, contact McGraw-Hill through your normal channels or see the address provided under the How to Order section of this review.

How to order

Book: Computer Applications in Construction
Author: Boyd C. Paulson, Jr.
ISBN 0-070048967-X

Phone: 1-800-338-3987
Fax: 614-755-5645

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College Division / 27th Floor
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New York, New York 10020

Related Titles of Interest

Building Construction Estimating

Stephen Schuette, Purdue University

Robert Liska, Clemson University

1994/512 pages/Order code: 0-07-037907-6

This book furnishes readers with specific details on how a general building contractor derives the cost of a project before it begins, and how the estimate fits into the total construction process. It provides coverage of such areas as determining labor productivity and wages, selecting equipment and assigning productivity rates and cost, acquiring specialty contractor prices, and assigning overhead costs and profit.

Project Management for Engineering and Construction

Garold D. Oberlender, Oklahoma State University

1993/448 pages/Order code: 0-07-048150-4

This book presents the principles and techniques of managing engineering and construction projects from the owners study--through design and construction to completion. It emphasizes project management during the early stages because the ability to influence the quality, cost, and schedule of a project can best be achieved at that time.

Professional Construction Management: Including CM, Design-Construct, and General Contracting - Third Edition

Donald S. Barrie, CM Consultants

Boyd C. Paulson, Stanford University

1992/672 pages/Order code: 0-07-003889-9

Offering a practical, in-depth approach to the major engineering and management techniques involved in professional construction management, this edition offers strengthened coverage of the business aspects of the industry, with an entire section devoted entirely to the business methods in professional construction management.

F.W. Dodge - Industry Statistics

provided courtesy F.W. Dodge

Information from the July, 1995 **Dodge Construction Potentials Bulletin**

U.S. Summary

Contracts for New, Addition and Major Alteration Projects
Square Feet in Thousands
Value in $Millions

Current Month

	Number of Projects	Square Feet	Value	Last Year Value
Total Construction	**107,217**	**270,535**	**25,061**	**25,909**
Total Building	**99,177**	**270,535**	**18,903**	**20,257**
Non-Residential	10,990	98,358	8,711	9,193
Residential	88,187	172,177	10,192	11,064
Non-Building	**8,040**	**--**	**6,157.8**	**5,651.9**

Cumulative to Date*

	Number of Projects		Square Feet		Value		% Chng.
Total Construction	**718,080**	**604,557**	**1,912,013**	**1,981,224**	**171,311**	**173,631**	**-1**
Total Building	**665,878**	**752,036**	**1,912,013**	**1,981,224**	**132,587**	**135,979**	**-2**
Non-Residential	76,531	73,932	685,035	624,664	60,320	56,017	+8
Residential	589,347	678,104	1,226,978	1,358,560	72,267	79,963	-10
Non-Building	**52,202**	**52,521**	**--**	**--**	**38,723.6**	**37,652.0**	**+3**

* Cumulative to Date figures include delayed entries and adjustment affecting projects entered in previously reported months. In the % Change column, increases of 100% or more are indicated by *.

Non-Residential

	Number of Projects	Square Feet	Value	Last Year Value
Commercial	6,194	51,530	3,469	3,637
Manufacturing	529	10,958	689	1,186
Education and Science	1,439	15,703	1,983	1,921
Dormitories	73	714	118	114
Hospital & Health Treatment	810	4,721	652	746
Public Buildings	394	5,910	858	573
Religious	449	2,359	216	234
Amusement	827	4,470	503	509
Miscellaneous Non-Res.	275	1,994	222	272

Residential

	Number of Projects	Square Feet	Value	Last Year Value
One-Family Houses	85,309	149,580	8,859	9,599
Two-Family Houses	946	2,843	118	176
Apartment Buildings	1,932	19,754	1,215	1,289

Non-Building

	Number of Projects	Square Feet	Value	Last Year Value
Streets & Highways	3,474	---	2,559	2,134
Bridges	592	---	700	542
Dams & Reservoirs	49	---	42	58
River & Harbor Development	586	---	352	286
Sewerage & Waste Disposal	761	---	649	733
Water Supply Systems	849	---	520	566
Elec. Power & Heating Systems	116	---	125	199
Gas Systems	3	---	2	1
Communication Systems	71	---	26	17
Airport & Space Facilities	89	---	213	97
Miscellaneous Non-Building	1,450	---	959	1,019

F.W. Dodge

For over 100 years, F.W. Dodge has been the acknowledged leader in serving the information needs of general contractors, subcontractors, building product and equipment manufacturers, materials suppliers/distributors/dealers and design professionals--as well as financial, real estate and many other industry-related firms--by providing...

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- Market activity statistics, forecasts and analysis

To learn more about the specific Dodge products and services your business needs to succeed, please contact your Dodge representative at the Dodge office nearest you or call 1-800-325-2030. For the products and services offered by Dodge, use the Manufacturer Name Search in SweetSource and enter **F.W. Dodge** to review their Showcase of information.

Summer 1995 Articles

Introducing the 1995 MasterFormat: Change for the Better

MasterFormat and Sweet's

F.W. Dodge - Industry Statistics

Introducing the 1995 MasterFormat: Change for the Better

by Charles A. Shrive, PE

The Construction Specifications Institute has completed the 1995 Edition of MasterFormat and is unveiling the new version at its June annual meeting and exhibit in Minneapolis. Copies will be available for sale within a few months.

This latest edition of MasterFormat has had more user input than any other. The Formats Subcommittee not only solicited public review from several facets of the construction industry but then held a public meeting to discuss the proposed changes. Throughout the process, CSI made a special effort to improve MasterFormat's usefulness while avoiding unproductive changes.

One complaint CSI often receives is MasterFormat changes too often. Users find it difficult and expensive to make major changes to their product data files, master specifications and cost-estimating databases.

But change is part of our dynamic industry. No one can prevent it. There are new products and new ways of considering products that suggest, even require, changes in MasterFormat. CSI's intent is to keep pace with the changes needed in MasterFormat without disrupting the construction industry.

MasterFormat works well because it was developed as a practical document. The user input that went into the 1995 edition makes it better than ever.

What's New?

The new MasterFormat, which replaces the edition published in 1988, incorporates many minor changes in numbers and titles, several style and presentation changes, plus some significant rearrangement of numbers and titles, particularly in the following:

- Bidding Requirements
- Contract Requirements
- Facilities and Spaces
- Systems and Assemblies
- Division 1
- Division 2
- Division 13
- Division 15
- Division 16

General changes include:

- An improved comprehensive "Application Guide" provides users with helpful hints when navigating MasterFormat.
- The multipurpose nature of MasterFormat is clarified by removing references to "specification sections" in the listing of numbers and titles and in the related explanations.
- The "Explanation" column, opposite the numbers and titles, now refers to specific titles rather than generally to top-level titles.
- "Basic Materials and Methods" titles were added to Divisions 2, 3, 4, 5, 6, 7, 8, 9, and 12.

- "Renovation and Repair" titles were added to Divisions 2, 3, 4, 5, 6, 7, 8, 9, 12, 14, 15, and 16.

There are, of course, many other changes that users will find significant, hopefully in a positive way.

The Overseeing of UniFormat

In 1992, CSI became responsible for overseeing UniFormat, creating a challenge for the Formats Subcommittee. UniFormat categorizes construction by "elements," or assembly systems, while MasterFormat's focus is more on individual products.

Several interesting developments came as a result of the subcommittee's review of this new "elemental" format. Although the two numbering systems for categorizing construction provide different views of the industry, the subcommittee found the appearance of overlap in several areas. To eliminate the overlap, subcommittee members removed the term "systems" from MasterFormat, focusing instead on listing the products that are the components of systems.

As the subcommittee continued its investigation, the relationship between these formats became clear: They are different views of construction, each meeting a specific purpose.

About the Author:

Charles A. Shrive, PE

CSI MasterFormat

MasterFormat, originally published in 1963 as the "CSI Format for Construction Specifications," is a list of numbers and titles for identifying and arranging construction information such as specifications, drawings, and product data. Its scope is construction bids, contracts, administration, products, and activities.

Over the last thirty years, MasterFormat has become the defacto standard list of numbers and titles for construction in the United States and Canada. First published as part of the *CSI Format for Construction Specifications* in 1963, it was later used as the basis for the *Uniform System for Construction Specifications, Data Filing and Cost Accounting - Title One Buildings* published in 1966.

In 1966, a similar effort in Canada produced *The Building Construction Index* (BCI). BCI was based on the same 16-division format and was introduced by the Specification Writers Association of Canada (renamed Construction Specifications Canada in 1974).

The United States and Canadian formats were merged into a single document in 1972 and published by CSI, CSC, and several other organizations as the *Uniform Construction Index* (UCI). The UCI introduced separate frameworks for arranging specifications, construction data files, cost classifications, and project files.

In 1978, the first edition of MasterFormat was published. This edition added bidding requirements, contract forms, and conditions of the contract to the 16-division format. CSI published revised editions of MasterFormat in 1983 and 1988.

Bidding Requirements

"Bidding Requirements" titles were made to match terms used in popular standard documents for bidding. Titles were also added to identify bidding scopes to accommodate non-traditional methods of construction pricing.

Separate titles for the various components of the "0-series" titles are substituted for a single, agglomerated title, to clarify that these titles are not related to specifications, and that there is no "Division 0."

Contract Requirements

"Contract Requirements" titles were made to match terms used in popular standard documents for contracting. Titles were added to identify contract scopes to accommodate non-traditional methods of construction delivery.

Separate titles for the various components of the "0-series" titles are substituted for a single, agglomerated title, to clarify that these titles are not related to specifications, and that there is no "Division 0."

Facilities and Spaces

"Facilities and Spaces" title was added to accommodate descriptions of multiple facility projects and performance specifications for facilities and spaces. A breakdown of types of facilities and spaces is not included in this edition.

Systems and Assemblies

"Systems and Assemblies" title was added to accommodate descriptions, cost reports, and performance specifications of these elements. MasterFormat does not include a breakdown of types of systems and assemblies, but refers to UniFormat for this information.

Division 1

Division 1 contains titles related to general requirements for construction. This division was completely rearranged into titles for:

- Summary
- Price and Payment Procedures
- Administrative Requirements
- Quality Requirements
- Temporary Facilities and Controls
- Product Requirements
- Execution Requirements
- Facility Operation
- Facility Decommissioning.

Division 2

Division 2 was renamed "Site Construction" and completely rearranged into Level 2 titles for:

- Basic Site Materials and Methods
- Site Remediation
- Site Preparation
- Earthwork
- Tunneling, Boring, and Jacking
- Utility Services
- On-Site Drainage and Containment
- Bases, Ballasts, Pavements, and Appurtenances
- Site Improvements and Amenities
- Planting
- Restoration and Rehabilitation

Division 13

Division 13 remains "Special Construction," but several titles were changed, and this division now includes lightning protection, cathodic protection, hazardous material abatement, electrical control devices, security access and surveillance, detection and alarms, and an expanded fire suppression and protection.

Division 15

Division 15 was changed to group piping by application and to include industrial process piping. Fire protection piping components remain in Division 15, but fire suppression (as a system) is relocated to Division 13. Heating, ventilating, and airconditioning equipment is rearranged to match industry terminology. Temperature control is rearranged by component function rather than system technology.

Division 16

Division 16 was rearranged to include a general title for electrical power. Lightning protection, cathodic protection, detection and alarm, and security access were relocated to Division 13, and a new title was added for "Sound and Video."

UniFormat

UniFormat lists systems and assemblies, referring to them as "construction elements." The original UniFormat was published in 1974 by GSA and AIA, prepared by Hanscomb and Associates. That document was used extensively by the government as well as publishers of unit cost data for building elements, but it was never revised or republished.

Around 1990, ASTM considered publishing a revision of the document. CSI became the secretariat for that document, reserving the right to also publish its own expanded version for use with performance specifications and in other non-costing applications. That version was published in 1992 as an interim draft edition for use and comment. CSI recently issued a public review package to solicit comments from users.

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Sweet's Forum - Summer 1995 Edition

To Contact the Editor

We welcome your comments and suggestions. To contact the editor, address correspondence to: Sweet's Forum, 99 Monroe Ave. NE Ste. 400, Grand Rapids, MI 49503. If you prefer, FAX your comments to Sweet's Forum at 1-616-454-4140, E-mail comments to rose_austhof@sweetspub.com, or call our Technical Services department at 1-800-636-6002.

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MasterFormat

Editors Note

MASTERFORMAT is the correct capitalization and attribution for the 1983 and 1988 versions.

MasterFormat is the new capitalization and attribution for the 1995 version.

Source: CSI Headquarters, Alexandria, VA

MasterFormat and Sweet's

The relationship between CSI **MasterFormat** and Sweet's **Data Filing Format** has been that of siblings born of the same parent, the Uniform Construction Index. While aiming at uniformity across the construction industry, the two classification systems focus on different needs. The following bit of history may help us understand how these documents developed.

In 1962, the American Institute of Architects (AIA) concluded that its Standard Filing System -- in use since 1920-- was obsolete, and invited the Construction Specifications Institute (CSI) to cosponsor a meeting to develop a new system. The meeting included several representative organizations from the U.S. construction industry. The following year, the CSI first proposed the 16 basic divisions that have become the industry standard for specifying and organizing construction data.

The 16 divisions proposed by CSI became the foundation for the Uniform System for Construction Specifications, Data Filing & Cost Accounting, or Uniform System, published in 1966. The goal of the organizations that developed this system was that it be flexible enough to accept changes in technology readily, yet sufficiently systematic for classifying and identifying technical literature. It was designed to remain consistent for many years to come.

At the time the Uniform System was published, Sweet's was using a 39-section classification system unique to Sweet's. After reviewing the Uniform System, Sweet's decided to convert to the 16 division format. Sweet's 1969 catalogs were organized according to the 16 divisions.

The introduction to the Uniform System states,

It is expected that continuing investigations will be made by all endorsing organizations to improve the document.

True to this prediction, the sponsoring organizations met again in 1970 to revise the system. This time they included organizations from Canada as well as other U.S. organizations, including Sweet's. The result of their efforts was the publication in 1972 of the Uniform Construction Index.

Based on this Uniform Construction Index, CSI and Construction Specifications Canada developed a five-digit specification format, called MasterFormat, which they published in 1978. Although MasterFormat was an adaptation of the Uniform Construction Index designed primarily for specification writing, it became so widely used that it is now nearly synonymous with the 16 division format first proposed by CSI in 1963.

Sweet's classification system up until 1987 was based on the 16 divisions but did not include the five-digit coding system. After recognizing the wide acceptance of MasterFormat, a second edition of which was published in 1983, Sweet's adopted the five-digit code and adapted its classification to that of CSI MasterFormat.

The current Sweet's classification system, which includes the five-digit codes, is called **Data Filing Format**. It is from this master classification system that sections are opened for product catalogs in the Sweet's Files. Data Filing Format focuses on product information, while MasterFormat was designed for specification. As a result, the two systems are not identical, each meeting specific needs. But since the development of the Uniform Construction Index, Sweet's has participated with AIA, CSI and other organizations in maintaining and promoting uniform classification for the construction industry.

Sweet's, with its experience in organizing information, has been a contributor to the MasterFormat revisions that will make their debut later this year in the 1995 edition.

Unlike the Sweet's print Files, SweetSource data has been organized into Product Areas rather than by

the 16 divisions. These areas are product modules designed not to overlap each other and are influenced by the needs and possibilities of an electronic database. SweetSource provides an exhaustive cross-index from the Data Filing Format to these product areas.

Sweet's is dedicated to continued cooperation with CSI, AIA, and other organizations in maintaining and improving the classification and organization of construction information.

F.W. Dodge - Industry Statistics

provided courtesy F.W. Dodge

Information from the April, 1995 **Dodge Construction Potentials Bulletin**

U.S. Summary

Contracts for New, Addition and Major Alteration Projects
Square Feet in Thousands
Value in $Millions

Current Month

	Number of Projects	Square Feet	Value	Last Year Value
Total Construction	**101,052**	**244,450**	**21,911**	**25,143**
Total Building	**93,015**	**244,450**	**17,206**	**19,614**
Non-Residential	9,695	79,633	7,356	7,287
Residential	83,320	164,818	9,850	12,327
Non-Building	**8,037**	**--**	**4,705.5**	**5,528.8**

Cumulative to Date*

	Number of Projects		Square Feet		Value		% Chng.
Total Construction	**365,241**	**424,096**	**963,836**	**1,042,417**	**85,802**	**90,688**	**-5**
Total Building	**339,698**	**399,355**	**963,836**	**1,042,417**	**67,592**	**71,258**	**-5**
Non-Residential	39,846	37,789	345,617	318,670	31,035	28,860	+8
Residential	299,852	361,566	618,218	723,737	36,557	42,398	-14
Non-Building	**25,543**	**24,741**	**--**	**--**	**18,210.6**	**19,430.1**	**-6**

* Cumulative to Date figures include delayed entries and adjustment affecting projects entered in previously reported months. In the % Change column, increases of 100% or more are indicated by *.

Information Provided by:

F.W. Dodge

Non-Residential

	Number of Projects	Square Feet	Value	Last Year Value
Commercial	5,676	42,927	3,345	2,901
Manufacturing	485	7,439	418	587
Education and Science	1,221	14,143	1,789	1,737
Dormitories	56	633	86	132
Hospital & Health Treatment	646	5,388	679	720
Public Buildings	299	1,478	226	365
Religious	369	2,297	200	207
Amusement	712	3,641	429	441
Miscellaneous Non-Res.	231	1,685	184	196

Residential

	Number of Projects	Square Feet	Value	Last Year Value
One-Family Houses	80,816	148,272	8,811	11,336
Two-Family Houses	1,183	3,640	169	179
Apartment Buildings	1,321	12,906	870	813

Non-Building

	Number of Projects	Square Feet	Value	Last Year Value
Streets & Highways	3,397	---	2,196	2,140
Bridges	591	---	511	716
Dams & Reservoirs	65	---	68	80
River & Harbor Development	532	---	256	299
Sewerage & Waste Disposal	814	---	553	822
Water Supply Systems	916	---	417	492
Elec. Power & Heating Systems	111	---	101	105
Gas Systems	-0-	---	-0-	-0-
Communication Systems	70	---	14	36
Airport & Space Facilities	65	---	48	102
Miscellaneous Non-Building	1,476	---	541	737

F.W. Dodge

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Spring 1995 Articles

Leveraging the Virtual AEC Organization with Electronic Communication

by Kristine K. Fallon, FAIA

U.S. corporate profits are up due in large to aggressive restructuring efforts and the automation of business processes and work flow. The construction industry tends to be a laggard in adopting new business techniques. Few AEC organizations have yet to undertake comparable analyses, restructurings or automation initiatives. The "virtual" quality of our industry is largely responsible for this lack of initiative. Owners, design professionals and contractors assemble for the duration of a single project, and no one organization "owns" the complete work process. Until recently, investment in analyzing and restructuring work processes and in developing cross-organizational computer systems has paid off only on large, long-term projects.

New approaches to project delivery, particularly design/build and partnering, are creating new types of "virtual corporations" with the potential to reap significant benefits from integrating cross-organizational systems.

The Payoff

A 1988 study published by Nolan, Norton & Co. analyzed return on technology investment in a number of large organizations. It documented ROIs ranging from 20% to 1000%. This study concluded that total automation of entire work processes yields much higher returns than automating bits and pieces of work. Also, the communication potential, rather than the computational potential, of information technology provided the most powerful leverage. Thus we see corporate interest in shared databases, global networks and access to corporate resources via portable computers.

Electronic Communication for the AEC Industry

From a business perspective, electronic communication can streamline construction industry workflow in the following ways:

- Improve access to information by cross-indexing.
- Reduce to moments the time required to retrieve and distribute information.
- Increase the usability and usefulness of data.
- Use automated procedures to protect drawings and other data from accidental loss, alteration or unauthorized access.
- Eliminate redundant data, ensuring that all parties are working with current and accurate information.

To be most effective, electronic communications must include all project information, not just CAD files.

Maintaining Control

The AEC industry requires control and documentation of information exchange between organizations. To become viable, electronic communication must incorporate these controls. Computer-based techniques already exist to meet requirements in the following areas:

Change Control ensures that there is only one current copy of any item of information. It controls access to computer-based information, allowing a file to be modified by only one user at a time.

Change Control also can limit users' access to specific types of information. For example, the mechanical engineer might be denied write privileges to the architectural CAD files but given read privileges to use them as reference files. Also, a design update may be "held" until it is approved.

Configuration Control keeps track of relationships between computer files. A computer file is not necessarily a complete document, and a document is not necessarily contained in a single file. CAD drawings using reference files are an obvious example. It is extremely important that, if a document must be distributed or archived, all files making up that document are identified and acted upon appropriately.

Configuration Control also permits a set of documents to be copied and modified while the original information is maintained. A snapshot can be taken at each project milestone and each set of files transferred to team members. This allows the team to roll back its work to any checkpoint.

Workflow Management is the most recently developed and perhaps the most powerful capability. It links documents to the work process and to the project schedule. Put simply, it tracks who needs what information when and can automate the electronic transfer of that information. Workflow Management can report exceptions and reroute information if a deadline is missed.

Who Manages Electronic Communications?

The entire team participates in electronic communications. However, someone must take responsibility for setting up and managing the electronic controls discussed above. This responsibility can reside with the owner, the program manager or the lead design firm, depending on who has the primary responsibility for communications and coordination.

How to Exchange Electronic Data

Electronic communication via LAN, WAN, modem, Internet or commercial services, such as CompuServe, are virtually instantaneous. Make sure your electronic communication controls include logging the date, time, contents and recipient of every transfer. Electronic communication is the only way to expedite RFI (request for information) responses, weekly updates and other time-critical communications.

Whoever said "a picture is worth a thousand words" accurately predicted the file sizes of graphics and scanned images. To distribute large quantities of graphic data, such as a full set of as-builts or a bid set, consider using physical transfers of electronic media. However, even with compression, diskettes do not have the capacity to handle large data sets. Magnetic tapes have the capacity, but sizes and formats vary.

CD-ROM is becoming a popular data-distribution medium: It is standardized, compact, high-capacity, unalterable, rugged and long-lived. The cost of CD mastering equipment has dropped below $5,000, so both mastering and duplication can now be done economically. This is a multi-step procedure that requires assembling the data, producing the master, duplicating and shipping.

As with any new process, there is an initial cost. Be aware that the control and distribution of project information electronically will take longer than physical reproduction and distribution of hard copy. The payoff is that the data is more useful to the recipient.

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Sharing Electronic Design Data

by David E. Lorenzini, FCSI, CCS

Technology can be a wonderful ally to us as design professionals or, left ignored, can give our competition a decided advantage. Automation can help us perform our work more efficiently, and allow greater control over the design process and the results.

The relatively low price for powerful computer systems and sophisticated software has made design automation available to even the smallest firms. However, new computer technology is only a new tool. What is needed is a corresponding new approach to the design and drawing process.

Remote Computer Linking

One technique often overlooked and undervalued is the connection of the personal computer to telephone lines. Although linking computers on a local area network within an office is common, the emerging concept of the virtual corporation demands that offices consider linking to other offices around the world. We need to put the telephone inside the computer along with the FAX machine.

Selecting the best talent for an important project means including expert consultants and branch offices in remote locations. Today's technology allows individuals to share electronic data and interactively edit a project design over common telephone lines.

A simple but significant example was demonstrated recently by the Long Island Chapter CSI (Construction Specifications Institute) to the Northeast Region CSI board of directors by Paul Doherty, CSI. The Northeast Region CSI board had approved the organization of a full-service Internet system, the first in the ten CSI regions. During the presentation to the region board, Doherty teamed up with Sandra Burnett, an information specialist across the country in California, to collaboratively edit a specification section, live and in real time.

A more complex example of remote linking is the development of the Contour and Mystique automobiles by Ford Motor Company. Automotive engineers in the United States and Europe collaborated electronically to combine the best expertise Ford had to offer.

What's the possibility of architects electronically collaborating on a design project? Of architects coordinating electronically with consultant specialists in other cities? Of design teams interactively sharing a common graphic database to integrate complex building systems in a high-rise or hospital project?

Limitations a Roadblock

It's possible to do it today, but several limitations make it difficult. One is the cost and speed of phone lines. Exchanging graphic information taxes current systems. This situation will change when fiber-optic telecommunication networks are in place. In the meantime, the price of ISDN service, which will provide the necessary bandwidth, is becoming more affordable.

The lack of nationally accepted standards also inhibits the transfer of electronic drawings. Many offices experience poorly coordinated drawings internally because they do not have a definite set of in-house standards. It is essential that remote collaborators on a design project work with the same set of drawing standards. Sheet numbering, detail location, keynote terminology, layering designations, and standard symbol referencing have to be consistent.

Standardized Electronic Drawings

The work of CSI's Drawing Subcommittee promises to alleviate this problem. This subcommittee developed the Uniform Drawing System (UDS) strategy in 1991 and has undertaken development of a complete set of standards in cooperation with other groups such as AIA, CSC (Construction Specifications Canada), NAVFAC and the Tri-Services Council of NIBS (National Institute of Building Sciences).

The first three components of UDS under CSI's responsibility is well under way and scheduled for completion in mid-1996. The components include Drawing Set Organization, Sheet Organization, and Schedules. An AIA task force has scheduled meetings to review the Layer Guidelines component. The other components of UDS include Drafting Conventions, Notation, Attributes, Diagrams, and Color.

The Uniform Drawing System will provide a uniform location and standard format for graphic information. Standards and formats will promote standardization, aid in the retrieval of information, and improve the communication necessary to meet tomorrow's challenges.

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Mr. Lorenzini is a past member of CSI's Technical Committee and past chair of CSI's Symbols and Drawings subcommittees. He has been a speaker on electronic data communications at the 1994 CSI Convention as well as several CSI chapter meetings. He is scheduled to make several computer presentations at the West Region Conference in October 1995.

A Case Study: AEC Project Electronics and Data Exchange

by Steven Glenn, Architect, C.I.P.E.

A recently completed design project by our firm illustrates our use of current electronic advances in the design process. A large Chicago A/E firm, Knight Architects Engineers Planners, Inc., found itself at one of those common "peaks" of the cyclic workload. Knight asked our firm, ECD Associates, Ltd., to assist with the heavy workload in its institutional business unit. The work involved a project with a government agency, the Federal Aviation Administration (FAA). Our assistance to Knight included the design of the HVAC, plumbing and fire-protection systems.

Electronic File Diversity

The project was achieved entirely in electronic format, from specifications and cost estimating to working design documents. The contract required delivery of all documents in electronic media to the client.

The FAA uses a two-dimensional CAD program that is not widespread. Knight uses the industry standard of AutoCAD. Our company uses Generic CADD. This necessitated a common/compatible electronic format for deliverables between consultants. The drawing file format chosen for commonality was .DXF.

In addition, the FAA uses Microsoft Word, while the design team standard is WordPerfect. The FAA, however, could read WordPerfect files directly through its word-processing program. The design team delivered native WordPerfect files.

When Is a Common Drawing Format Not Common

The .DXF translation between Knight and the FAA was riddled with incompatibilities. The FAA's .DXF translator incorrectly converted X-references, Paper Space, nested blocks, 3-D elements, etc. This problem required Knight to develop a filter program to remove or explode the conflicting portions of the .DXF files. Since we, at ECD, were using Generic CADD, which is 2-D and does not have advanced features like X-references and Paper Space, we were able to produce .DXF files that the FAA system could cleanly translate. The communication of CADD files between ourselves and Knight was very smooth due to Generic CADD's ability to read and write native AutoCAD .DWG files.

Persuading the Software to Produce Compatible Products

The largest hurdle for us was to produce drawings that followed the style and format established by Knight. Fonts, drawing titles, note styles, etc., had to match to appear as a cohesive set of drawings. Since no two firms package construction documents alike, we modified our CADD system to be compatible with Knight.

Our document style is controlled by a macro and menu system developed in-house to work with Generic CADD. This system modifies the universal Generic CADD menus into our internal ECD CADD. This provides us controls for the layering, line colors, line weight, line type, pre-built components (blocks), and text styles common to systems dedicated to the A/E profession.

While many firms are not prepared to alter software for their specific office use, our customization of Generic CADD temporarily tricked the system to produce Knight standards. Our changes to Generic CADD for our internal standards give us menus which delineate a project by discipline or trade, and by existing or new construction. Each discipline or trade, once selected, then presents the user with appropriate sub-menus which ultimately select building elements.

For example, our "New-HVAC" menu gives us sub-menus for equipment, ductwork, fittings, diffusers, etc. The user can select pre-drawn symbols (components) to use in a drawing and the menu system chooses the correct layer, line type, line color, etc., to draw the building element desired. This eliminates concern about drawing standards while providing freedom to concentrate on design concerns.

All this customization works well for us. For this project the system had to be modified to match the style and format of Knight for effective production of the design documents. Some minor computer programming was performed to accomplish this task.

Compatibility Achieved

Throughout the design process Knight and ECD communicated via modem and occasionally by disk. Some of our HVAC drawings would take 6-8 hours to plot on our Houston Instruments DMP-162 eight-pen plotter. Often, this plotter could not keep up with the demand for the large quantity of documents. Due to time constraints, we usually were required to electronically produce plot files for Knight's electrostatic plotter and electronically transfer them to Knight for processing. This worked flawlessly once fully coordinated.

Perseverance Pays

This project demonstrates that there are many bridges to cross with electronic media due to the variety of software and hardware products available today. However, with a little understanding and perseverance, complex problems can be resolved, and the potential of computers and electronics can be realized.

Software developers have been laying the groundwork for interoperability between software and hardware. Available now is instant access to the latest specifications sections by product vendors to include in project specifications, detail and installation drawings ready for inclusion in our working drawings, and electronic photographs of products which can be exported to word-processing or presentation packages for client presentation. This is leading-edge technology which will further the A/E profession. As the electronic industry continues to serve the A/E profession, leaders such as Sweet's will set the direction for continuity and interoperative systems.

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Data Distribution in the Architectural Office

by Tomes Hernandez, Jr.

Kohn Pedersen Fox, a New York based architectural firm, is currently undergoing another expansion of its computer and data system with the goal of doing every project, and every aspect of each project, by computer. Like everyone else, KPF in the past has worked either manually or only partially by computer. Now that computers have become affordable and more powerful, it is possible to accomplish every aspect of AEC projects with computers. This is a must. The information is more useful in digital form -- and this is not limited to just CADD files.

Keep It Simple, Standard and Organized

When designing data distribution and retrieval systems, it is important to organize and index data in a practical manner that works for the office. At KPF, the information for each project is arranged by project number and indexed when needed, putting the latest projects in last in the system. But projects could as easily be filed by project name, active or inactive, domestic or international, by building type or by studio head. All these could work.

The key is a good networking system. Every firm, including the small operation of only three or four, should be operating with a network. Cost is no longer an excuse for not automating. Every workstation must have the same software, the same capabilities, the same access to data. All employees need to be able to send and receive faxes and data files via modem from their computers. At KPF, everyone, with only a few exceptions, has access to all CADD files, scanned images, specifications, letters, meeting minutes and photos, even marketing materials.

With a network, records created in different software programs by different people can be used together. For example, a report on building efficiency can use CADD files and spreadsheets as linked objects in a word-processing document. Or a Quark page layout program can be used to gather information for an office project description sheet incorporating CADD files and other data from different projects. The possibilities are endless.

Instantaneous Connection

With the current communications tools in the marketplace, information is available for instant transmission to virtually anyone in the world over standard telephone lines. The overnight wait for information is a thing of the past ... well, almost.

Electronic data exchange is not without its shortcomings. Problems with bulk data transmission and international transmission continue to haunt the industry. Until a universally accepted method of transmitting bulk data -- such as Syquest drives and high-speed telecommunications lines -- becomes affordable, this problem will continue.

What now takes hours to transmit can be sent in seconds with the new technology, but high prices are slowing the move. High-speed telecommunications lines, such as ISDN and T1, which can transmit data in seconds are only sparsely available in this country. CD-ROMs won't become standard for exchanging data until after read/write CD drives come down in price.

Lack of Standards Is Inhibiting Integration

But the single most important issue hampering the exchange of industry data is the differing data formats.

Accuracy is imperative, and the only way to guarantee that an exchange of data will be accurate is for both parties to use the same program and the same computer type. But even this is no guarantee. Firms can use the same software and the same computer hardware -- but set different standards within the software, such as different fonts -- and have glitches occur.

Things are better today than they used to be. Many firms are standardizing with CADD programs such as AutoCAD and Microstation, and office software such as Microsoft Office and Lotus SmartSuite. AEC firm standards are being published and shared. Professional organizations are doing more to help set standards. And software developers are incorporating these standards in new releases.

The up side of all this is that you now have a much better chance, on the next architectural project you start, of doing all the work on computer. As you proceed, remember:

> The key to *maintaining data* is organization and simple storage methods.
>
> The key to successful *data exchange* is flexibility and organization.

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Mr. Hernandez is Director of Computer Services for Kohn Pedersen Fox Associates in New York. He is currently chairman of the New York Microstation Users Group and past chairman of the New York Chapter AIA Committee on Computers. He is a syndicated columnist for a number of McGraw-Hill construction newspapers including New York Construction News. He has been involved with computers and architecture since 1980.

Otis's Electronic Delivery of Specifications and CAD Drawings

Otis Elevator Company

Architects needing CSI-formatted elevator specifications and CAD drawings need only boot up their computers.

Distribution of Electronic Data

Otis Elevator's distribution of electronic data was initiated in direct response to requests from AEC professionals. Since 1992, CAD drawings and specifications have been available on floppy disk. An architect or engineer requiring information called the nearest Otis office (there are 350 Otis offices in North America), and a sales representative delivered the disk. The architect copied the file and, with another piece of the electronic puzzle in place, the project proceeded.

With an increasing demand for electronic information, our distribution procedure has expanded. One of our conduits to AEC professionals is now through SweetSource, the CD-ROM service that allows architects to download critical design and specification information to their own personal computer files.

"SweetSource is a natural for Otis in providing its customers with what they want, when they want it, where and how they want it," says Rob Kornet, new equipment sales manager for Otis. "Some 72 percent of architects use CAD. Through SweetSource, we can get critical information to them in the fastest, most efficient way possible."

Instant Data Access in a Common Format

Architects and engineers can access Otis specifications and CAD drawings instantaneously on CD-ROM. Now the phone call and delivery time are eliminated. A primary goal for Otis is to reach the widest segment of AEC professionals with electronic data. Architects prefer electronic media via a multi-product CD-ROM because of its one-stop-shopping convenience. Smaller firms especially value a central source over individual collections for gathering design information.

"That makes SweetSource an ideal delivery system for us," Kornet says. "Architects and engineers are not faced with the challenge of learning multiple software programs for data access and retrieval. In one common carrier, they are able to find a wide range of building products in an electronic format."

Data Use and Manipulation

Once downloaded, the data can be manipulated to meet job-specific requirements. CD-ROM general layouts and specs become specific project layouts and specs, saving time and increasing contract document accuracy.

The CAD drawings generally are provided in a single product layout format. Users often need to bank the single elements into multiples. Otis encourages alteration and manipulation of the drawings to meet project needs.

"We provide the data and encourage its alteration to fit the project." Kornet says. "One concern, of course, is alteration of a drawing to the point it is no longer an Otis product. This also includes our specifications. Massaging of the wording to meet AEC professionals' perception of codes and accommodate the project may manipulate themselves out of our product. For us to stand behind the product, it must remain an Otis product. Otis encourages phone calls to the local office whenever there are questions about product fit or elevator codes."

Advanced Technology

CD-ROM availability is increasingly important as project lead times become more compressed. In fact, as short lead time becomes even more of a competitive factor, architects' demand for zero lag on information access will intensify. We are not unlike many other manufacturers who are attempting to be in all the electronic places our users visit. Otis foresees the day when its specs and CAD drawings will be on-line, according to Kornet.

"Our continued success and leadership in elevators will, in part, be enhanced by the innovative and widespread distribution of our product information electronically," Kornet says. "We cannot wait for these opportunities to come to us. Our diligent pursuance of distribution channels will put us wherever our AEC professionals may want to find us."

Provided by:

Robert Kornet, Otis Elevator Company

Otis Elevator Company

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Otis Elevator Company, a wholly owned subsidiary of United Technologies Corporation, was founded in 1853. They are the world's largest company in the manufacture, maintenance and service of elevators, escalators, moving walkways, and other horizontal transportation systems.

With an installed base of more than 1.2 million elevators and escalators throughout the world, Otis maintains it's leadership by investing heavily in advanced elevator, electronic and computer technology. More than $90 million is invested annually in engineering, research and development. Market Position is maintained with annual sales of 3,600 elevators and escalators ($4.4 billion in 1993) which translates to 21% share of world elevator new equipment market.

Otis maintains 1,700 offices worldwide and provides product sales in virtually all countries. More than 140 years of ideas go into perfecting every Otis product. Reliable designs. Proven installation methods. Unsurpassed service. Today, Otis is meeting architects' vertical transportation needs with low-cost elevator and escalator models.

SweetSource Product Filters

When you select any of the five search methods, three Product Filter radio buttons display on the tool bar. You can limit your search to just the products with SweetSource screens.

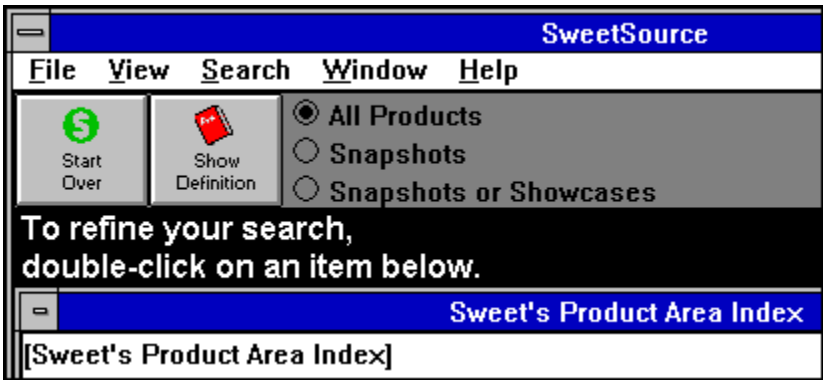
SweetSource provides an index to all products in the printed Sweet's General Building and Renovation (GBR) catalog files. Not all the indexed products have SweetSource Snapshots screens (text, CAD, etc.) associated with them. The Product Filter radio buttons allow you to limit your search to just the products with SweetSource screens available.

The default option is *All Products*, which includes all indexed products as well as those with SweetSource screens. You may switch from one option to another any time you are in the *Product Search Screen*.

The Product Filters influence the product count and *Product Search Screen* display as you select products. For instance:

- If, after going down a search path, you switch from the *All Products* option to one of the filters, it is possible to get a product count of zero.
- When using the *Manufacturer Name* or *Trade Name* search with the *Snapshots* filter on, the *Search List* area of the *Product Search Screen* may be empty. To see the full list, click the *All Products* radio button.

Product Filter Buttons



SweetSource Product Filter Options

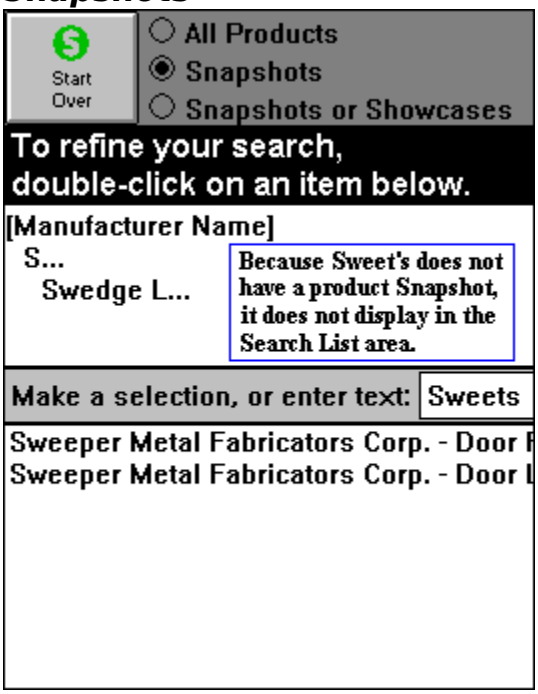
All Products - Products included in both the Sweet's GBR catalog files as well as SweetSource.

Snapshots - Only products that have a product Snapshot screen in SweetSource.

Snapshots or Showcases - Products that have either a product Snapshot or a Manufacturer Showcase.

All Products

Snapshots


Start Over
All Products
Snapshots
Snapshots or Showcases
To refine your search, double-click on an item below.
[Manufacturer Name]
S...
Swedge L...
Because Sweet's does not have a product Snapshot, it does not display in the Search List area.
Make a selection, or enter text:
Sweets
Sweeper Metal Fabricators Corp. - Door
Sweeper Metal Fabricators Corp. - Door

Snapshots and Showcases

New SweetSource Manufacturers

29 manufacturers have joined SweetSource with the Fall edition and added 198 new screens. Additionally, 22 current manufacturers have added or replaced 239 screens.

The Fall edition welcomes the following new SweetSource participating manufacturers.

Advance Lifts, Inc.

AirLocke Dock Seal

Boston Retail

Citadel Architectural Products, Inc.

Davidson Plastics Corporation

Dunbarton Corporation

Exeter Architectural Products

Gerber Plumbing Verbal

Gilbert Industries, inc.

Interfinish

ITD Industries, Inc. (Metallized Products)

Kentucky Metal Products

Kohlman Engineering Corp.

Krueger

Matot: D.A. Matot

Maxant

Meadows: W.R. Meadows, Inc.

Metal Sales Mfg. Corp.

Newfoundland Slate, Inc.

Precast / Prestressed Concrete Institute

Radiation Protection Products

Sentronic Int'l

Strom Plumbing

Syracuse Castings Sales Corp.(formerly Campbell Foundry)

Temple-Inland Forest Products Corp.

Tomsed

United Marketing, Inc.

Vortex Specialty Doors

Weyerhaeuser

Sweet's FAX

The following is a pre-addressed form you can print to your office printer or copy to a Windows-based word processor.

Enter the next section and select the ***File*** menu and ***Print Topic.*** After printing the form, fill in your address and comments. Fax or mail the form to Sweet's Group at the address shown.

To copy our address to your own Fax form, select the ***Edit*** menu and the ***Copy*** command. The Help *Copy* window displays. Highlight the text and click the ***Copy*** button. This copies the text to Windows Clipboard for transfer to your word processor.

We are eager to hear your comments.

Sweet's Group

Sweet's Group

Attention: Alma Weinstein
Sweet's Group
20th Floor
1221 Avenue of the Americas
New York, NY 10020

We want to hear from you. Please fill out this questionnaire, or use the SweetSource Business Reply Card.
Our fax number is 212-512-2745.
E-mail comments can also be sent to: rose_austhof@sweetspub.com.

Name: _____

Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone Number: _____ Fax Number: _____

How often do you use SweetSource?

__ Daily __ Monthly __ Never

__ Weekly __ Seldom __ Don't Know

How useful is SweetSource to you?

__ Very Useful __ Somewhat Useful __ Don't Know

__ Useful __ Not Very Useful

What do you use SweetSource for? (Please check all that apply)

__ Review available products __ Compare similar products

__ See "what's new" __ Make preliminary searches

__ Find alternative products __ Produce specifications

__ Export CAD drawings __ Select products

__ Export text and table data to a word processor or spreadsheet

__ Create project file __ Build slide show presentations

I referenced the following manufacturer(s) in SweetSource in the past three months:

_____

_____

_____

Which of the following action(s) have you taken after referring to SweetSource? (Please check all that apply)

__ Called a manufacturer to get more detailed technical information

__ Called a manufacturer to get pricing information

__ Asked a sales representative to call

__ Recommended a product seen in SweetSource

__ Selected/specified a product seen in SweetSource

__ Purchased a product seen in SweetSource

__ Incorporated into project design or specification

Which manufacturer(s) would you like to see that are currently not in SweetSource?

_____

_____

_____

Please indicate your job function:

__ Architect __ Landscape Architect

__ Drafter/CAD Operator __ Librarian

__ Engineer __ Office Manager

__ General Contractor __ Project Manager

__ Interior Designer/Planner __ Specification Writer

__ Intern __ Technical Writer

__ Other _____

How many design professionals does your firm have on staff?

__ 1 __ 5-9 __ 20-50

__ 2-4 __ 10-19 __ Over 50

What was the approximate total cost of projects your firm worked on in the last 12 months.

__ Less then $2 million

__ $2 - $9.9 million

__ $10 - $49.9 million

__ $50 million or more

What percentage of your business is:

New Construction _____% + Renovation/Retrofit _____% = 100%

Comments and suggestions

_____

_____

_____

My responses and comments may be furnished to building product manufacturers in evaluating their catalog programs.

Signature:

_____

Additional orders

For additional copies of SweetSource, contact Sweet's at 1 800 442 2258

Stop sending me SweetSource because

_____

Address change

Name:_____

Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone Number: _____ Fax Number: _____

Old address

Name: _____

Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Fall 95 Edition

Sweet's Forum - Fall 1995 Edition

To Contact the Editor

We welcome your comments and suggestions. To contact the editor, address correspondence to: Sweet's Forum, 99 Monroe Ave. NE Ste. 400, Grand Rapids, MI 49503. If you prefer, FAX your comments to Sweet's Forum at 1-616-454-4140, E-mail comments to rose_austhof@sweetspub.com, or call our Technical Services department at 1-800-636-6002.