Perspectives

DATACASH CONTEST WINNERS

On April 14, 1986, we announced our first end user contest, DataCASH. We asked our DataCAD users to send us their best 2-D and/or 3-D drawings, so that we could get a first hand look at the work being producing on DataCAD. Entries started arriving by UPS around the middle of May, and continued right up until Federal Express delivered the last one at 10:00 a.m. on June 1st. Judging from the amount and quality of the entries - the DataCASH contest was a success.

As you can well imagine, it was no easy task for the judges to select six of the drawings to award First, Second and Third place prizes. Each entry had its unique features. The drawings were judged by a panel of architects and computer aided design experts at MICROTECTURE'S headquarters in Charlottesville, Virginia. Points were given for complexity of design, technical creativity, and best overall use of DataCAD. "I was extremely impressed with the quality and creativity of the drawings submitted," commented Berry Taylor, contest coordinator and Director of Training at MICROTECTURE. "We have a lot of firms out there producing excellent work with DataCAD."

Although the decision was a hard one, the winners were finally selected. First, Second and Third place cash prizes were awarded in the 2-D and 3-D categories to the following:

2-D Category

1ST PLACE - Walter B. Sawyer
McKimmon/Edwards/Hitch Architects, Raleigh, North Carolina (Illustrated on front page)

2ND PLACE - Donald R. McGovern
Glassner Nathan and Partners, Memphis, Tennessee

3RD PLACE - Montie R. Breeden
VMDO Architects, Charlottesville, Virginia

3-D Category

1ST PLACE - Steve Rick,
Idea Net, Addison, Texas

2ND PLACE - Mitchell Goldstein
Design for Health, Santa Cruz, California

3RD PLACE - Ed Wenzler
William Wenzler Associates, Milwaukee, Wisconsin

Congratulations to the Winners! Their winning drawings will be used to promote DataCAD in MICROTECTURE'S literature and advertising. We thank all of you who participated and hope to see your entry at next year's contest.

Financial Management System

We are pleased to announce the release of the new MICROTECTURE Financial Management System, named 'FMS'. Many hours of research and development have gone into our latest software product, and as with DataCAD, FMS has been specifically designed for architectural and engineering firms.

The FMS package is a fully integrated project costing and accounting system. Each module makes use of detailed on-screen reports and comprehensive error trapping. All of the FMS reporting formats closely adhere to the standardized accounting guidelines of the American Institute of Architects (AIA). Firms currently using the AIA forms, will now find the task of automation easier than ever before.

Recently reviewed in the Progressive Architecture magazine, the FMS package, the reviewer states, "has the most advanced software engineering of any of the products. . .MICROTECTURE also pays considerable attention to accounting for professional time and overhead. The product tracks not only billable time, but also professional time that is neither paid nor billed."

PROJECT COSTING
GENERAL LEDGER
ACCOUNTS RECEIVABLE
ACCOUNTS PAYABLE
PAYROLL

MICROTECTURE'S FMS package --- Financial Management has never been easier!

To find out more about the new FMS package, contact Mike McClain at 804/295-2600, for the name of the authorized dealer nearest you. □

▶ *Two drawings from the winning entry by Walter B. Sawyer of McKimmon/Edwards /Hitch Architects.*

DAVIDSON RESIDENCE HALL
PEACE COLLEGE
RALEIGH, NORTH CAROLINA

From the President

COMMENTS ON THE NEW DATACAD

The 3.0 release of DataCAD represents more than just a new version of our professional CAD software. A tremendous amount of engineering effort has been invested during recent months to create what is essentially a new product. Several major areas of the DataCAD source code have been re-engineered and rewritten. This new code will provide the basis for a number of enhancements and additions to the program which will be added during the next twelve months. These changes are grouped into several major areas of the program's operation.
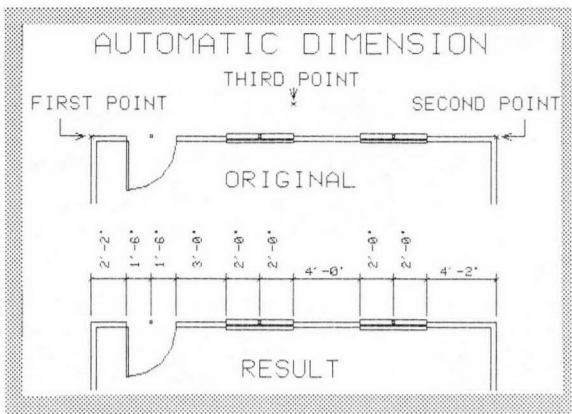
The first thing you may notice about the program is that your old data must be converted into a new file format. The new files are somewhat larger than before, because they now contain a full three dimensional database for your drawings. We have also extracted more accuracy from the vector list and you can now draw lines with one arc-second of precision. The full three dimensional database has allowed the introduction of three dimensional arc capabilities, and has provided the foundation for a number of enchancements to our three dimensional features.

In addition to changes to the database structure, several changes to the file structure have also occurred. We have removed the current limitation on the number of lines which may appear on any single layer. DataCAD now uses an automatic page-to-disk function which expands the number of lines that can be displayed at any one time by almost ten-fold. This paves the way for Extended Memory Specification (EMS) versions and facilitates the use of the new intelligent graphics controllers which are now entering the marketplace. The new file structure also permits more flexibility in the management of drawing files while editing. New file names may now be specified at any time, and it is far easier to recover old drawings.

Included in the new release are a number of functional enhancements that we have been saving for some time. Automatic dimensioning, a built-in COGO package, a revised hatching menu, new line types, and a host of other improvements have been included. A new and very powerful associative dimensioning feature has also been released. This capability greatly extends the editing power of the program, and represents a major advancement in our software.

In response to customer and third party requests, two powerful macro command languages have been developed for DataCAD. The "basic" macro language includes an on-screen text editor which may be used to create a variety of user definable elements. This utility may be used in conjunction with the editor in real time to develop and debug your own macros. We have also provided a split screen mode to display the macro in plan, elevation and axonometric simultaneously. The fundamental graphics primitives such as rectangles, cones and pyramids have been included to facilitate the fast development of complicated shapes in three dimensions.

Another powerful macro language has been developed for third party and advanced users. This consists of a complete programming interface to DataCAD's menu structure and graphics database. These macros may be used to execute complicated instruction sets, and greatly enhance the speed and editing power of the program.
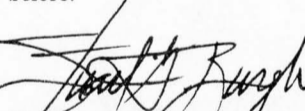
MICROTECTURE Calendar

SEPT. 11 - Philadelphia, PA - NEC Information Systems, NEC APC IV Seminar

SEPT. 16-18 - Montreal, Canada - CAD/CAM Robotics Show

SEPT. 18 - Vienna, VA - NEC Information Systems, NEC APC IV Seminar

SEPT. 29 - Denver, CO - DataCAD Seminar, Clark Musgrove, Entre' Computer Center

OCT. 9 - Melborne, FL - DataCAD Seminar, Entre' Computer Center

OCT. 17-18 - Ft. Wayne, IN - Grand Wayne Center, Indiana Society of Architects Show

OCT. 25 - Atlanta, GA - AIA PC CAD Workshop, Eric Teicholz, Graphic Systems, Inc.

OCT. 30-31 - Grand Rapids, MI - Michigan Society of Architects Show

OCT. 30-31 - Dallas, TX - Texas Society of Architects Show

NOV. 10 - San Francisco, CA - AIA PC CAD Workshop, Eric Teicholz, Graphic Systems, Inc.

DataCAD 3.0

The Automatic Dimensioning command of the new DataCAD 3.0.

Version 3.0 also reflects the company's changing attitude toward system design. In past versions of our software, all of our device drivers were written internally. This situation created a "bottle neck" for the support of new peripheral equipment. We have now revised this policy; and all future device drivers may be defined as external files. This means that you will soon see many more graphics cards, monitors, input devices and plotters supported in the near future.

Of all the enhancements and changes mentioned here, by far the most important is something the typical user will never see. Though the basic user-interface of DataCAD remains essentially the same, the internal coding of procedures has been completely reworked. The new methods for passing information to various procedures within the program has resulted in cleaner, more concise source code. This change facilitates the addition of new enhancements, and greatly simplifies the process of checking and debugging internal code. DataCAD 3.0 is now a fully mature software product which may be used with even greater confidence.

In sum, these changes represent a new phase of MICROTECTURE'S development. Our continuing commitment to the professional design field will now see a more rapid development of new products and enhancements to this already excellent program. DataCAD, which has received wide acclaim in the last twelve months as the premier architectural CAD package, is now positioned to take on even more demanding tasks.

On behalf of the many dedicated professionals here at MICROTECTURE, we appreciate the opportunity to be a part of this dynamic new industry. Through your continued support and feedback about our products, we will be able to serve you better in the future than ever before.

Stuart Griffin Burgh, AIA
President

New 3.0 Features
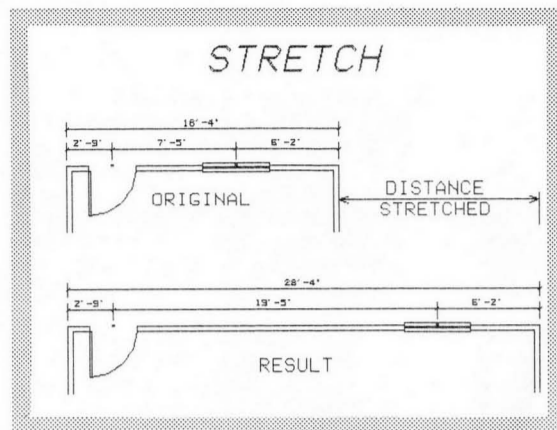
The DataCAD 3.0 Associative Dimensioning command used in combination with the Stretch command.

End User Groups

We have received a tremendous amount of interest from DataCAD end users regarding the availability and locations of end user support groups. Currently we are aware that end users groups are getting underway in Boston, MA, Washington, D.C., Richmond, VA, Raleigh, N.C., and Los Angeles, CA. We would be happy to be of assistance in organizing new groups, supplying mailing lists, providing samples of documentation, etc.

If you are interested in organizing or participating in a DataCAD End User Group in your area please contact, Debra Marston at 804/295-2600. □

L. Berry Taylor, Director of Training (seated) at the A/E/C Systems '86 Show in Chicago.

Questions and Answers
by W.David Henderson

1. HOW DO I ENTER A LINE 24'-5 1/8" AT AN ANGLE OF 30° 42' IN DATACAD? Use the keyboard entry feature. After entering the first point of a line with the mouse, press the space bar. DataCAD will then prompt you for the 'relative distance'. If you are using 'Architectural' units, (feet-inches-fractions) enter 24'-5 1/8" by typing 24.5.1.8, and press return. DataCAD then asks for the 'relative angle'. To enter an angle of 30° 42', type 30.42, and press return. The relative angle will establish the direction of the line entered

2. WHICH COORDINATE SYSTEMS DOES DATACAD SUPPORT? DataCAD allows operations in four coordinate systems: relative polar, absolute polar, relative cartesian, and absolute cartesian. Under the default, relative polar, points are defined as a distance from the last point entered. Absolute polar calculates points similarly from 'absolute zero'. Absolute zero defaults to the lower left hand corner of the screen, but can be set in the Utility Menu. In relative cartesian, points are defined as an x, y distance from the last point entered. Absolute cartesian calculates points as an x, y distance from absolute zero. In DataCAD coordinate systems can be changed anytime simply by pressing the insert key to scroll through the list, or pressing shift insert to scroll backwards.

3. CAN I DEFINE MY OWN SCALES IN DATACAD? Yes. DataCAD allows up to eighteen scales, all of which are user definable. To change one of the scales provided with the program, first delete the scale to be changed, and select 'create scale'. DataCAD will then prompt you for a 'stringline': enter text up to 8 characters that you would like to display in the menu window. Finally, DataCAD will ask for a scaling value. This is simply the scale expressed in decimal form. A list of scaling values is provided below for your convenience.

Architectural

1/32"=1'-0"	.00260416
1/16"=1'-0"	.00520833
3/32"=1'-0"	.00781250
1/8"=1'-0"	.01041666
3/16"=1'-0"	.01562500
1/4"=1'-0"	.02083333
3/8"=1'-0"	.03125000
1/2"=1'-0"	.04166666
3/4"=1'-0"	.06250000
1"=1'-0"	.08333333
1 1/2"=1'-0"	.12500000
2"=1'-0"	.16666666
3"=1'-0"	.25000000
6"=1'-0"	.50000000
12"=1'-0"	1.00000000
24"=1'-0"	2.00000000

To calculate the scaling value for additional architectural scales, express the fraction in decimal form, and divide by 12 to convert the feet to inches. For example, 1/4"=1'-0" would be 0.25"=1'-0" or 0.02083333"=1".
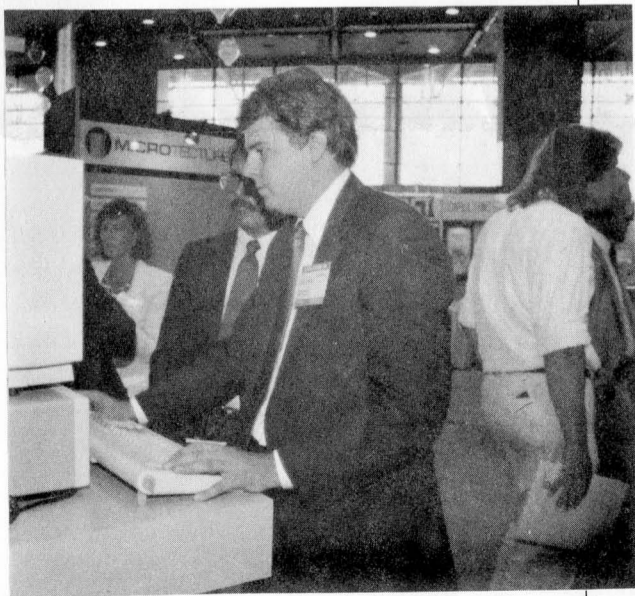
File Management

Retrieving Backup Files

No one likes to talk about it, but every now and then you do something to your drawing that is regrettable. And it's either difficult, or sometimes impossible to correct. You could return to the backup file made the night before on a floppy diskette, but you have worked long and hard today. How can you retrieve that work as well? The last time you exited your drawing DataCAD automatically made a copy of your drawing file and stored it in the same directory as a backup file. To retrieve your backup file, ABORT the drawing file and exit DataCAD to MS-DOS. It is critical that you select ABORT, a menu item under Quit, to exit your file without saving, as DataCAD overwrites or updates the backup file each time you exit and save a drawing file. You need not worry about overwriting the backup file during a drawing session, as the automatic save function does not overwrite or update the drawing or backup files.

Your backup file is easily identified by the suffix .BAK appended to the name you gave your drawing. Your drawing file, identified by the same name, will end with the suffix .CAD. Now using the MS-DOS COPY command, copy the .BAK file to a .CAD file. For example, if I named my drawing HOUSE10, the drawing file would be named HOUSE10.CAD and the backup file HOUSE10.BAK. To copy, type the following:

COPY HOUSE10.BAK HOUSE10A.CAD

Note the spaces, which are as important as the characters typed. It is not necessary to rename your file when substituting the backup for the drawing file, but it allows you to retain both versions of your drawing should you change your mind. Renaming also allows you to save the flawed version to send to us should you have further questions as to what happened.

Locating Files in DataCAD

You know the file is there. It was listed when you typed DIR in MS-DOS, but you can not enter it from within DataCAD. Maybe it was your favorite drawing, or a template file. Computers you say to yourself. What good are they? Before you give up and start looking for your T-square, check the Path Name. The Path Name tells DataCAD where to search for your various file types. The Path Name for a drawing is an address of sorts. It tells DataCAD how to search your storage device, whether a hard disk, floppy, or tape drive, for the desired file. When did you last go to New York City to see a friend without their address. Cities....you would have exclaimed.

In the CONFIG program for DataCAD you establish a Path Name for each file type. Your drawing, template, form, and text files may all be in the same directory as the program, or you may segregate each type of file in separate directories based on your file management strategy. Once you have organized your files, you need to enter the Path Name for each type in the CONFIG program. If all files reside in the same directory as the program, the default Path Name provided in the CONFIG program is correct. Otherwise, or if the Path Name is accidentally changed, the Path Name must be entered.

The Path Name is defined from the root directory, denoted in MS-DOS by '\', from which all other directories branch. The Path Name indicates all the intermediate directories between the root directory and the directory containing the desired file. If the directories were organized on the hard disk in the manner indicated by the diagram above, the Path Name for .CAD files would be:

C:\MTEC\CAD

The Path Name for template files (.TPL) would be:

C:\MTEC\TPL

The Path Name for all the executable files which constitute the DataCAD program would be:

C:\MTEC

Once you have told DataCAD the directory of the desired file, you will notice your favorite drawing, or your most complex template symbols listed once again in the menu window, ready to be used in DataCAD. And you can heave a sigh of relief, and have time to see your friends. But this time remember the addresses. □

◄ *Eric V. Smith, Director of CAD Software Development, demonstrating DataCAD at the MICROTECTURE booth at A/E/C Systems '86.*

Multiple Scale Plotting
by L. Berry Taylor

The following is an excerpt from the new DataCAD 3.0 manual.

In order to keep drawing files to a manageable size, MICROTECTURE recommends that you create a separate drawing file for each drawing you produce (see Chapter Two.) But since drawing sheets are composed of MANY drawings plotted at DIFFERENT scales, a facility is needed to coordinate the plotting of several files onto a single sheet of paper. Here's how to do this:

The Setup

1.   Make sure that the file DEFAULT.CAD (included with your software) is loaded into the directory where your drawings are stored. Each time you create a new drawing file, DEFAULT.CAD will be copied to your file.

2.   Each new drawing file you create will then contain two layers, one called BORDER and the other called LAYER 2. BORDER contains a cyan-colored cross called the PLOTTER REFERENCE MARK. Layer 2 is a blank layer you can use for drawing.

3.   You can create as many additional layers as you like, but BEFORE YOU BEGIN DRAWING, you will need to load a SHEET BORDER. To do this, select TEMPLATE from the UTILITY menu. Then select the template called BORDERS.

4.   The BORDERS template contains sheet borders for each of the five standard paper sizes, A through E. By enlarging these borders as they are brought into the drawing, using the ENLARGEMENT FACTOR table provided, you can create a border which will match the plotting scale of your drawing.

To do this, choose ENLARGE from the TEMPLATE menu. Type in the enlargement factor which corresponds to the plotting scale of your drawing. Be sure to press ENTER.

Now move your cursor to the CENTER of the border you would like to use, and press the middle button on your mouse or puck. (If you don't have a three-button mouse or puck, press the N key instead.) Then drag your cursor over to the CENTER of the PLOTTER REFERENCE MARK and again press the middle button (or the N key). The border will be inserted into your drawing.

5.   Select OBJ SNAP from the UTILITY menu. Check to be sure that LYR.SEARCH is off (no asterisk). Then use the TAB key to tab through layers until the BORDERS layer is active.

6.   Next, select PLOTTER from the UTILITY menu. Select PAPER SIZE and choose the paper size corresponding to your chosen border. Then select SCALE and choose the appropriate plotting scale.

7.   Select LAYOUT. Move your cursor until it lines up with the CENTER of the PLOTTER REFERENCE MARK. Then press the middle button on your mouse or puck (or the N key). Your drawing is now laid out correctly for plotting. Finally, TAB to another layer and turn off the BORDER layer.

8.   Now you're ready to begin drawing. But be sure to repeat steps 2 through 7 above for each *New* drawing file you create.

Detail Blocks

Both the "D" and "E" size plot borders contain a grid of boxes called DETAIL BLOCKS. These are provided to assist you in composing large sheets of drawings, especially detail sheets.

Before you begin work on a project, sit down with a pencil and paper and plan your drawing sheets, determining the sheet number and detail block location(s) for each drawing needed. You may wish to number the detail blocks to keep things straight.

Then when you produce your drawings, keep them within the detail block(s) you have assigned. This will ensure proper layout coordination of drawings in different files.

Plotting Sheets of Drawings

If you have followed the steps outlined above, plotting a sheet of variously-scaled drawings is easy:

1.   Simply turn on your plotter and load a sheet of paper.

2.   Load a drawing file to be plotted.

3.   Select Plotter from the UTILITY menu. Choose PLOT. Your drawing will be plotted correctly.

4.   Repeat steps 2 and 3 until all drawing files have been plotted onto the sheet.

Engineering

1:10	.00833333
1:20	.00416666
1:33 1/3	.00250000
1:40	.00208333
1:50	.00166666
1:80	.00104166
1:100	.00083333
1:200	.00041666
1:400	.00020833
1:600	.00013888
1:1000	.00008333

To calculate the scaling value for additional engineering scales, express the ratio in decimal form and divide by twelve to convert the feet to inches. For example, 1:10 would be 0.1/12 or 0.00833333

Metric

1:1	1.00000000
1:2	0.50000000
1:5	0.20000000
1:10	0.10000000
1:20	0.05000000
1:50	0.02000000
1:100	0.01000000
1:200	0.00500000
1:500	0.00200000
1:1000	0.00100000
1:2000	0.00050000
1:5000	0.00020000
1:10000	0.00010000

To calculate additional metric scales, simply express the ratio in decimal form. No further computation is necessary as both values are in the same scale.

LET'S HEAR FROM YOU...

We hope that you enjoy this first issue of the MICROTECTURE newsletter. We welcome your suggestions or comments, and hope that you will participate in future issues by sending us your drawings, questions, and your accounts of first-hand experiences with DataCAD or FMS. Please address any newsletter submissions to: Perspectives Newsletter, MICROTECTURE, 617 West Main St., Charlottesville, VA, 22901.

Customizing The Borders

Each border in the BORDERS template must retain its outline and center snapping point in order to be used correctly. However, you can customize the detail and title blocks any way you like within the outline of each sheet.

To do this, insert the border into a drawing on a Blank layer. (Matching the PLOTTER REFERENCE POINT is unnecessary.) Simply erase the lines you don't want and draw new ones. Then choose DEL SYMBOL from the TEMPLATE menu and delete the old border. Finally, choose SAVE SYMBOL, put a box around the new border, and insert it into the template window. Your new border can now be used.

NOTE: When inserting a border into a drawing for customization, be sure that the ENLARGE function on the TEMPLATE menu is set to One (1). Otherwise a distorted border will result.

Borders For Customized Scales

If you have created new scales using the EDIT STUFF menu, you can match borders to those scales, using an appropriate enlargement factor. The borders in the BORDERS template are drawn at Full Scale and enlarged appropriately to compensate for fractional scales of plotting.

To find an enlargement factor, determine: What fraction of actual size is the scale under consideration? The enlargement factor is then the denominator of that fraction.

For example, 1"=1'=0" is 1/12th actual size, so the enlargement factor is 12.

———————■———————

New Additions

We are pleased to announce the addition of Michael McClain to our Sales Department as National Sales Manager. Mike graduated from Texas A&M University and has over 12 years experience in the architectural reprographic and computer aided design industries. "What I am bringing to Microtecture is a first-hand knowledge of the problems dealers encounter in the CAD sales process, and a step by step plan to overcome those problems." Mike is currently in the process of preparing a Dealer Sales Manual for DataCAD. If you have any comments or ideas you wish to discuss, please call Mike at 804/295-2600.

Hardware News

We are continually adding new equipment to our supported hardware list. Since June, we have added the following:

Computers

NEC APC IV
SPERRY IT
TI BUSINESS PRO
EPSON EQUITY II

Graphics Cards

SIGMA COLOR 400-L
HERCULES GRAPHIC CARD

All of the computers listed require 640K bytes of RAM, an Intel Math Co-processor. We recommend a 20 MB hard disk.

▊▊MICROTECTURE™

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DataCAD Tips

TROUBLE

When there is trouble, MICROTECTURE Technical Support is here to help. Here are the most common error messages encountered by users in DataCAD:

1. THE POINT ENTERED IS TOO FAR FROM THE LINE when snapping to a point, selecting a line or shape to edit. Are you on the correct layer? Use Identify to check the layer of the entity.

2. BOTH ENDPOINTS OF A LINE ARE INSIDE THE BOX when attempting to cleanup a T-intersection. Do you have an extra line segment drawn on top of one of the lines you are trying to cleanup? To check each line, erase the line, and refresh the screen with the ESC key. If a line or partial line reappears, two lines are drawn one on top of the other. Once you erase one of them, the T-intersection will cleanup. If no additional line appears, use the undo command in the Erase menu to restore the line. Check the next line until you find the hidden line segment.

3. MORE THAN 4 ENDPOINTS WERE FOUND INSIDE THE BOX when attempting to cleanup an L-intersection. See above instructions for T-intersections.

4. T-INTERSECTION CLEANS UP TO THE WRONG SIDE OF A WALL. When the T Intsct command is selected in the Cleanup Menu, DataCAD will trim the intersecting wall to the nearest face of the continuous wall. If the intersecting wall crosses the continous wall, DataCAD will trim it to the wrong line of the continuous wall. To avoid this problem, use 1Ln Trim to trim the intersecting wall to the correct face of the continuous wall. Then use the T-Intsct command to finish the job.

5. WHEN NEARPOINTING, CURSOR MOVES TO the point nearest the cursor, which is sometimes only near the desired end or mid point. Is Nearest selected in the Object Snap menu? Nearest will move the cursor to the nearest point entered in the drawing. It could be anything, but it will be nearest. Typically, you want the nearest endpoint, midpoint, etc. Selecting End Pnt only will snap to the nearest endpoint. All object snap selections assume you want the nearest point of the type selected; the Nearest setting does not qualify the other settings. Nearest is a separate, and potentially troublesome, setting.

We appreciate hearing your suggestions and any problems you have encountered using DataCAD. Your problems and suggestions help us define the future direction of DataCAD. Solutions to common problems will appear in this column in each issue. If you have something that might be of interest to other users, let us know. □

PLEASE FILL OUT THIS COUPON, IF YOU WOULD LIKE YOUR NAME ADDED TO OUR MAILING LIST.

NAME_____

FIRM_____

STREET_____

_____

CITY_____

STATE/ZIP_____

PHONE_____

Mail To: MICROTECTURE
617 West Main St.
Charlottesville, VA 22901