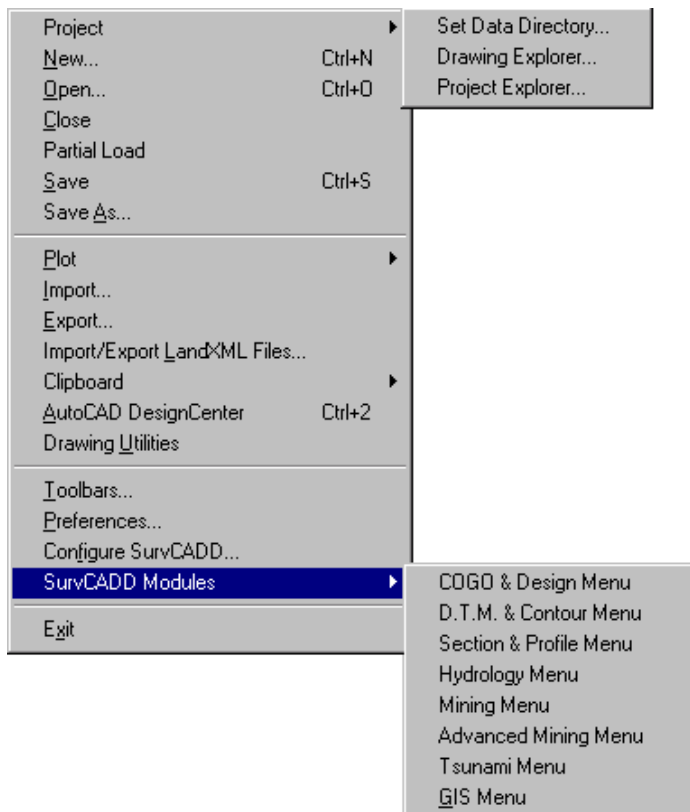# General Commands

All the SurvCADD module menus share six of the same pull-down menus which are File, Edit, View, Draw, Inq-Set, & Points. Within a module, only the other pull-down menus, typically three or four, are specific to the module. The common pull-down menus contain general commands that are applicable within all the modules. Many of these commands are AutoCAD commands which are described in your AutoCAD Reference manual. The SurvCADD commands in the common pull-down menus are explained in the next six sections.

File Menu Commands

All the options on the File menu except the Project comands and *Configure SurvCADD* are AutoCAD commands which are discussed in the AutoCAD Reference Manual. The set of AutoCAD commands varies slightly between the AutoCAD versions.

Project	▶	Set Data Directory...
New...	Ctrl+N	Drawing Explorer...
Open...	Ctrl+O	Project Explorer...
Close		
Partial Load		
Save	Ctrl+S	
Save As...		
Plot	▶	
Import...		
Export...		
Import/Export LandXML Files...		
Clipboard	▶	
AutoCAD DesignCenter	Ctrl+2	
Drawing Utilities		
Toolbars...		
Preferences...		
Configure SurvCADD...		
SurvCADD Modules	▶	COGO & Design Menu
		D.T.M. & Contour Menu
Exit		Section & Profile Menu
		Hydrology Menu
		Mining Menu
		Advanced Mining Menu
		Tsunami Menu
		GIS Menu

Drawing Explorer

Function

The Drawing Explorer command presents a list of all SurvCADD data files that are made in association with a drawing. The knowledge of these files is contained in the .INI file that shares the drawing name (eg. Estates.dwg, Estates.ini). If a drawing was not made in SurvCADD or does not have a companion .INI file, then Drawing Explorer will display "No Files". If *Configure SurvCADD*|General Settings|Save Drawing INI Files is clicked off, then Drawing Explorer will again display "No Files". Drawing Explorer will also not show any data files where the drawing name starts with the 7 letters "Drawing". Using any other file name, once data files are created such as a coordinate (.CRD) file, then Drawing Explorer will track these files in the order that they are created. Drawing Explorer helps manage drawing-related data.
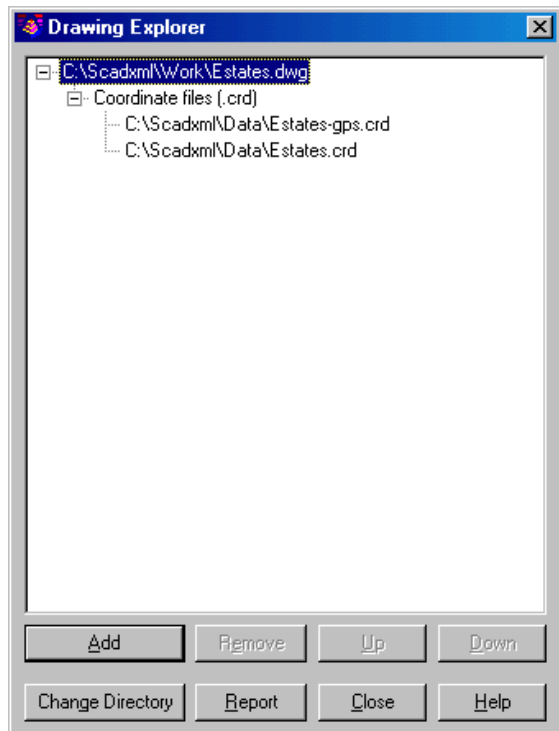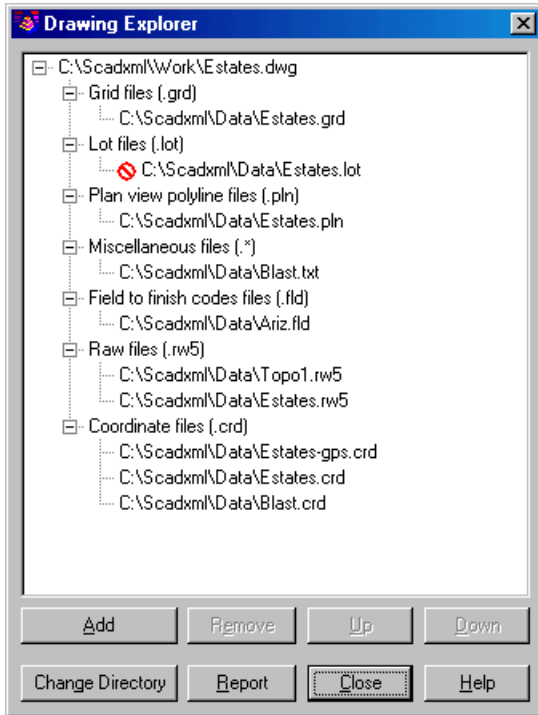
Example 1

If we are working in a drawing called Estates.dwg and create a coordinate file Estates.crd, then later create a second coordinate file called Estates-GPS.crd, Drawing Explorer would display the following:

The coordinate file created or modified last appears at the top of the list. All data files are displayed in the order of most recent to oldest. If the Estates.crd file is set as current by the command *Set Coordinate File*, then added to or revised, Estates.crd will move to the top of the list. Thus old, relatively unused files will gravitate to the bottom of the list.

Files are displayed by category. So far, we have only the Coordinate Files category. There are also Raw Field Note files (.RW5), profiles (.PRO), section files (.SCT) — in fact dozens of file type categories that will display once these files are actually created.

If a data file is selected and highlighted, the Up and Down keys will become enabled, and the user can move files up to the top of the list or otherwise alter their position. The position of files affects only the reporting of the files using the Report option in the lower left of the dialog. When highlighted, a file can be removed from the list (but it won't be deleted from the hard drive!). The Add option will add other older or non-referenced data files to the list of files associated with the drawing.

Drawing Explorer

```
☐ C:\Scadxml\Work\Estates.dwg
  ☐ Grid files (.grd)
     └ C:\Scadxml\Data\Estates.grd
  ☐ Lot files (.lot)
     └ ⊘ C:\Scadxml\Data\Estates.lot
  ☐ Plan view polyline files (.pln)
     └ C:\Scadxml\Data\Estates.pln
  ☐ Miscellaneous files (.*)
     └ C:\Scadxml\Data\Blast.txt
  ☐ Field to finish codes files (.fld)
     └ C:\Scadxml\Data\Ariz.fld
  ☐ Raw files (.rw5)
     ├ C:\Scadxml\Data\Topo1.rw5
     └ C:\Scadxml\Data\Estates.rw5
  ☐ Coordinate files (.crd)
     ├ C:\Scadxml\Data\Estates-gps.crd
     ├ C:\Scadxml\Data\Estates.crd
     └ C:\Scadxml\Data\Blast.crd
```

Add	Remove	Up	Down

Change Directory	Report	Close	Help

Example 2

As we do more work in the file Estates.dwg, data files will begin to proliferate and will appear in Drawing Explorer. Shown below is a more comprehensive list of files, with occasional examples of multiple files within the same category. Categories themselves float to the top of the list if any of their data files have been used more recently than data files in other categories.
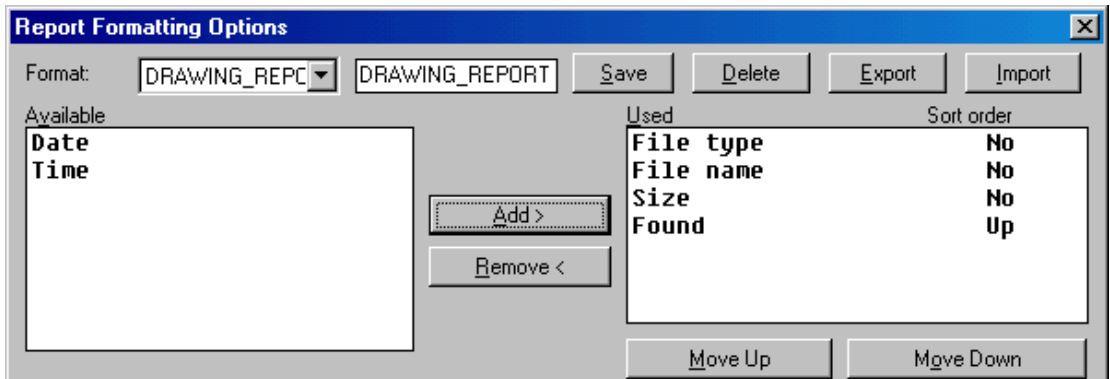
Note that there is even a Miscellaneous Files category, that includes ASCII point files created by the command Export Text/ASCII File.

When many data files are involved, the Report option becomes very useful. Here you can use the Report Formatter to display, in any order, the File Name, File Type, Date last modified, Time last modified, Size in bytes, and whether it is Found (eg. exists) in the specified directory. For example, if a file was created in a certain directory but moved using Windows Explorer to another directory without being further altered in SurvCADD, it would show up here as not found. ("No" would appear in the Found column).
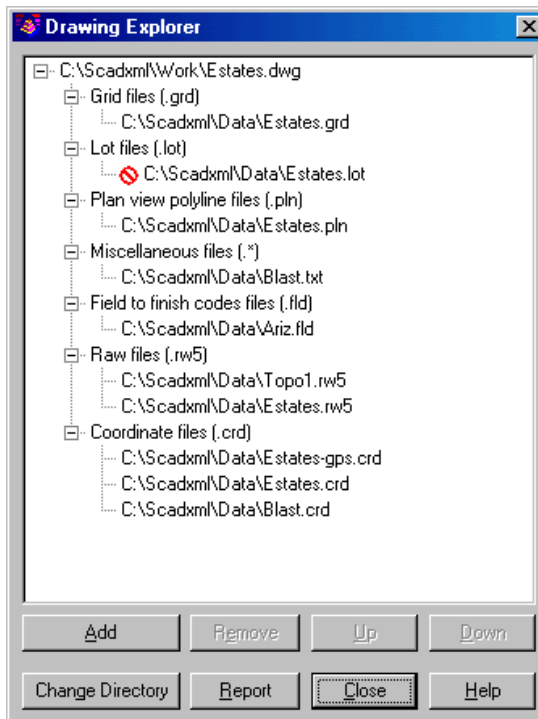
Shown here is a summary of our data files by size, with reporting of the found status. In this case, the Estates.Lot file has been moved or deleted.

The Report Formatter can be used to move to the right side all items that are desired for reporting, with the up-down options used to set the report order (eg. File type first, File name second, etc.). Click the Display button (not shown above) that appears at the bottom of the Report Formatting Options dialog, to obtain the report shown here.

Report Formatting Options

Format:	DRAWING_REPO ▼	DRAWING_REPORT	Save	Delete	Export	Import

Available		Used	Sort order
Date		File type	No
Time		File name	No
		Size	No
		Found	Up

Add >
Remove <

Move Up	Move Down

C:\Scadxml\Work\Estates.dwg

File type	File name	Size	Found
Grid files (.grd)	C:\Scadxml\Data\Estates.grd	16098	YES
Lot files (.lot)	C:\Scadxml\Data\Estates.lot		NO
Plan view polyline files (.pln)	C:\Scadxml\Data\Estates.pln	21336	YES
Miscellaneous files (.*)	C:\Scadxml\Data\Blast.txt	442	YES
Field to finish codes files (.fld)	C:\Scadxml\Data\Ariz.fld	1142	YES
Raw files (.rw5)	C:\Scadxml\Data\Topo1.rw5	2118	YES
Raw files (.rw5)	C:\Scadxml\Data\Estates.rw5	1685	YES
Coordinate files (.crd)	C:\Scadxml\Data\Estates-gps.crd	3218	YES
Coordinate files (.crd)	C:\Scadxml\Data\Estates.crd	5601	YES
Coordinate files (.crd)	C:\Scadxml\Data\Blast.crd	8518	YES

Drawing Explorer

```
□ C:\Scadxml\Work\Estates.dwg
   □ Grid files (.grd)
       └ C:\Scadxml\Data\Estates.grd
   □ Lot files (.lot)
       └ ⊘ C:\Scadxml\Data\Estates.lot
   □ Plan view polyline files (.pln)
       └ C:\Scadxml\Data\Estates.pln
   □ Miscellaneous files (.*)
       └ C:\Scadxml\Data\Blast.txt
   □ Field to finish codes files (.fld)
       └ C:\Scadxml\Data\Ariz.fld
   □ Raw files (.rw5)
       ├ C:\Scadxml\Data\Topo1.rw5
       └ C:\Scadxml\Data\Estates.rw5
   □ Coordinate files (.crd)
       ├ C:\Scadxml\Data\Estates-gps.crd
       ├ C:\Scadxml\Data\Estates.crd
       └ C:\Scadxml\Data\Blast.crd
```

[Add] [Remove] [Up] [Down]

[Change Directory] [Report] [Close] [Help]

Project Explorer

Function

This tool is used for management of a complete project. A project can contain numerous drawings, and each drawing within that project can contain numerous related files.

Think of the *Project Explorer* as the trunk of the hierarchical tree structure that develops into a project. While within each drawing, SurvCADD keeps track of the files that you create (such as grids and coordinates). These are related to the drawing and you can use *Drawing Explorer* to manage them. When management reaches the top level, the *Project Explorer* is used to tie these together.

Prompts

When you initiate the *Project Explorer*, you will be prompted to select an existing or create a new Project File. Project files end in the PRJ extension. Once a project file is open, the following dialog will appear.

Add: When you choose the add button you will be presented with a dialog to select a drawing to add to the project. Once a drawing is selected, it will be added to the project tree along with any files related to the drawing.

Remove: When any branch of the tree structure (except the top root) is selected, you have the ability to remove it. Keep in mind that removing any node of a tree structure will obviously remove any nodes that are contained under it.

Up/Down: When you select any branch of the tree structure that can be moved, the Up and Down buttons will be available. This allows you to rearrange the items vertically.

Pulldown Menu Location: File> Project
Keyboard Command: prjxplore
Prerequisite: None
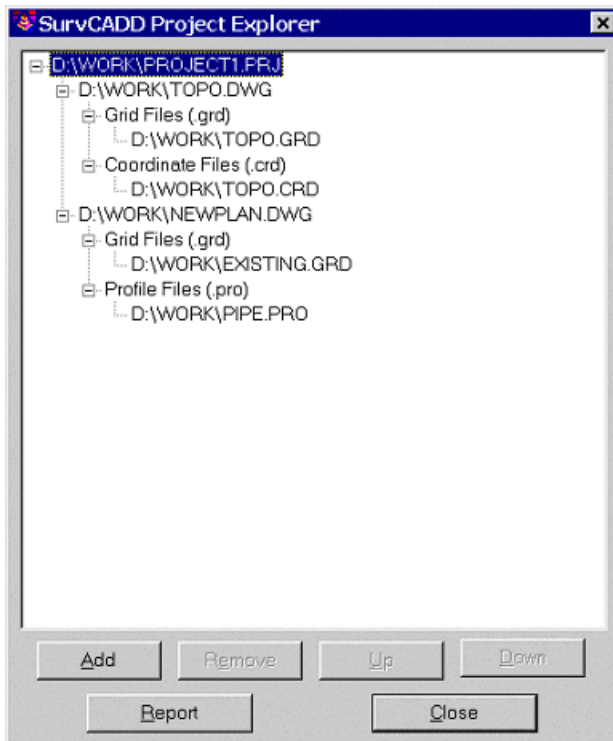
Set Data Directory

Function

This command sets the data directory to use as the default directory for creating SurvCADD data files such as coordinate (.CRD) and profile (.PRO) files. The routine shows the tree structure of existing directories available on your computer. The display is set to the current data directory. To set the data directory, highlight the directory name and then click OK. To create a new data directory, first highlight the parent directory to create the new one inside and then pick the Create Directory button. Then the program will prompt you for the new directory name. The Remove Directory button allows you to delete directories that have no files inside.

Pulldown Menu Location: File> Project
Keyboard Command: settmpdir
Prerequisite: None
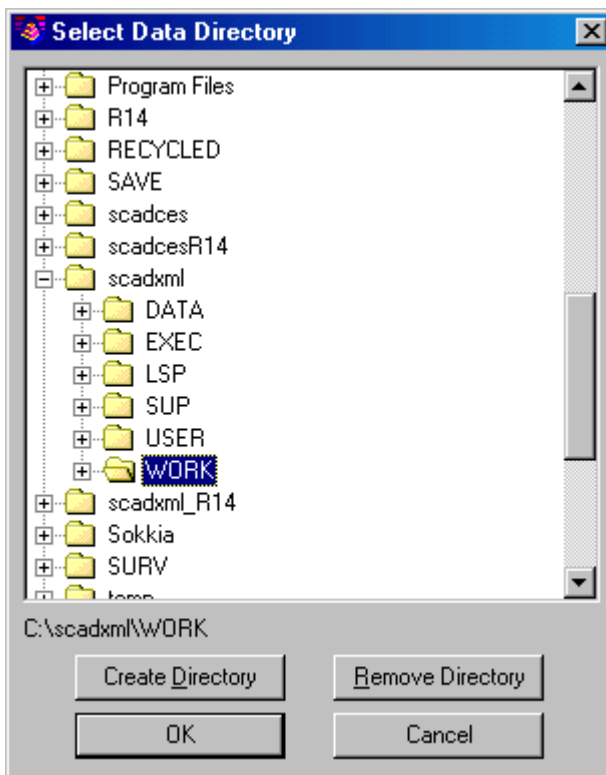
Configure SurvCADD

Function

This command allows you to set up the default settings that are used each time you start a new drawing or load an existing drawing. These settings are stored in files called SURVCADD.INI, COGO.INI, SCTPRO.INI, DTM.INI, HYDRO.INI, and MINE.INI in the SurvCADD USER directory. *Configure SurvCADD* will restore the current drawing settings to these default settings.

The settings for the modules apply to the commands within those modules. Refer to the associated manual chapters for descriptions of these settings. Under General Settings there are options that apply to all modules. The many of the these options are only accessed in *Configure SurvCADD* and will be described here.

The *Use Startup Wizard* controls whether this wizard appears when creating a new drawing. Save Drawing INI Files will create an .INI with the same name as the .dwg file to store the project data files for the drawing. The Put Data Files in DWG Directory will set the Data Path to the directory of the drawing. The Data Path is the default directory for SurvCADD data files such as the coordinate (.CRD) files, profile (.PRO) files, etc.

The Object Linking section contains options for creating reactors to the drawing entities. The Link Points with CRD File will attach a reactor to the SurvCADD point entities so that any change to the entities such as MOVE or ROTATE will update the coordinates in the CRD file. The Link Linework with Points option will attach reactors to line and polyline entities that are drawn by point number so that moving the points will automatically move the linework. The Link Labels with Linework applies to bearing/distance annotation. This link with update the annotation when the linework is modified. The Group Point Entities option joins the three entities of a SurvCADD point (attribute block, symbol, node). For each point, selecting any one of these entities selects all three entities for the point. See the Points Menu Commands and Dynamic Annotation sections of the manual for more information about linking.

When the Generate Report Log option is on, output from several commands will be accumulated in a report buffer. Commands that output to the report log include Inverse, Traverse, Curve Info, etc. Also any report that is displayed in the standard report viewer is also added to the report log. While activated, the report log resides in the lower left corner of the desktop as a minimized title bar that shows how many lines are in the report buffer. To view the report log, pick on the maximize icon on this title bar. You can also view the report log by running the Display Report Log function in the Misc menu. The report log can be edited, saved to a file or printed. To quickly turn the report log on and off, you can type REPORT at the command prompt. This function toggles the report log on/off.
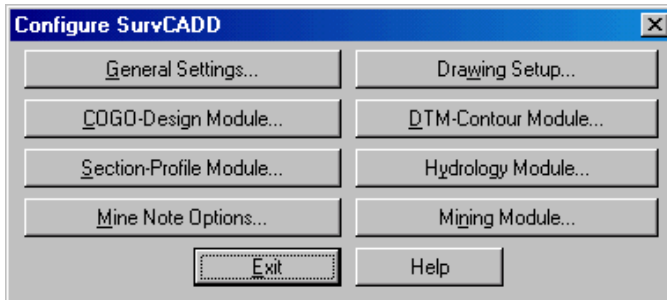
The Report Print Specifications settings apply to the Standard Report Viewer. Use Degree Symbol in Reports chooses between using the degree circle symbol and a 'd' for degree angles in the report. The 'd' can be used for printers that don't handle the degree circle symbol. The Use Page# option will add a page number to the bottom of each page in the report.

The CRD File Pt# Format option sets point number format for coordinate files as either numeric only or alphanumeric. Numeric point numbers are numbers like 5,6,7 whereas alphanumeric point numbers can also contain characters such as 5A,5B,5C.

The Database Format chooses between Microsoft® Access 97 or 2000 format. This database format applies to creating new database (.MDB) files in the GIS module, the drillhole database and the Export to Microsoft® Access option in the Report Formatter.

The settings under *Drawing Setup* only apply to new drawings because the Drawing Setup settings are automatically stored in existing drawings in a block called SURVSETV. This allows drawings to have individual defaults settings for *Drawing Setup*.

Pull-Down Menu Location: File
Prerequisites: None
Keyboard Command: config_scad
File Names: \lsp\survini.lsp, \lsp\cogoini.lsp, \lsp\dtmini.lsp, \lsp\mineini.lsp, \lsp\hydroini.lsp
\lsp\sctini.lsp, \lsp\cfg_scad.lsp, \lsp\cfg_scad.dcl
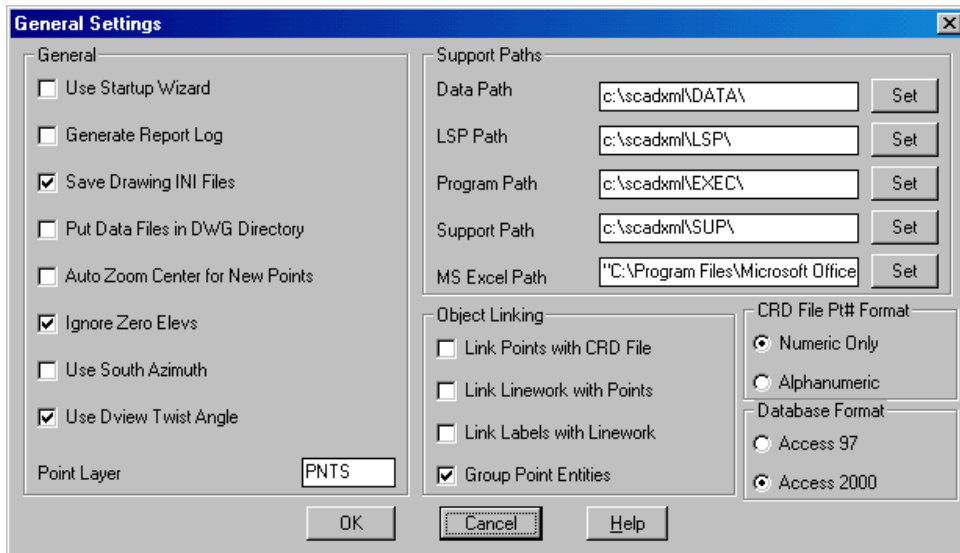
Edit Commands

In addition to AutoCAD's powerful editing commands, the SurvCADD Edit menu has the additional commands which are explained in this section.
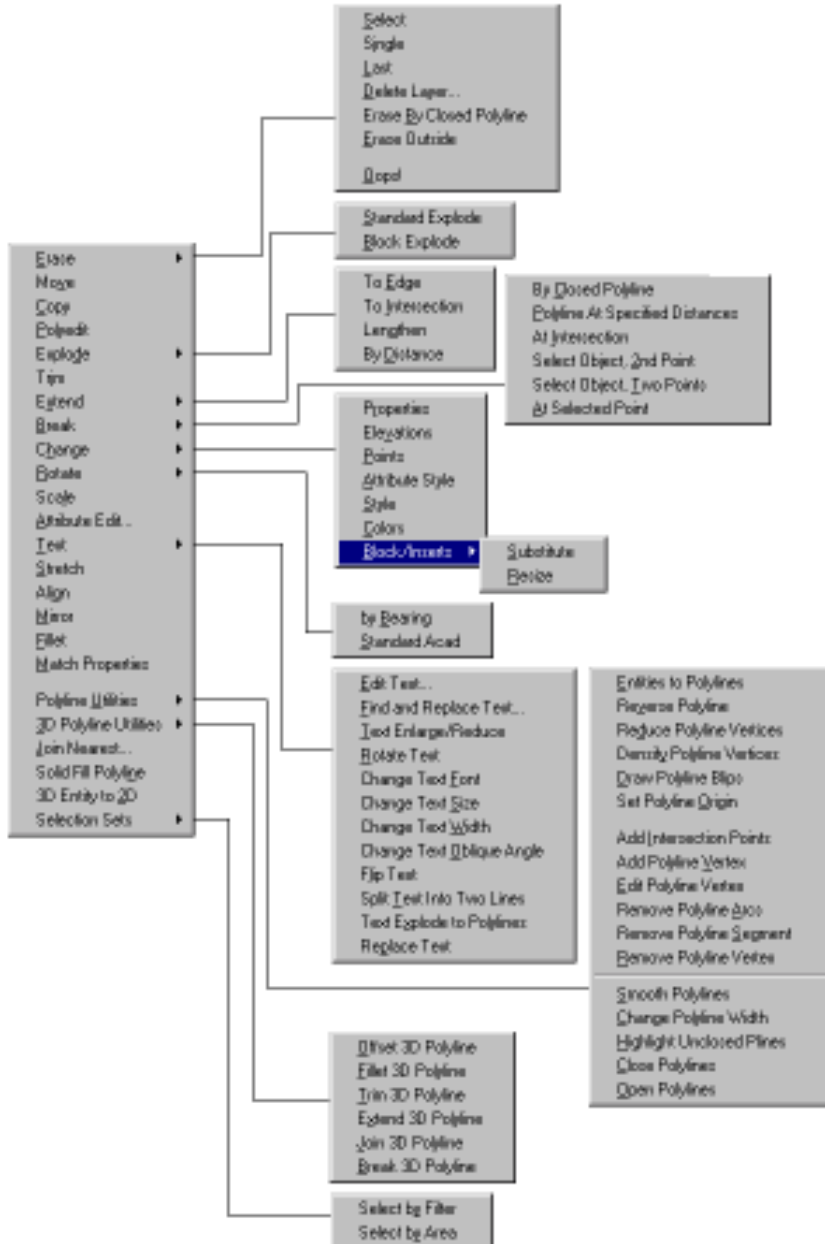
Delete Layer

Function

This command will ERASE all the entities on the specified layers and will delete these layers from the drawing. The command prompts for the layer name to erase and then erases all entities on that layer. In addition to typing in the layer name, you can also specify a layer to delete by picking an entity on that layer. To select layers by picking, first click the Select Layers from Screen button and then select the entities on the layers to be deleted. The Select Layers by Name button allows you to choose a layer name from a list of layers in the drawing. You can also specify which types of entities to erase. For instance, if you have both linework and points on the same layer and you want to erase only the linework, you can click off All and check Line and Polyline.
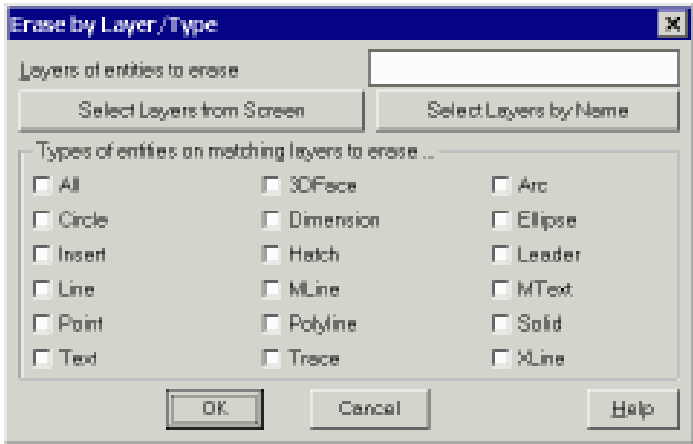
Pull-Down Menu Location: Edit, Erase >

Prerequisite: Something to erase

Keyboard Command: ldel

File Name: \lsp\dellayr.lsp

Erase by Closed Polyline

Function

This tool is used to cleanup drawing geometry at the extents of a polyline boundary. It provides options to erase adjacent geometry as well as trim geometry crossing the fence of the polyline. First select the boundary polyline, only one can be selected. Designate the desired options in the following dialog.

The top section allows you to toggle which object types should be affected by the operation. Note that some objects such as text and inserts cannot be trimmed.
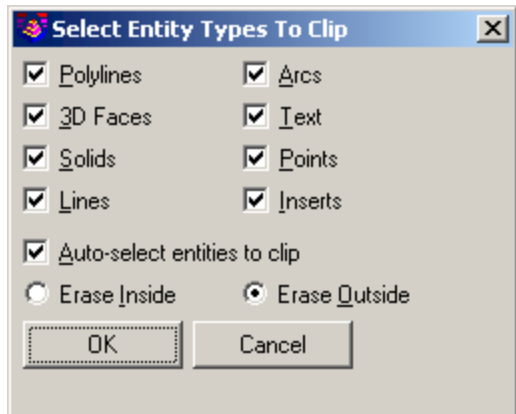
In the middle of the dialog is a toggle that determines whether to prompt for objects to process. If you want to isolate the drawings contents to that of the selected polyline, turn this toggle on. Note that all geometry in the drawing is effected, even that outside the current viewport. Many users will prefer to turn this toggle off so they will be prompted for the geometry to manipulate. The bottom row allows you to choose whether to erase all geometry on the inside or outside.

Pull-Down Menu Location: Edit, Erase >
Prerequisite: Entities, and a closed polyline
Keyboard Command: erasepline

Erase Outside

Function

This command erases all the entities outside of a user specified window. This can be useful if you somehow place entities way outside your drawing limits and want to easily erase them.

Pull-Down Menu Location: Edit, Erase >
Prerequisite: Entities to erase
Keyboard Command: eraseout
File Name: \lsp\surv1.lsp

Block Explode

Function

This command retains the values of attributes when a block is exploded. The standard AutoCAD *Explode* command changes the attribute values back to the attribute type. For example, using *Explode*, a SurvCADD point block would become PNTNO, PNTELEV, PNTDESC. *Block Explode* would keep the point attribute values such as 10, 1000.0, EP. The layer names of the exploded block attributes can be either the insert layer of the parent block or the original attribute layers from the block definition.

Pull-Down Menu Location: Edit
Prerequisite: A block to be exploded
Keyboard Command: explode2
File Name: \lsp\blkattex.lsp

Extend to Intersection

Function

This command extend the end points of two lines and/or polylines at the same time to their intersection point.

Prompts

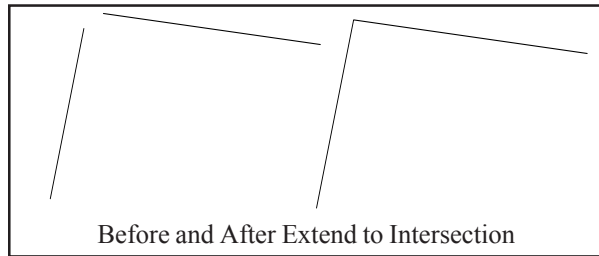**Select first line or polyline to extend:** *pick a line or polyline*
Select second line or polyline to extend: *pick another line or polyline*

Pull-Down Menu Location: Edit, Extend >
Prerequisite: Two lines or polylines
**Keyboard Command:** extint
File Name: \lsp\poly3d.arx

Before and After Extend to Intersection

Extend by Distance

Function

This command extends a line or polyline, or creates new lines or polylines off of an existing one. By specifying a distance, a new segment of the line or polyline can be drawn from the current position. The current position and direction along the line or polyline is indicated by an arrowhead.

Extend by Distance starts by selecting an existing line or polyline. Initially, the current position will be the closest vertex to where the line or polyline was selected. Extending from the endpoint of a polyline will add a new point to that polyline, while extending from any other point will create a new polyline.

There are two modes of operation: draw mode and move mode. When in draw mode, extending will draw line or polyline segments. In move mode, the current position arrowhead can be moved without drawing segments. The orientation of the current position arrowhead can be changed with the Right, Left, and Angle commands.

Here is a list of the Extend by Distance commands:
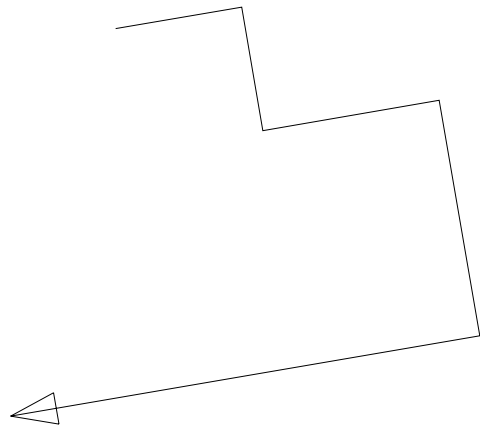
D - Draw Mode	Actions draw or extend the line or polyline
M - Move Mode	Actions only move the pointer
# - Number	Distance to draw or extend
R - Right rotate	Rotates clockwise 90 degrees
L - Left rotate	Rotates counterclockwise 90 degrees
E - Extend to Edge	Extends to intersection with a selected line or polyline
T# - Total distance	Sets current segment to specified distance
A# - Angle change	Rotates pointer by specified number of degrees
A - Align	Rotates pointer to align with segment
B - Bearing	Sets pointer direction by bearing in format: Qdd.mmss with Q-quadrant, d-degrees, m-minutes, s-seconds (e.g. 130.1005 is NE 30 degrees, 10 minutes, and 5 seconds)
S - Switch	Reverses pointer direction
F - Forward move	Moves pointer to next point
B - Backward move	Moves pointer to previous point
U - Undo	Undo the last Extend by Distance command
C - Close	Closes the polyline
O - Open	Opens the polyline
Help	Displays this list

Prompts

Select line or pline to extend: *select line or polyline near the place to extend*

Enter or pick distance to draw (A,B,C,E,L,M,N,O,P,R,S,T,U,Help): *50* The line is extended by 50 units. Use the Pick option to pick a distance.

Pick/Horizontal Distance to Extend ([Enter] for new line): *R* Rotate right 90 degrees.

Enter or pick distance to draw (A,B,C,E,L,M,N,O,P,R,S,T,U,Help): *50* The line is extended by 50 units. Use the Pick option to pick a distance.

Enter or pick distance to draw (A,B,C,E,L,M,N,O,P,R,S,T,U,Help): *Press Enter*

Extend another (<Yes>/No)? *No*

(Note: R50 and L10 can be used to go right 50, left 10, etc.)

Pull-Down Menu Location: Edit, Extend >

Prerequisite: An existing line or polyline with at least one segment from which to start.

Keyboard Command: extender

**File Name:** \lsp\scadutil.arx

Break by Closed Polyline

Function

This tool is used to break drawing geometry at the edge of a polyline boundary. It provides options to change the layers of the interior and exterior geometry after it is broken.

First select the boundary polyline, only one can be selected. Then select the polylines and lines to be clipped.

You will be prompted for options on specifying the layers for the newly broken geometry. Respond with a "Y" if you want to specify a new layer, then enter the new layer name. If the layer name does not exist, it will be created for you.
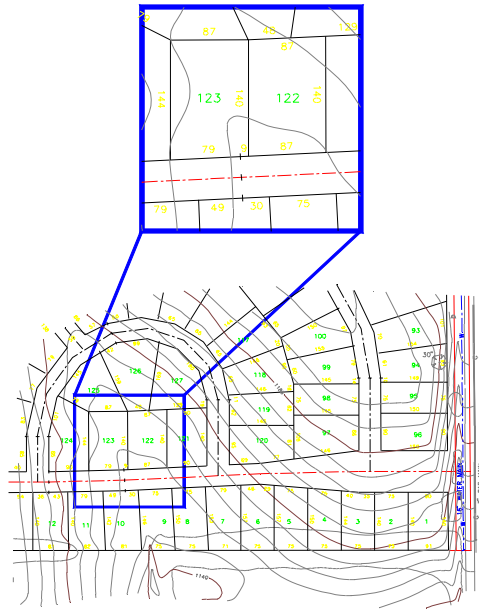
Prompts

Select the clip edge polyline: *pick a closed polyline*
Select the polylines and lines to be clipped.
Select Objects: *pick the entities to break*
Specify layer names for inside segments (Yes/<No>)? *Yes*
Enter a layer name for the inside segments <0>: *Press Enter*
Specify layer names for outside segments (Yes/<No>)? *Yes*
Enter a layer name for the outside segments <0>: *Final*

Pull-Down Menu Location: Edit, Break >
Prerequisite: A closed polyline
Keyboard Command: clipline
File Name: \lsp\poly3d.arx

Break Polyline at Specified Distances

Function

This command allows you to pick a polyline and break it at a specified distances along the polyline. Following the prompts below, the beginning of the polyline in the illustration was broken into three 55-foot segments.

Prompts

Select polyline to break: *Select polyline*
Total Distance: 779.429 (Length of polyline reported)
Distance Along Polyline For Break: *55.0*
Distance Along Polyline For Break (Enter to end): *110*
Distance Along Polyline For Break (Enter to end): *165*
Distance Along Polyline For Break (Enter to end): *Press Enter*
3 polyline breaks created.
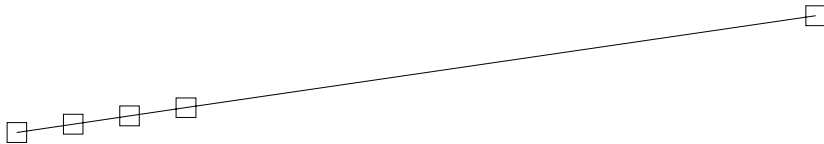
Break at Intersection

Function

This command allows the user to break a line, arc or polyline at the intersection of another line, arc or polyline. In many cases this command is used in conjunction with the *Area by Lines&Arcs* command. Many times, to get the correct area of a figure, it is necessary to break it from adjoining lines.

Prompts

Select Line, Arc, or Polyline to Break
Select object: *(select object to break)*
[int on] Pick Intersection to break at: *(pick intersection point)*

Pull-Down Menu Location: Edit, Break >
Keyboard Command: breakat
File Name: \lsp\surv1.lsp

Change Elevations

Function

This command will change the elevation of selected Entities. It can move the entity to a specified elevation from it's current elevation (absolute) or do a differential change by adding or subtracting a value from it's current elevation. If SurvCADD points are selected, their attribute text and z axis coordinate are changed.

Prompts

Ignore zero elevations (<Yes>/No)? *Press Enter.* If you answer *No*, then entities with elevation 0 will be changed.
[A]bsolute or [D]ifferential Change <A>: *A*
Elevation to change to: *125*
By using the Absolute option all entities selected are changed to the elevation 125.
Select Entities for elevation change.
Select objects: *C*
First corner: *(pick point)*
Other corner: *(pick point)*
Select objects: *[Enter]*
If SurvCADD points are selected the command warns:
This command DOES NOT change the elevations in the Coordinate file!
Use Coordinate File Utilities menu option F to update the file.

Pull-Down Menu Location: Edit, Change>
Prerequisite: Something to change
Keyboard Command: chgelev
File Name: \lsp\scadutil.arx

Change Attribute Style

Function

This command will globally change the textstyle of attributes on the drawing. This can be very useful if all the label styles (such as the point symbol attribute labels) on a drawing must be changed to accommodate a different plotting specification. The default STYLE used for the point symbol attributes is PTXT.

Existing Style: Select the style that is currently applied to the attributes you want to change. If you

are unsure of the existing text style, select the "Pick Attr" button, then pick an existing attribute on the screen. When the dialog returns, the textstyle applied to that attribute will be selected in the list.

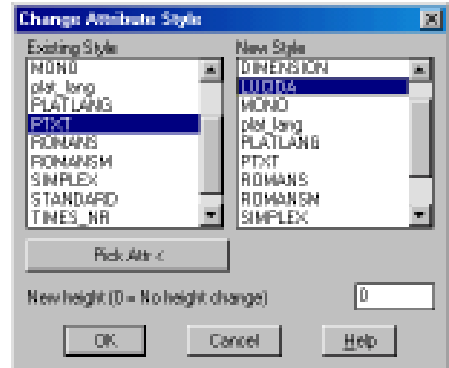**New Style:** Select the style that you want to apply to the attributes.

New Height: Enter a new text height for the attributes. An entry of zero (0) will not modify the existing height.

Pull-Down Menu Location: Edit, Change >

Prerequisite: You may want to use the *LIST* command to check the current Text size.

Keyboard Command: CHGATTR

File Name: \lsp\chgattr.lsp

Change Style

Function

This command will globally change the style and height of text on the drawing. This can be very useful if all the text sizes on a drawing must be changed to accommodate a different plotting scale.

Existing Style: Select the style that is currently applied to the text you want to change. If you are unsure of the existing text style, select the "Pick Text" button, then pick an existing text entity on the screen. When the dialog returns, the textstyle applied to that text entity will be selected in the list.

New Style: Select the style that you want to apply to the text.
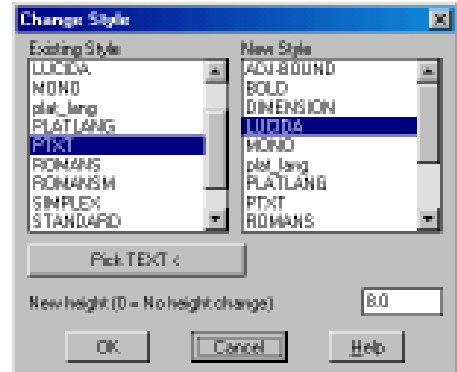
New Height: Enter a new text height. An entry of zero (0) will not modify the existing height.

Pull-Down Menu Location: Edit, Change >
Prerequisite: Text entities
Keyboard Command: CHGSTYL
File Name: \lsp\chgstyl.lsp

Change Block/Inserts Substitute

Function

This command is used to replace selected block(s) with a different block. The command optionally can change the size and rotation angle. This command will work with SurvCADD point symbol blocks or any AutoCAD block. For example, you may receive an AutoCAD drawing from another firm and want to replace certain inserts with inserts of your own specification. In the dialog shown, we are going to replace the block named NASTAR with a block named COHNORTH which will be inserted at a 50 scale and zero rotation.

Existing Block: Select the block name to be replaced. If the block name is unknown, choose the Select from Screen button, then select the block from the current drawing.

Replace With: Select the block that will replace the existing block. You may choose from the list of defined blocks, select an existing block fron the current drawing, choose a point symbol from the standard SurvCADD point library, or select an AutoCAD drawing file.

Retain Size and Rotation: When checked, the new block will retain the size and rotation values from the old block.

New Size: Available if Retain Size and Rotation is not checked. Enter the size for the new block.

New Rotation Angle: Available if Retain Size and Rotation is not checked. Enter the rotation angle for the new block.
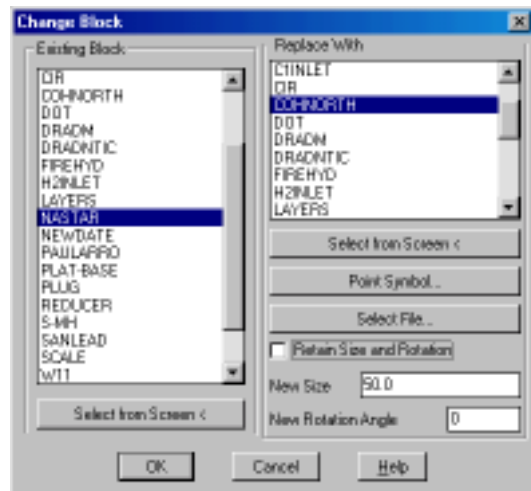
Pull-Down Menu Location: Edit, Change >
Keyboard Command: chgblk
Prerequisite: None
File Name: \lsp\chgblk.lsp

Change Block/Inserts Resize

Function

This command resizes blocks inserts while maintaining their insertion position. When prompted to select objects, choose the inserts to resize. Note that this routine does not rescale attributes that may be associated to the selected inserts.

Prompts

      Scaling Multiplier <0.5>: *Enter the size scale factor*
      Select symbols and blocks to scale.
      Select objects: *select entities*

Pull-Down Menu Location: Edit, Change >

Prerequisite: block/inserts in drawing

Keyboard Command: sizeblk

File Name: \lsp\sizeblk.lsp

Rotate by Bearing

Function

      This command allows you to rotate the selected entities from the drawing. The rotation angle is defined by the difference between a reference line and an entered bearing or azimuth. The reference line is defined by two points that can be picked on the screen or entered by point number.

Prompts

      Select entities to rotate.
      Select objects: *select the entities*
      Base pivot point ?
      Pick point or point number: *2* The program then reads the coordinate value for pt#2 from the current CRD file.
      Reference Bearing point ?
      Pick point or point number: *pick a point*
      Reference Bearing N 44d31'1" E The program then displays the reference bearing defined by the two points selected.
      Azimuth/<Bearing (Qdd.mmss)>: *245.3030* Enter an A to input an Azimuth or enter the bearing.
      The above response is a bearing of South 45 degrees, 30 minutes, and 30 seconds East.
      The program then rotates the database to the new bearing.
      If SurvCADD Points are selected the program warns:
      This command DOES NOT change the coordinates in the CooRDinate file!
      Use CooRDinate File Utilities menu, Update CRD from Drawing.
      This warning applies if the points entities are not linked to the CRD file. This link option is set in the Configure SurvCADD command.

Pull-Down Menu Location: Edit, Rotate>

Prerequisite: None

Keyboard Command: brot

File Name: \lsp\scrot.lsp

Text Enlarge/Reduce

Function

This command will scale text entities up or down in size. The routine prompts for a scale multiplier and a selection set of text objects. If you want to enlarge the text enter a value greater than one. If you want to reduce text enter a decimal fraction such as .5. This would reduce the text size by 50%. This command is very useful if you have set up your drawing for one plotting scale and decide to change to a new plotting scale. The Change Text Size command can alternatively be used to set the text size to a specific value.

Pull-Down Menu Location: Edit, Text >
Prerequisite: Text entities to be changed.
Keyboard Command: txtenl
File Name: \lsp\surv1.lsp

Rotate Text

Function

This command sets the rotation of the selected text to the current twist screen, an entered azimuth, or to align with a line or polyline. The text keeps the same insertion point and justification. The *Twist Screen* option sets the text rotation to align horizontal with the current twist screen. With the *Azimuth* option you can enter the angle or pick two points to define the text rotation. The *Entity Segment* aligns the text with a selected line or polyline segment. The *Follow Polyline* option aligns the text with the closest polyline segment.

Prompts

Rotate by (<Twist Screen>/Azimuth/Entity segment/Follow polyline)? *Press Enter to use Twist Screen*
Select Text to rotate.
Select objects: *select the text*

Pull-Down Menu Location: Edit, Text >
Keyboard Command: twisttxt
Prerequisite: Text
File Name: \lsp\twisttxt.lsp

Change Text Font

Function

> This command can change multiple text entities to a user specified style. The routine prompts for a selection set of TEXT and/or MTEXT objects. The next prompt asks you for a textstyle name such as MONO or ROMANS or press enter to use the current textstyle. If you enter a style name that does not exist, it will be created for you using the font with the same name.

Pull-Down Menu Location: Edit, Text>
Prerequisite: Text entities to be changed.
Keyboard Command: chgtxtstyle
File Name: \lsp\chtxtst.lsp

Change Text Size

Function

> This command will change the size of the selected text objects to the user specified size. The Text Enlarge/Reduce command also changes text size. The difference is that this routine sets the text to an absolute size whereas Text Enlarge/Reduce scales or relatively changes the text size.

Pull-Down Menu Location: Edit, Text>
Prerequisite: Text entities to be changed.
Keyboard Command: chgtxtsize
File Name: \lsp\surv1.lsp

Change Text Width

Function

> This command changes the width of the selected text entities. The insertion point of each text entity is maintained as the routine lengthens or shortens the text.

Prompts

> **Select the text to change.**
> **Select Objects:** *Select text entities*
> **Enter new width factor <1.0>:** *Enter new width factor*

Pull-Down Menu Location: Edit, Text>
Prerequisite: Text entities to be changed.
Keyboard Command: chgtxtwidth
File Name: \lsp\surv1.lsp

Change Text Oblique Angle

Function

This command allows you to change the text oblique angle on existing text in the drawing. The oblique angle for a specific text style is defined during the creation of the style. The default value for the oblique angle for text styles is 0 until defined to another value by the user. When changing the oblique angle, a minus (-) sign in front of the angle indicates a backward slant and a positive value results in a forward slant. Remember that the reference base point for the oblique change is always 0 degree. This means that if an existing text string has an oblique angle of 20, changing the oblique angle to 25, will not add 25 degrees to the existing 20 degree oblique resulting in a text oblique angle of 45 degrees but rather a 25 degree oblique will be established by referencing 0 oblique as the base and then slanting the text to 25 degrees. This works the same for slanting text backward as well as forward. Below is an example showing original text created with the default oblique angle of zero, then changed to a backward and forward slant of 15 degrees.

Prompts

Select the text to change.
Select Objects: *Select text to change oblique angle on*. Note: One or more text strings can be selected. When all desired text has been selected, press the enter key.
Enter new oblique angle: *Enter the desired oblique angle and press enter.*

Pull-Down Menu Location: Edit, Text>
Prerequisite: Text entities to be changed.
Keyboard Command: chgtxtoblique
File Name: \lsp\surv1.lsp

Oblique 0

Oblique −15

Oblique 15

Flip Text

Function

This command will change the alignment of text entities by 180 degrees.

Pull-Down Menu Location: Edit, Text>
Prerequisite: Text entities to be changed.
Keyboard Command: fliptext
File Name: \lsp\surv1.lsp

Split Text into Two Lines

Function

This tool allows you to break a single line of TEXT into two seperate lines. First select the text string you would like to break. This dialog then appears.

Initially the slider is all the way to the right. Begin dragging it toward the left until it reaches the point where the split is a the desired position. Then choose OK to complete the break operation.

Pull-Down Menu Location: Edit, Text>
Prerequisite: Text entity to break
Keyboard Command: txtbrk

Text Explode To Polylines

Function

This command converts the selected text into polylines. This function is generally used when preparing a plan view file for Dozer 2000 before using the *Write Polyline File* command.

Prompts

Select text to be EXPLODED.
Select objects: *select the text*
1 text object(s) have been exploded to lines.
The line objects have been placed on layer 0.
Reading the selection set ...
Joining ...
Converting ...

Pull-Down Menu Location: Edit, Text>
Keyboard Command: textexp
Prerequisite: Text
File Name: \lsp\textexp.lsp & \lsp\poly3d.arx

Replace Text

Function

This command will replace one text string with another. For example, if the text LEGEL is on a drawing

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you could use this command to replace it with LEGAL. In AutoCAD 2000 and later, the command *Find and Replace Text* includes more options including replacing partial strings and searching attributes and MTEXT.

Pull-Down Menu Location: Edit, Text>
Prerequisite: Text entities to be changed.
Keyboard Command: CHGTEXT
File Name: \lsp\chgtext.lsp

Entities to Polylines

Function

This command converts selected lines, arcs, circles, 3DFaces and solids into individual polylines. Use *Join Nearest* to convert adjoining lines and arcs into continuous polylines.

Pull-Down Menu Location: Edit, Polyline Utilities>
Keyboard Command: topline
Prerequisite: lines, arcs or other entities to convert
File Name: \lsp\poly3d.arx

Reverse Polyline

Function

This command reverses the order of the line and/or arc segments of a *POLYLINE*. This can be useful in conjunction with the commands *Station Polyline*, *MXS by Polyline*, *Profile from Surface Model* or *CL File from Polyline* since the polyline must be plotted in the direction of increasing stations. If it is more convenient to draft a polyline in one direction do so and then use the *Reverse Polyline* command to change it's order. Temporary arrows along the polyline are drawn to graphically show the new polyline direction.

Prompts

Select the Polyline to Reverse: *(pick point on polyline)*

Pull-Down Menu Location: Edit
Prerequisite: A polyline.
Keyboard Command: revpline
File Name: \lsp\revpline.lsp & \lsp\poly3d.arx

Reduce Polyline Vertices

Function

This command removes points from a polyline without significantly changing the polyline. The offset cutoff is the maximum amount that the polyline can move when removing a point. For example, in a polyline with three points in a straight line, the middle point can be removed without changing the polyline. This command is explained further in the DTM-Contour module.

Prompts

Enter the offset cutoff <0.1>: .5
Select polylines to reduce.
Select objects: *pick polylines*
Tested PolyLines> 1
Total number of vertices: 10
Number of vertices removed: 1

Pull-Down Menu Location: Edit, Polyline Utilities>
Prerequisite: A polyline.
Keyboard Command: reduce
File Name: \lsp\tri4.arx

Densify Polyline Vertices

Function

This command adds vertices to the selected polylines at the specified interval. These points are interpolated between existing points in the polyline. This command is the opposite of Reduce Polyline Vertices.

Original Polyline   After Densify Polyline Vertices
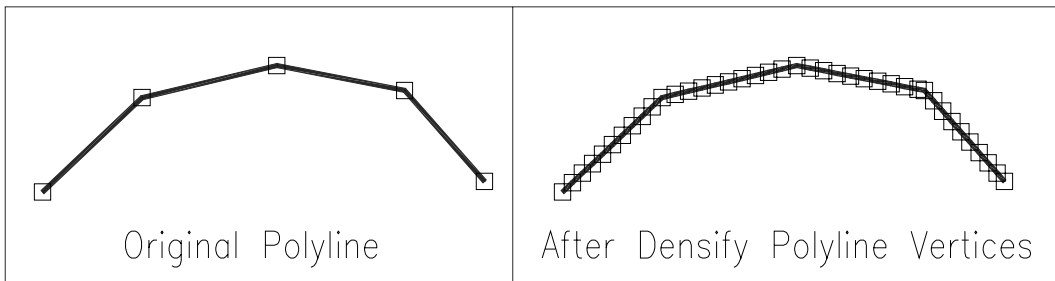
Prompts

> **Select polylines to densify.**
> **Select objects:** *select polylines*
> **Point interval <10.0>:** *Press Enter*
> **Testing Entity> 1**
> **Added 17 points to 1 polyline.**

Pull-Down Menu Location: Edit, Polyline Utilities>
Prerequisite: A polyline.
Keyboard Command: densepl
File Name: \lsp\poly3d.arx

Draw Polyline Blips

Function

This command will draw temporary markers, "blips", at each polyline vertex. This allows you to identify the actual location of each vertex. The Blips are temporary. Any change to the viewport (pan, zoom, regen) will make the blips disappear. In later versions of AutoCAD, you can also click on the polyline to activate the grips which will remain visible during and after viewport changes. See illustration under *Densify Polyline Vertices*.

Prompts

> **Select polylines to draw blips.**
> **Select objects:** *select polyline(s)*

Pull-Down Menu Location: Edit, Polyline Utilities>
Prerequisite: A polyline.
Keyboard Command: plblip
File Name: \lsp\poly3d.arx

Set Polyline Origin

Function

This command sets the starting vertex of a closed polyline. Simply pick the polyline and then pick near the point to set as the starting point.

Prompts

Select Polyline: *pick a polyline*
Pick Near New Origin Point: *pick a point on the polyline to be the starting point*
Processing ...
Select Polyline: *Press Enter*

Pull-Down Menu Location: Edit, Polyline Utilities>

Prerequisite: A closed polyline

Keyboard Command: plchgorg

File Name: \lsp\plchgorg.lsp

Add Intersection Points

Function

This command adds points into lines or polylines where there are intersections. This can be useful for other commands such as Auto-Annotate. For example in the drawing shown, Add Intersection Points adds point to the boundary polyline where the lot lines intersect. Then Auto Annotate for the boundary polyline will label the boundary distance along each lot. This routine does not add intersection points on arcs.

Prompts

Select lines and polylines to check.
Select objects: *pick lines or polylines*
Reading the selection set ...
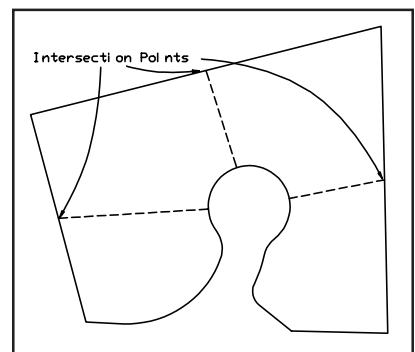**Adding intersection points ...**
Added 3 intersection points.

Pull-Down Menu Location: Edit, Polyline Utilities>

Prerequisite: Polylines or lines

Keyboard Command: addint

File Name: poly3d.arx

Add Polyline Vertex

Function

This command adds points into a polyline. First you select the polyline to modify. The existing polyline vertices are marked and then you can pick or enter the coordinates for the new point(s). A new point is inserted into the polyline at the nearest polyline segment. On a 3D polyline, the elevation of the new vertex will be calculated for you. You can continue to pick points to add, press Enter when you are done.

Prompts

Select polyline to add to: *pick a polyline*
Pick or enter point to add: *pick a point*
Select polyline to add to: *Press Enter to end*

Pull-Down Menu Location: Edit, Polyline Utilities>
Prerequisite: A polyline.
Keyboard Command: addpl
File Name: poly3d.arx

Edit Polyline Vertex

Function

This tool allows you to make changes in the coordinates of vertices on all polyline types. Upon execution you will be asked to select a polyline to edit. Upon selection a temporary marker will be placed at all of the vertices of the polyline, making them easy to distinguish. Then pick near the vertex you wish to edit, and the following dialog appears.

At the top of the dialog it identifies the type of polyline, being 2D or 3D. In the case of 2D polylines it allows you convert the polyine. You have the ability to type in new northing, easting or elevation values. You can also determine the 3D coordinate position by using distances and slope to/from adjacent points. As you change the values in the dialog, new values for derivatives are being calculated. For example if you change the horizontal distances, the coordinates will change.

Prompts

  Select polyline vertex to edit: *pick a polyline at the point to be modified*
  Pick or enter position <5264.23,5048.21>: *pick a point*
  Enter elevation <0.00>: *Press Enter*
  Select polyline vertex to edit: *Press Enter to end*

Pull-Down Menu Location: Edit, Polyline Utilities>
Prerequisite: A polyline.
Keyboard Command: editpl
File Name: \lsp\poly3d.arx

Remove Polyline Arcs

Function

  This command replaces arc segments in polylines with chords. Removing arcs is a prerequisite to some SurvCADD commands that don't handle arcs such as Break by Closed Polyline and Make 3D Grid file. This process can add many vertices to the polyline. The Offset Cutoff is the maximum any point on the arc will be allowed to shift.

Prompts

  Select polylines to remove arcs from.
  Select objects: *pick polylines*
  Offset cutoff <0.5>: *Press Enter.*

Pull-Down Menu Location: Edit, Polyline Utilities>
Prerequisite: polyline with arcs
Keyboard Command: rmarc
File Name: \lsp\poly3d.arx

Remove Polyline Segment

Function

  This command removes the user specified segment from a polyline. A polyline segment is the section between two vertices of the polyline. There are two options for removing the segment. Either the two vertices of the removed segments are averaged together to keep polyline continuous, or the segment is left missing in the polyline which creates two separate polylines. The keywords Continuous and Break respectively identify these two options.

Prompts

  Break polyline at removal or keep continuous (Break/<Continuous>)? *Press Enter*

> **Select polyline segment to remove:** *(pick point on polyline)*
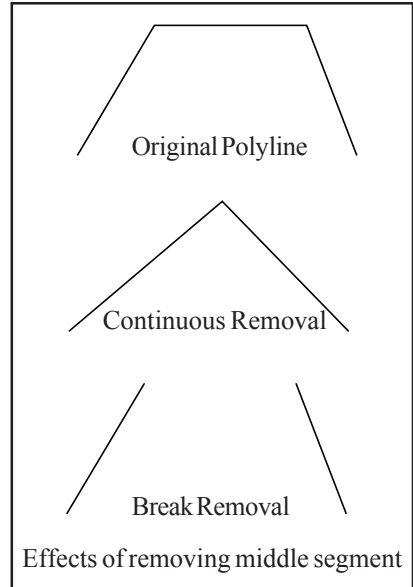> **Select polyline segment to remove:** *Press Enter to end*

Pull-Down Menu Location: Edit
Prerequisite: A polyline.
Keyboard Command: removepl
File Name: \lsp\removepl.lsp & \lsp\poly3d.arx

Original Polyline

Continuous Removal

Break Removal

Effects of removing middle segment

Remove Polyline Vertex

Function

This command removes vertices from a polyline. First you select the polyline to modify. The existing polyline vertices are marked and then you pick near the vertex you wish to delete. You can continue to pick vertices to delete, press Enter when you are done.

Prompts

> **Select polyline vertex to remove:** *(pick point on polyline)*
> **Select polyline vertex to remove:** *Press Enter to end*

Pull-Down Menu Location: Edit, Polyline Utilities>
Prerequisite: A polyline.
Keyboard Command: rmvertex
File Name: \lsp\poly3d.arx

Smooth Polyline

Function

This command smooths the selected polylines using a modified bezier method that makes the smooth polyline pass through all the original points and only smooths between the original points. The looping factor controls smoothing amount. A higher factor gives more looping. This command is explained further in the DTM-Contour module.

Prompts

Enter the looping factor (1-10) <5>: *7*
Enter the offset cutoff <0.05>: *Press Enter*. This is the same reducing filter described above.
Select polylines to smooth.
Select objects: *pick polylines*
Smoothed 1 PolyLines
Total original vertices: 9 Total final vertices: 50

Pull-Down Menu Location: Edit, Polyline Utilities>
Prerequisite: A polyline.
Keyboard Command: smoothpl
File Name: \lsp\tri4.arx

Change Polyline Width

Function

This command sets the width of the selected polylines. In later versions of AutoCAD, the command *PEDIT* can also modify the width of multiple polylines.

Prompts

New width <1.0>: *2*
Select Contours/Plines to change width of:
Select objects: *pick polylines*

Pull-Down Menu Location: Edit, Polyline Utilities>
Prerequisite: A polyline.
Keyboard Command: cwidth
File Name: \lsp\surv1.lsp

Highlight Open Polylines

Function

This tool will evaluate polylines you select and highlight those that are open. It also provides options to close all or selected polylines from those found.

First select all polylines to evaluate. The tool will then display those that are open in a highlighted appearance. You will be offered an option to close all or selected polylines. If you wish to close all the open polylines, choose the All option. If you choose the Selected option you will be prompted to pick which polylines you want to close. As you pick each polyline it will be closed.

Prompts

Select the polylines to check.

Select objects: *Specify opposite corner: 2 found*

Select objects: *Specify opposite corner: 3 found, 4 total*

1 was filtered out.

Select objects: *Press Enter*

Open polylines are highlighted.

Close all or selected polylines [All/<Selected>]? *S*

Pick polyline to close: *Press Enter to End*

Pull-Down Menu Location: Edit, Polyline Utilities>
Prerequisite: A polyline.
Keyboard Command: cwidth
File Name: \lsp\surv1.lsp

Close/Open Polylines

Function

These commands allow you close or open multiple polylines respectively. In AutoCAD 2000+, you can also use the PEDIT command.

Pull-Down Menu Location: Edit, Polyline Utilities>
Prerequisite: A polyline.
**Keyboard Command:** closepl, openpl

Offset 3D Polyline

Function

This command allows you to offset a 3D polyline entity in both the horizontal and vertical directions. There are three offset methods. The Interval method applies one horizontal and one vertical offset to all the vertices of the polyline. The Constant method has a horizontal offset and sets the elevation of the polyline to one constant elevation. The Variable method allows you to specify each horizontal and vertical offset individually either by polyline segment or for each point. The vertical offset can be specified by actual vertical distance, percent slope or slope ratio.
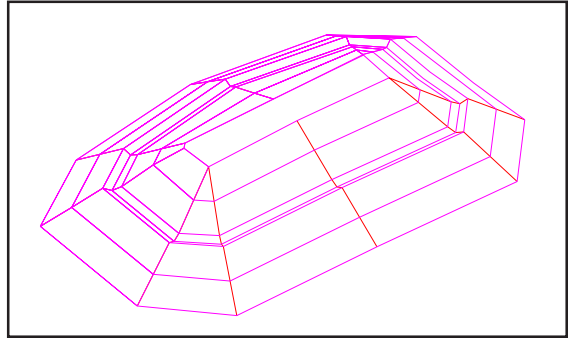
Prompts

Enter the offset method (<Interval>,Constant,Variable): *[Enter]*
Enter the horizontal offset amount: *15*
Percent/Ratio/Vertical offset amount <0>: *10*
Select a polyline to offset (Enter for none): *(select 3D POLY)*
Select side to offset: *(pick point)*
Select a point on the graphics screen that is in the direction of the side of line to offset.
Select a polyline to offset (Enter for none): *[Enter]*

Pull-Down Menu Location: Edit and DTM, 3D Polyline Utilities >

Prerequisite: Plot the *3DPoly* lines to use for selection.

Keyboard Command: offset3d

File Name: \lsp\poly3d.arx

Fillet 3D Polyline

Function

This command fillets two segments of a 3D polyline with the given radius. AutoCAD's *FILLET* command does not support 3D Polyline entities. Since 3D polylines cannot have arcs, this command draws the fillet arc as a series of short chords. The elevations along the curve are interpolated from the 3D polyline.

Prompts

Enter fillet radius <10.00>: *Press Enter*
Select first polyline segment: *pick a segment of a polyline*
Select second polyline segment: *pick an adjoining segment of the same polyline*
Select first polyline segment (Enter to End): *Press Enter*

Pull-Down Menu Location: Edit and DTM, 3D Polyline Utilities >
Prerequisite: 3D polyline
Keyboard Command: fillet3d
File Name: \lsp\poly3d.arx

Trim 3D Polyline

Function

This command allows you to trim 3D Polylines using another polyline as the cutting edge. The AutoCAD *TRIM* command now supports 3D Polylines and other types of entities can be used as the cutting edge.

Prompts

Select trim edge polylines.
Select objects: *(select polyline)* **1 found**
Select objects: *[Enter]*
Pressing [Enter] end the object selection prompt.
Select 3-D polyline to trim: *(select 3DPOLY)*
Select 3-D polyline to trim: *(select 3DPOLY)*
Select 3-D polyline to trim: *[Enter]*
Pressing [Enter] ends the command.

Pull-Down Menu Location: Edit and DTM, 3D Polyline Utilities >
Prerequisite: Plot 2D polyline to use as trim perimeter and the *3DPoly* lines to trim.
Keyboard Command: trim3d
File Name: \lsp\poly3d.arx

Extend 3D Polyline

Function

      This command extends 3D polylines to a boundary edge which is defined by another polyline. *Extend By Distance* routine which can be used to extend a 3D polyline incrementally. The AutoCAD *EXTEND* command now supports 3D Polylines and other types of entities can be used as the boundary edge.

Prompts

      Select boundary edge: pick a line or polyline
      Select polyline or line to extend: *pick a 3D polyline*
      Select polyline or line to extend: *Press Enter*

Pull-Down Menu Location: Edit and DTM, 3D Polyline Utilities >
Prerequisite: 3D polyline to extend and polylines to use as boundary edges.
Keyboard Command: extend3d
File Name: \lsp\poly3d.arx

Join 3D Polyline

Function

      This command joins *3DPOLY* entities into a single *3DPOLY* entity.

Prompts

      Select the 3D polyline to join: *pick a 3D polyline*
      Select the other 3D polyline to join: *pick a 3D polyline that has a common endpoint with the first*
      3 segments added to the polyline.

Pull-Down Menu Location: Edit and DTM, 3D Polyline Utilities >
Prerequisite: Plot the *3DPoly* lines to use for selection.
Keyboard Command: join3d
File Name: \lsp\join3d.lsp & \lsp\poly3d.arx

Break 3D Polyline

Function

This command can be used to break a 3D Polyline. The AutoCAD *BREAK* command now supports 3D Polylines and can be used also.

Prompts

Select a polyline to break: *pick a 3D polyline at the point to be broken*
Select second break point (or F for First): *pick a the other point on the 3D polyline*
Select a polyline to break: *[Enter]*

Pull-Down Menu Location: Edit and DTM, 3D Polyline Utilities >
Prerequisite: Plot the 3D Polylines to use for selection.
Keyboard Command: break3d
File Name: \lsp\break3d.lsp & \lsp\poly3d.arx

Join Nearest

Function

This command joins lines, arcs and/or polylines together. While AutoCAD's *PEDIT-Join* command requires the endpoints to match, Join Nearest will join entities whose endpoints do not meet.

Max Separation to Join: Entities whose endpoints are spaced apart greater than this value will not be joined. You may use the pick button to specify this value by picking two points on the screen.

Connection Method: Determines how to connect the endpoints. See illustration.

• **Average Endpoints Together:** New vertex will be located at midpoint between two original endpoints

• **Directly Connect Endpoints:** Original endpoints are connected with new segment.

• **Fillet with Radius Zero:** Same as AutoCAD *FILLET* command using zero radius.

Convert lines into polylines: When checked, automatically converts lines and arcs into polylines. If not checked, lines and arcs are joined but remain separate entities.

Original Lines — Average Endpoints Together

Original Lines — Directly Connect Endpoints

Original Lines — Fillet With Zero Radius
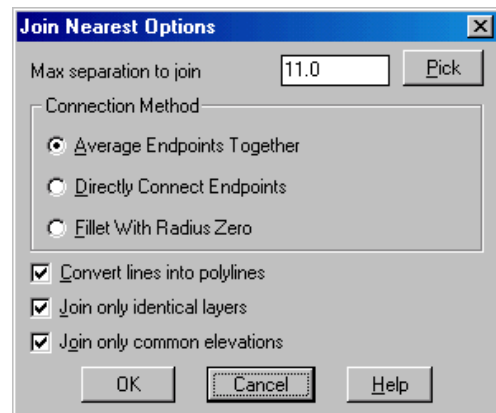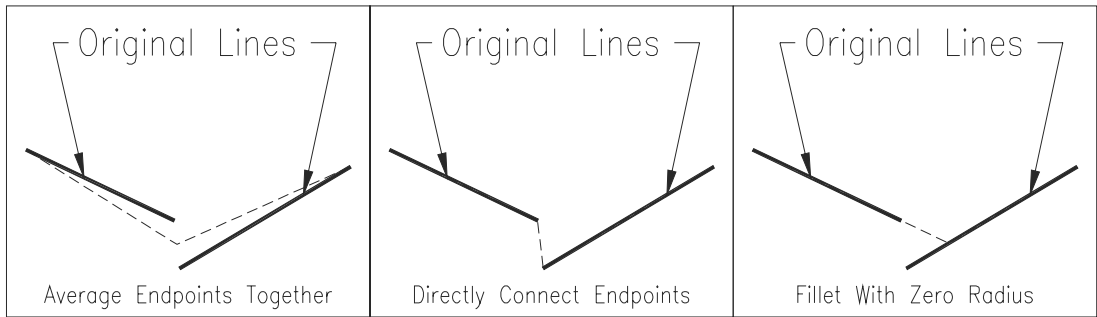
Join only identical layers: When checked, only entities on the same layer will be joined.

Join only common elevations: When checked, only endpoints located on the same elevation will be joined.

Pull-Down Menu Location: Edit
Prerequisite: Lines or polylines to be joined
Keyboard Command: nearjoin
File Name: \lsp\nearjoin.lsp & \lsp\poly3d.arx

Solid Fill Polyline

Function

This command fills the interior of closed polylines with 3D Faces to make the polyline areas appear solid. Closed polylines for exclusion areas can be used to exclude areas from the fill. Text can also be selected to exclude the text area from the fill. As an alternative, you can use the AutoCAD *HATCH* command, which creates an associative link between the hatch object and its boundary, interior boundary and any text that is excluded.

Prompts

Solid Fill Dialog Box
Use Layer/Color of Perimeter Polyline
This option uses the layer and color of the perimeter polyline for the solid fill faces instead of those in the dialog box.
Pick Interior Point to Make Perimeter
Instead of requiring a closed perimeter polyline, this option defines the perimeter by the boundary of the area around a picked point.
Make Block of Solid
The solid is created by adjoining 3D faces. This option groups the 3D faces into a block.
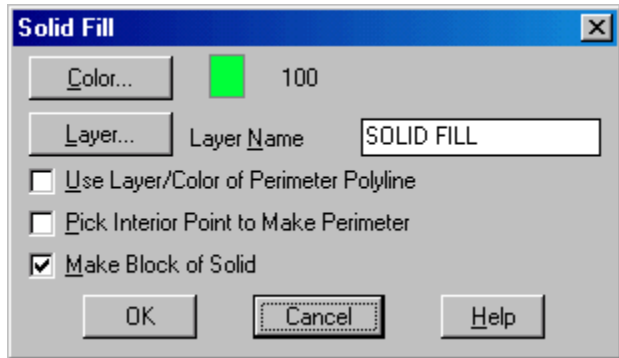
Select Inclusion perimeter polylines.
Select objects: *(pick closed polyline)*
Select Exclusion perimeter polylines.
Select objects: *Press Enter*
Select Text to exclude from fill.
Select objects: *Press Enter*

Pull-Down Menu Location: Edit
Prerequisite: A closed polyline.
Keyboard Command: solidfill
File Name: \lsp\makegrid.arx

Solid Fill

Color...   [green]   100

Layer...   Layer Name   SOLID FILL

☐ Use Layer/Color of Perimeter Polyline

☐ Pick Interior Point to Make Perimeter

☑ Make Block of Solid

OK   Cancel   Help

3D Entity to 2D

Function

This command changes a 3D Arc, Line or Polyline to a 2D Line or Polyline, i.e. a line with the elevations of the endpoints at the same Z coordinate. When the program detects a 3D polyline with all vertices with the same elevation, there is an option to convert to a 2D polyline with this elevation. Otherwise the entered *New Elevation* is used.

Prompts

New Elevation <0.00>: *[Enter]*
Select Lines, Arcs or Polylines for elevation change.
Select objects: *C*
First corner: *(pick point)*
Other corner: *(pick point)* **1 found**
Select objects: *[Enter]*
3DPOLY to 2DPOLYLINE
Number of entities changed> 1

Pull-Down Menu Location: Edit
Prerequisite: None
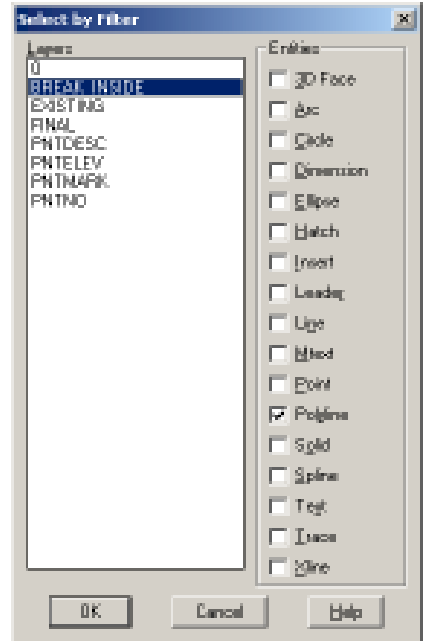**Keyboard Command:** 3dto2d
File Name: \lsp\3dto2d.lsp

Select by Filter

Function

This tool can be used to build a selection set of objects inside a drawing based on layer and entity type. When the tool is executed it displays the following dialog.

Select the layer(s) on the left you wish to select, then turn on the toggle(s) for the entity types to consider. The tool then builds a selection set of those objects that resides on those layers.

When you execute your command following this selection building process, when you are prompted to select objects simply enter "P" for previous.

Pull-Down Menu Location: Edit
Prerequisite: none
Keyboard Command: fsel
File Name: \lsp\fsel.fas

Select by Area

Function

This command builds a selection set using inclusion and/or exclusion closed polylines. Entities within the inclusion polylines are selected and entities within the exclusion polylines are not selected. With the Window selection method, the entity must be entirely inside the inclusion area and entirely outside the exclusion area to be included in the selection set. With the Crossing selection method, an entity is added to the selection set if any part of the entity is inside the inclusion area.

Prompts

Select the Inclusion perimeter polylines (Enter for None).
Select objects: *pick the closed polyline*
Select objects: *Press Enter*
Select the Exclusion perimeter polylines (Enter for None).
Select objects: *Press Enter*
Type of selection (Window/<Crossing>)? *Press Enter* for crossing
Select objects to build selection set.

Select objects: *All* These selected objects are checked with the inclusion/exclusion polylines.
Select objects: *Press Enter*
Built selection set with 43 objects.

Command: *Erase*
Select objects: *P* To use previous selection set created by Select by Area
43 found
Select objects: *Press Enter*

Pull-Down Menu Location: Edit
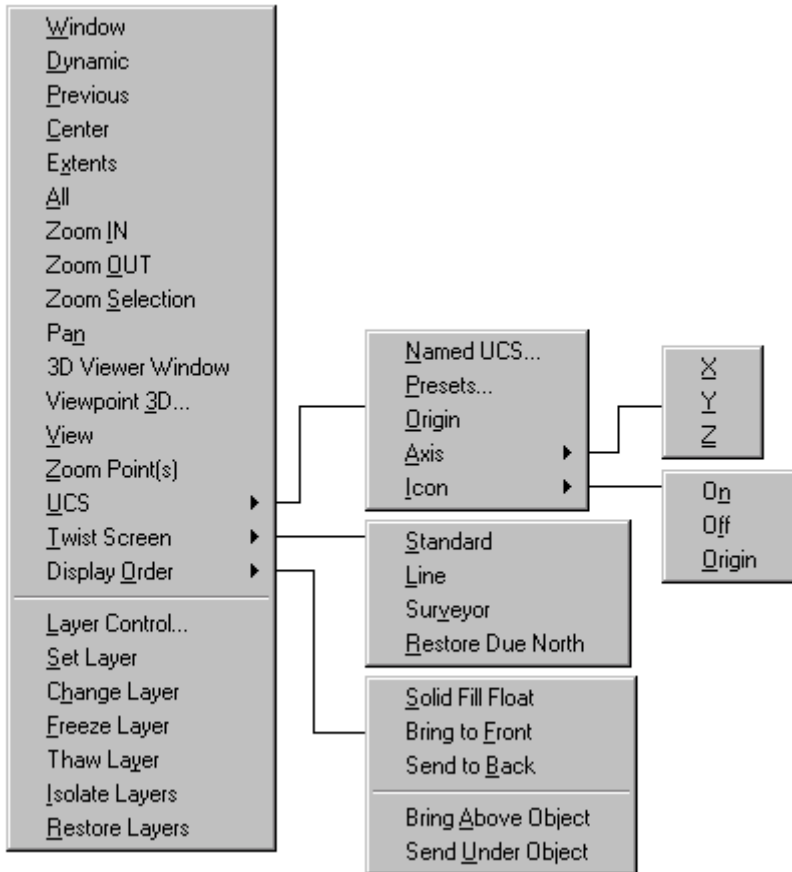**Prerequisite:** closed perimeter polylines
Keyboard Command: ssgetarea
File Name: \lsp\volcalc.arx

View Menu Commands

In addition to AutoCAD's powerful display and view commands, the SurvCADD View menu has some additional commands. The commands in the top section effect the screen display size and location, and the bottom section commands change layers.

```
Window
Dynamic
Previous
Center
Extents
All
Zoom IN
Zoom OUT
Zoom Selection
Pan
3D Viewer Window
Viewpoint 3D...
View
Zoom Point(s)
UCS                    ▶     Named UCS...            X
Twist Screen           ▶     Presets...              Y
Display Order          ▶     Origin                  Z
                             Axis              ▶
Layer Control...             Icon              ▶     On
Set Layer                                            Off
Change Layer                 Standard                Origin
Freeze Layer                 Line
Thaw Layer                   Surveyor
Isolate Layers               Restore Due North
Restore Layers
                             Solid Fill Float
                             Bring to Front
                             Send to Back

                             Bring Above Object
                             Send Under Object
```

Zoom Selection

Function

This command zooms the display to fit the selected entities. For example, if you run *Viewpoint 3D* and your viewport only shows two small dots of entities that are far apart, then you can use *Zoom Selection* to select the entities of one of these dots and quickly zoom the display to these entities.

Prompts

Select objects to zoom onto:
Select objects: *select entities*

Pull-Down Menu Location: Display
Keyboard Command: zoom_on
Prerequisite: Entities
File Name: \lsp\mineutil.arx

3D Viewer Window

Function

This command views in 3D, the selected 3D faces, polylines, lines and points. This routine uses the OpenGL graphics library for rendering, which gives it superior performance. Some of it's features include the ability to zoom in and out, pan, rotate around X,Y,Z axis and shade in user-positioned lighting.

Ignore Zero Elevations: When checked, the 3D viewer ignore entities at zero elevation.

Vert. Scale: Sets the vertical scale factor for the 3D viewer. Flat surfaces can be exaggerated by incresing the vertical scale.

This control represents position of the sun in the sky if looked from above.

Therefore the position of the sun in the center means sun in a zenith and position near the edge of the circle means the sun near horizon. To move sun simply drag it to new location or click on the new location.

Switch to Dynamic Zoom mode

Zooms IN

|	
	Zooms OUT
	Switch to Pan mode. Click and drag to pan.
	Toggles shading on and off
	Export to BMP format. Displays the Export Image Selections dialog.
	Switch to Rotation mode
	Resets the 3D view to plan
	Sets the AutoCAD view to match the view shown in the 3D viewer window.
	Exit the 3D viewer window.

Use X,Y,Z scrollbars near the bottom to rotate the view. The range of these scrollbars is -180 to +180 degrees with middle being 0 which is the default position when the viewer starts.

Pull-Down Menu Location: Display
Prerequisite: Entities to display
Keyboard Command: cube
File Name: \lsp\cube.arx
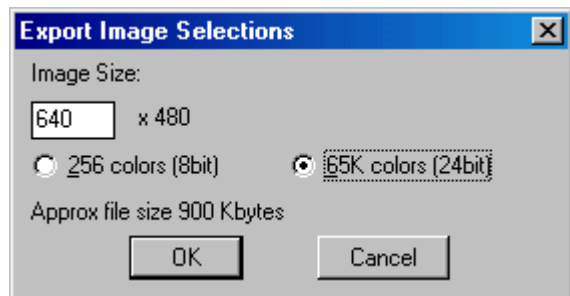
The Export Image Selections dialog allows you to control inage export format.
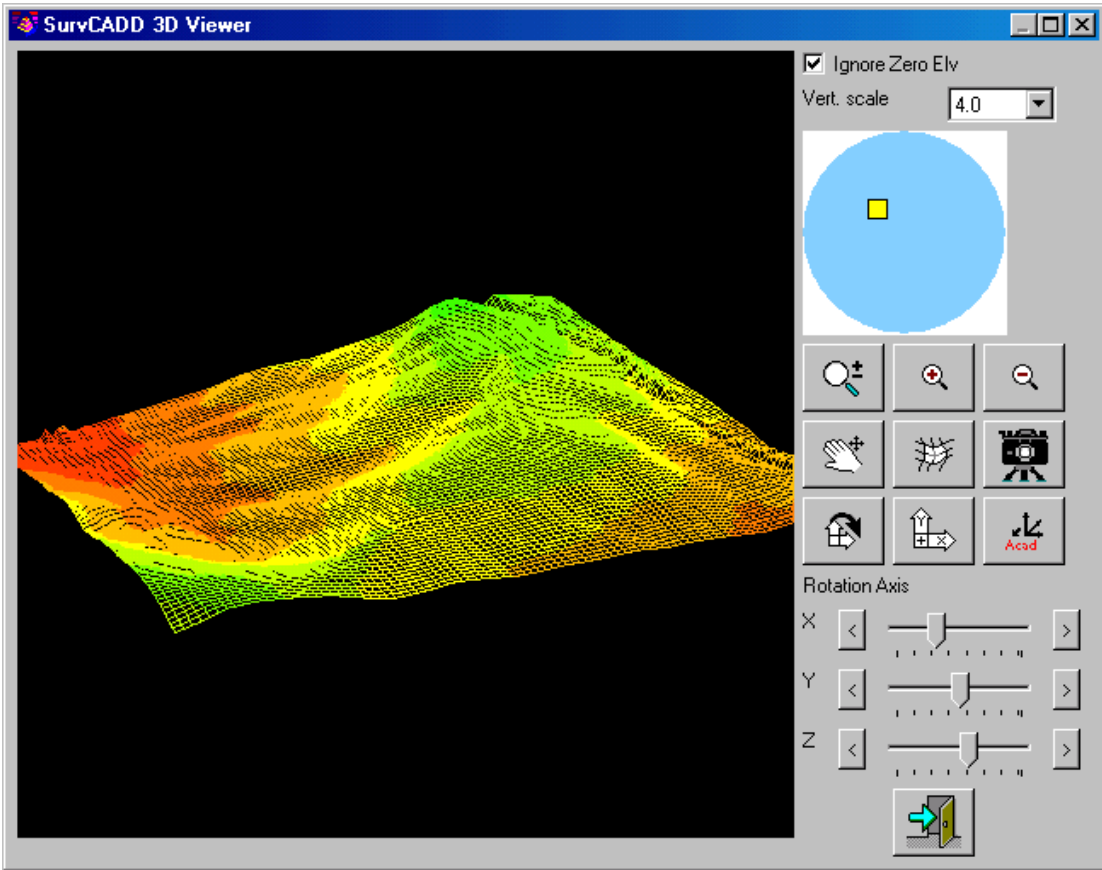
The SurvCADD 3D Viewer window

Zoom Point(s)

Function

This command centers the screen to a user-specified point. The point can be specified by either the point number or description. The command searches the current coordinate (.CRD) file. Besides centering the screen, the magnification can also be changed. The default value is the current magnification. To zoom in, enter a smaller value and to zoom out, enter a greater value.

Prompts

Find by point number or description [<Number>/Desc]? *N*
Choose N for Number
Point number or range of point numbers to find <1>: 2079
We want to find point number 2079
Magnification or Height <179.50>: *Press Enter*
Accept the default zoom magnification

Pull-Down Menu Location: Display
Prerequisite: A .CRD file.
Keyboard Command: zoompnt
File Name: \lsp\fpoint.lsp & \lsp\crdutil.arx

Twist Screen Standard

Function

This command will twist the screen orientation to where something other than the north direction is toward the top of the screen/drawing. It does not do a coordinate rotation, the drawing coordinates remain unchanged. Use commands on the *Points* menu such as *Rotate Points* and *Translate Points* if you want to do a coordinate rotation or translation.

This routine prompts for the twist angle then adjusts the screen and cross-hairs to that angle. This is a modification of AutoCAD's *DVIEW* command. The twist angle is always measured counter-clockwise with 0 degrees being to the east/right.

Pull-Down Menu Location: View
Prerequisite: None
Keyboard Command: twist1
File Name: \lsp\surv1.lsp

Twist Screen Line

Function

This is a variation of the previous command that allows you to select a line in your drawing that you want to be aligned parallel to the east-west direction of the graphics screen.

Think of the line you select as a pointer or arrow that will point in the east direction of the screen after you select it. Select the line closest to the end point which you want to be the horizontal or east direction of the screen.
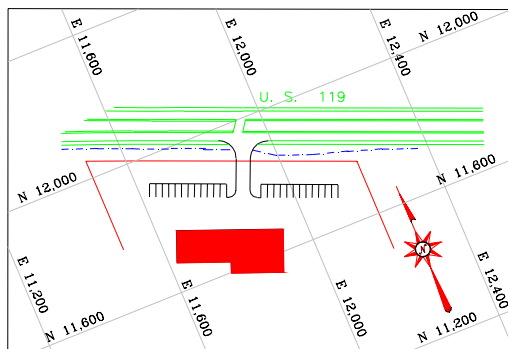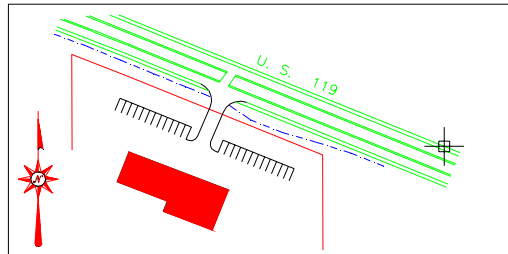
Prompts

Pick a line to make horizontal: *(select line)*

Pull-Down Menu Location: View
Prerequisite: None
Keyboard Command: twist2
File Name: \lsp\scadutil.arx

Twist Screen Surveyor

Function

This is another variation of twisting the screen that allows you to input an angle/azimuth that you want to be aligned parallel to the east-west direction of the graphics screen.

Prompts

Angle to set to horizontal: *0*
This would align due north with respect to real world coordinates to the east or horizontal direction of the graphics screen.

Pull-Down Menu Location: View
Keyboard Command: twist3
Prerequisite: None
File Name: \lsp\scadutil.arx

Restore Due North

Function

      This command twists the screen to make due north vertical.

Pull-Down Menu Location: View
Keyboard Command: twist3
Prerequisite: None
File Name: \lsp\surv1.arx

Solid Fill Float

Function

      This command reorders the drawing entities so that the selected entities will appear on top of other entities. Use this command to float geometry on top of raster images, hatches, solids, etc. *Solid Fill Float* differs from the AutoCAD command *Draworder* in that Solid Fill Float actually reorders the selected entities in the drawing database so that they remain on top in future drawing sessions.

Prompts

      WARNING: Floating Changes Object Handles!

      Select entities to process. *Select entities to be on top*

      Select objects: *Specify opposite corner: 1 found*

      Select objects: *Press Enter*

      Checking Selection Set ... Done.

Pull-Down Menu Location: View
Keyboard Command: sff
Prerequisite: None

Set Layer

Function

      Allows the user to change the current layer to a different layer by picking an entity on that layer.

Pull-Down Menu Location: View
Prerequisite: None
Keyboard Command: lset
File Name: \lsp\picklayr.lsp

Change Layer

Function

This command allows you to change the layer of a group of entities by selecting the group of entities. The layer name to assign can be either typed it or read from an existing entity by picking an entity that is on the layer that you want to change the group to.

Prompts

Select entities to be changed.
Select objects: *pick entities*
Enter new layer name or pick entity with layer (Enter/<Pick>)? *Press Enter*
Pick entity with layer to change to: *pick another entity* (assigns the selected entities to the layer of this entity)

or

Enter new layer name or pick entity with layer (Enter/<Pick>)? *E for Enter*
Enter new layer name: *FINAL* (assigns the selected entities to the FINAL layer)

Pull-Down Menu Location: View
Prerequisite: None
Keyboard Command: lchg
File Name: \lsp\chglayr.lsp

Freeze Layer

Function

This command will freeze layers by picking entities on that layer.

Pull-Down Menu Location: View
Prerequisite: None
Keyboard Command: LOFF
File Name: \lsp\loff.lsp

Thaw Layer

Function

This command thaws the layers frozen by the Freeze Layer command.

Pull-Down Menu Location: View
Prerequisite: None
Keyboard Command: LON
File Name: \lsp\lon.lsp
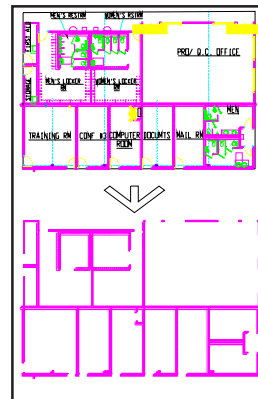
Isolate Layer

Function

This command freezes all the layers except the ones you select an entity on. The program prompts to see if you would like to retain the PNT layers which keeps the SurvCADD point layers from freezing. By default, these layers include PNT*, PNTMARK, PNTELEV, PNTDESC and .PNTELEV.

Pull-Down Menu Location: View
Prerequisite: None
Keyboard Command: isolate
File Name: \lsp\isolate.lsp

Isolate the wall layer by picking one wall line.

Restore Layer

Function

This command thaws the layers that were frozen by the *Isolate Layer* command.

Pull-Down Menu Location: View
Prerequisite: None
Keyboard Command: restore
File Name: \lsp\restore.lsp

Save Layer State

Function

This command stores to a file all the layers in the drawing and their current status of color, freeze/thaw, on/off, and linetype. The layer state file has a .LAY extension. This file can be recalled later with *Restore Layer State*. Later versions of AutoCAD include the ability to save and restore layer states, found in the layer dialog box.

Pull-Down Menu Location: View
Prerequisite: None
Keyboard Command: savelay
File Name: \lsp\savelay.lsp

Restore Layer State

Function

This command sets the drawing layers and their status from the layer information in a layer state file (.LAY file). This file is created by the *Save Layer State* command. If a layer from the layer state file does not exist in the drawing, the program will create the layer. The information in the file includes the layer color, freeze/thaw, on/off and linetype.

Pull-Down Menu Location: View
Prerequisite: Layer State File (.LAY file)
Keyboard Command: restlay
File Name: \lsp\restlay.lsp

Draw Menu Commands

Most of the Draw Menu commands are AutoCAD commands for creating entities in your drawing. The following commands SurvCADD commands are documented here
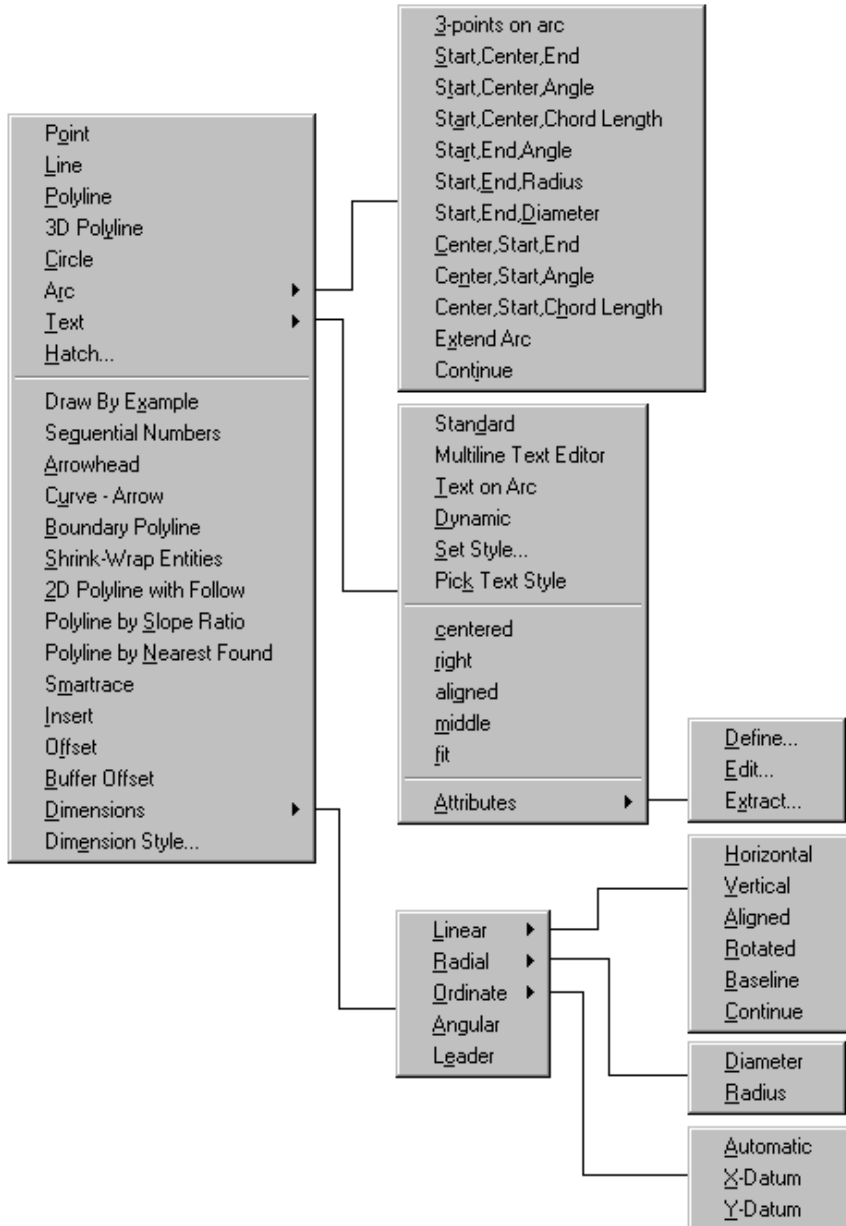
Extend Arc

Function
This command extends an ARC entity.

Prompts
Pick arc to extend: *Select an ARC entity*
Break Arc at Extension [Yes/<No>]? *N*
Answering *Yes* will create a new arc starting at the end of the existing arc.
Enter or pick the distance to extend: *5*
This extends the arc 5 units
Enter or pick the distance to extend ('U' to Undo): *Press Enter to end*

Pull-Down Menu Location: Draw, Arc>
Prerequisite: An arc
Keyboard Command: extarc
File Name: \lsp\scadutil.arx

Draw By Example

Function
This command prompts you to pick an entity and then starts the appropriate draw command to begin creating another one of the selected type of entity. The properties such as layer and color of the original entity are used for creating the new one. For example, if you pick a polyline, this command will start the *Pline* command. Likewise if you pick text, this command will begin the *Text* command using the layer and style of the selected text.

Prompts
Pick Object for Command: *pick an entity*
The remaining prompts depend on the type of the selected entity.

Pull-Down Menu Location: Draw
Prerequisite: Entities.
Keyboard Command: drawbyex
File Names: \lsp\drawbyex.lsp

Sequential Numbers

Function

This command that draws a text label optionally inside a circle, square, or other symbol. The size of the symbol adjusts to fit the label size. The options for this command are set in the dialog shown.

Text Size: Specify the text height. Defaults to size set in *Drawing Setup.*

Text: Specify the text label

Prefix: Specify an optional text prefix

Suffix: Specify an optional text suffix.

Auto Increment Labels: When checked, the value entered in the Text field will be incremented by the value in the Increment field.

Prompt for Alignment Every Time: When checked, you will be prompted for the alignment angle for each label, otherwise the alignment from the first label is automatically used for the other labels.

Increment: If Auto Increment Labels is checked, Text value is incremented by this value.

The label is drawn by combining the Prefix, Text and then Suffix into one text label. When placing multiple labels, the text portion of the label will increment by the value in the Increment field. For example, this command could be used to quickly label a series of lots by setting the Prefix to "Lot" and the Text field to the starting lot number. Then pick points inside the lots to label as "Lot 1", "Lot 2", etc.
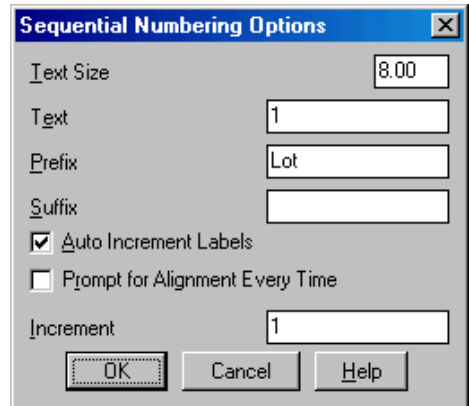
Prompts

Symbol Selection dialog
Sequential Numbers Options dialog
Pick point at beginning of label: *Pick a p*
Pick point for label alignment: *Pick a p*
Pick point at beginning of label: *Press E*

Pull-Down Menu Location: Draw
Prerequisite: None
Keyboard Command: numbers
File Name: \lsp\cir_num.lsp

Arrowhead

Function

This command draws an arrowhead at the end of the selected line or polyline.

Prompts

Enter the arrow size <5.00>: *Press Enter*
Pick a line or pline to add arrow: *pick a line or polyline*
Pick a line or pline to add arrow (Enter to End): *Press Enter*

Curve - Arrow

Function

Curve - Arrow can be used to draw a section of contour line or create leader pointer lines. Curve - Arrow draws a Bezier curve through user specified points. After choosing endpoints, each time an intermediate points is picked the curve will be redrawn through all the points. There is an option to draw an arrowhead at the starting point. The arrowhead size is determined by the AutoCAD system variable "DIMASZ". In order to change this size, type DIMASZ at the AutoCAD command prompt. This routine also has a Zorro option which creates a Z leader curve.

Prompts

Do the zorro (Yes/<No>)? *N*
Include an arrow (Yes/<No>)? *Y*
Enter the arrow head size <4.00>: *Press Enter*. This defaults to the DIMASZ system variable.
Pick a starting point: *Pick a point*
Pick an ending point: *Pick a point*
Pick an intermediate point (U to Undo):
Pick a point
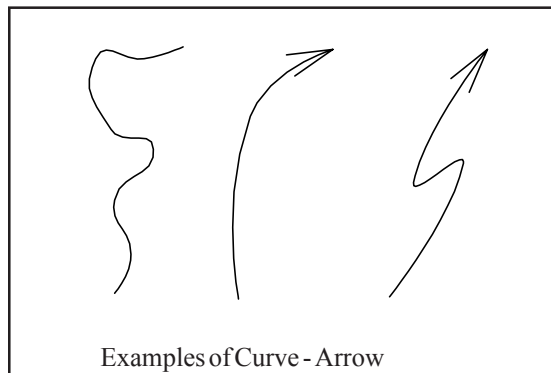**Pick an intermediate point (U to Undo):**
(Press Enter)

Pull-Down Menu Location: Draw
Prerequisite: None
Keyboard Command: carrow
**File Name:** \lsp\cir_num.lsp &
\lsp\scadutil.arx

Examples of Curve - Arrow

Boundary Polyline

Function

This is a streamlined analog of the AutoCAD command *Boundary*. The SurvCADD version is faster and works in many cases where *Boundary* fails. *Boundary Polyline* supports a snap tolerance, which means that you may specify a maximum gap to close when creating a closed polyline.

To create closed polylines from any existing linework, simply select all entities you would like to use and specify desired snap tolerance. Then click inside openings you would like to trace and the routine will generate corresponding closed polylines. The duplicate polylines are detected and not created, so that clicking more than once in the same area does not change anything. These new polylines are always created in the current layer. Layers of the original linework do not matter.
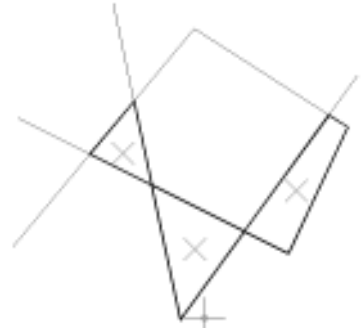
These three polylines are created from original linework by clicking at show locations

Prompts

Select polylines: *pick an entities to be used*
Enter snap tolerance or press Enter for none:
Pick an internal point:

Pull-Down Menu Location: Draw
Prerequisite: Entities.
Keyboard Command: boundpl
File Names: \lsp\scbpoly.arx

Shrink-Wrap Entities

Function

This command creates a closed polyline which encloses a given set of entities. The resulting polyline is created in the current layer. The program works on either point entities or polylines. For points, the program creates a closed polyline through the points around the perimeter of the area defined by the points. For polylines, the shrink-wrap polyline follows the outside border of the selected polylines. The polylines that are processed have to be connected to be shrink-wrapped. The snap tolerance is the maximum gap that will be joined to make the closed polyline.

Prompts

Entities to shrink wrap [Points/<Linework>]? *P*

Enter P for Points

Select the points to shrink-wrap.

Select objects: Specify opposite corner: 240 found

160 were filtered out.

Select objects: *Press Enter*

Reading points ... 80

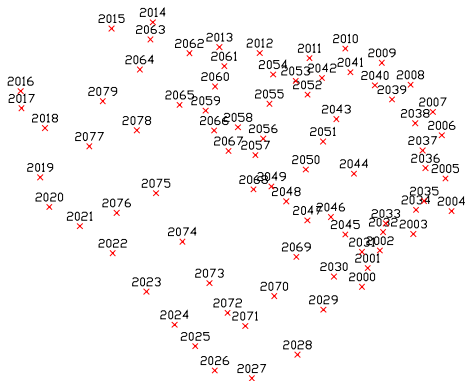**Triangulating points ... 80**

Create 2D or 3D Polyline (<2D>/3D)? 3D

Enter 3D to create a 3D polyline
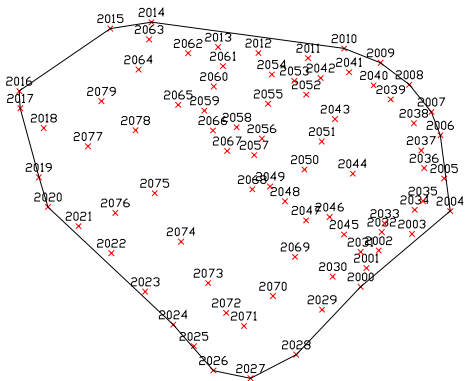
Pull-Down Menu Location: Draw
Prerequisite: Entities.
Keyboard Command: swplines
File Names: \lsp\scbpoly.arx

Existing points

Results of Shrink Wrap using Points option

2D Polyline with Follow

Function

In addition to allowing you to draw a polyline in the same way as the AutoCAD *Pline* command, this command can also add sections of existing polylines into the new polyline. To include part of an existing polyline, enter *S* for the Select existing polyline option. Then choose the existing polyline and pick an enter point and an exit point on the polyline. The new polyline will "follow" the existing polyline between these two points. If the existing polyline is closed, then there are two possible ways to go between the enter and exit points. By default the points are connected in the direction of the polyline. The command will highlight the default way. To connect in the other direction, enter No to the Is this correct question. The 3D version of this command can be found in the *3DPoly* menu in the DTM-Contour module.

Prompts

Enter polyline layer name <0>: *Press Enter*
Select existing polyline/End/Pick point: *Pick a point*
Select existing polyline/Undo/End/Close/Pick point: *S* (For Select existing polyline)
Select the polyline to follow: *Pick a polyline*
Pick entrance point on polyline: *Pick a point on the polyline*
Pick exit point on polyline: *Pick a point on the polyline*
Select existing polyline/Undo/End/Close/Pick point: *E* (To End)

Pull-Down Menu Location: Draw
Prerequisite: None.
Keyboard Command: follow
File Names: \lsp\poly3d.arx

Polyline by Slope Ratio

Function

This command allows you to draw or revise a polyline by specifying distance and slope ratio, percent of grade or pick points on the screen. The polyline could represent a section or profile which can be processed with the *Polylines End Area* or *Sections from Polyline*.

Prompts

Horizontal scale <50.0>: *20*
Vertical scale <50.0>: *10*
Pick point/<Starting elevation of polyline-section <100.0>>: *P*
Enter the starting elevation or press [Enter] to use the default value in brackets and you are prompted for the starting offset or X coordinate. By entering P you are prompted to pick a starting point for the polyline/section.
Pick start point: *(pick point)*

Slope ratio + for up slope - for down slope.
Undo/End/switch to Left/Pick point/<Enter Right Distance>: *130*
End/Percent slope/<Slope Ratio (?:1)<2.0>>: *5*
This enters a slope ratio of 5 to 1 for 130 feet to the right of the starting point.
Undo/End/switch to Left/Pick point/<Enter Right Distance>: *L*
Undo/End/Pick Point/<Enter Left Distance>: *110*
End/Percent slope/<Slope Ratio (?:1)<2.0>>: *P*
Percent of grade slope: *2*
This enters a slope of 2 in 100 for a distance of 110 feet to the left of the starting point.
Undo/End/Pick Point/<Enter Left Distance>: *30*
End/Percent slope/<Slope Ratio (?:1)<2.0>>: *4*
Undo/End/Pick Point/<Enter Left Distance>: *E* Entering E ends the command.

Pull-Down Menu Location: Draw
Keyboard Command: PSR
Prerequisite: None
File Name: \lsp\slpline.lsp

Polyline by Nearest Found

Function
This command draws a polyline by connecting points using a nearest found method. The points to connect can be specified either by entering point numbers or picking POINT entities on the screen. The nearest found method draws a polyline by starting at one of the points and then connecting to the closest of the remaining points. Then a remaining point that is closest to one of the polyline end points is added until all points are part of the polyline.

Prompts
Select point from screen or by point number (<Screen>/Number)? *Press Enter*
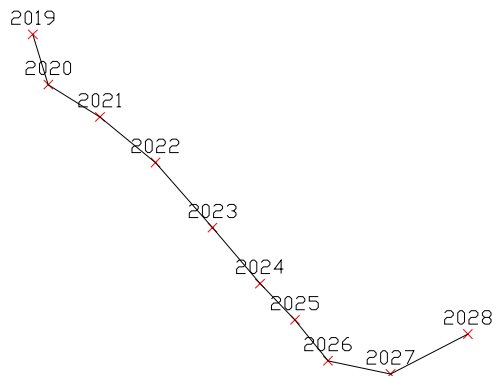**Select points.**
Select objects: *pick points*

Pull-Down Menu Location: Draw
Prerequisite: None.
Keyboard Command: plnear
File Names: \lsp\crdutil.arx

General Commands - Draw Commands

SmartTrace

Function

SmartTrace is an enhanced sketch routine. AutoCAD's *Sketch* command is acceptable for some tracing, but if a large contour map is sketched, it creates a huge file that loads and regenerates slowly. The problem is that the sketch command creates points at user specified increments, this small increment may be appropriate for sharp corners, however, in relatively straight stretches this is very inefficient.

SmartTrace solves this problem, the routine works by reducing the number of vertices created on polyline tracing by using a deflection angle and minimum and maximum distance. In sharp turns, it will create points at the minimum distance specified, and in relatively straight stretches it creates points at the maximum distance specified. If the angle of the polyline turns more than the specified deflection angle, SmartTrace also creates a point.

Prompts

Deflection Angle <4.0>: *Press Enter* (range of 3 to 5 degrees is best)

Minimum Distance <5.0>: *Press Enter* (usually 5% of map scale, or 1/20 inch)

Maximum Distance <50.0>: *Press Enter* (usually 50% of map scale, or 1/2 inch)

Start point: *pick beginning point on polyline*

Begin Tracing ... Press Pick Button to End. *(carefully move along polyline, press the pick button to complete the polyline)*

Pull-Down Menu Location: Draw
Keyboard Command: TABLET3
Prerequisite: None
File Name: \lsp\tablet.lsp

Buffer Offset

Function

This command offsets a polyline and maintains a fixed distance from the original polyline by placing an arc on convex corners. The standard AutoCAD *Offset* command can actually have a distance greater than the offset at corners. In the example shown, the distance between the corners of the original and offset polylines is 70.01 while the offset distance is 50.0. Buffer Offset makes an offset polyline that doesn't exceed the offset distance. This is useful when you want an offset that goes no further than the offset distance such as wetland offsets. Later versions of AutoCAD can acheive the same effect using the standard *Offset* command by changing the system variable OFFSETGAPTYPE to 1

Prompts

Enter the offset amount: *50*
Select a polyline to offset (Enter for none): *pick the original polyline*
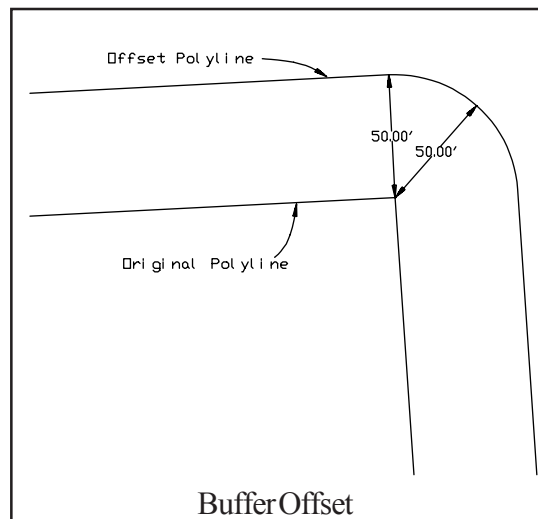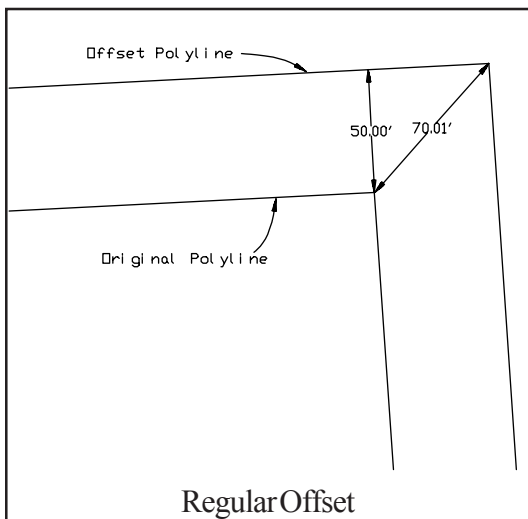**Select side to offset:** *pick a point on the side to offset to*
Select a polyline to offset (Enter for none): *Press Enter*

Pull-Down Menu Location: Draw
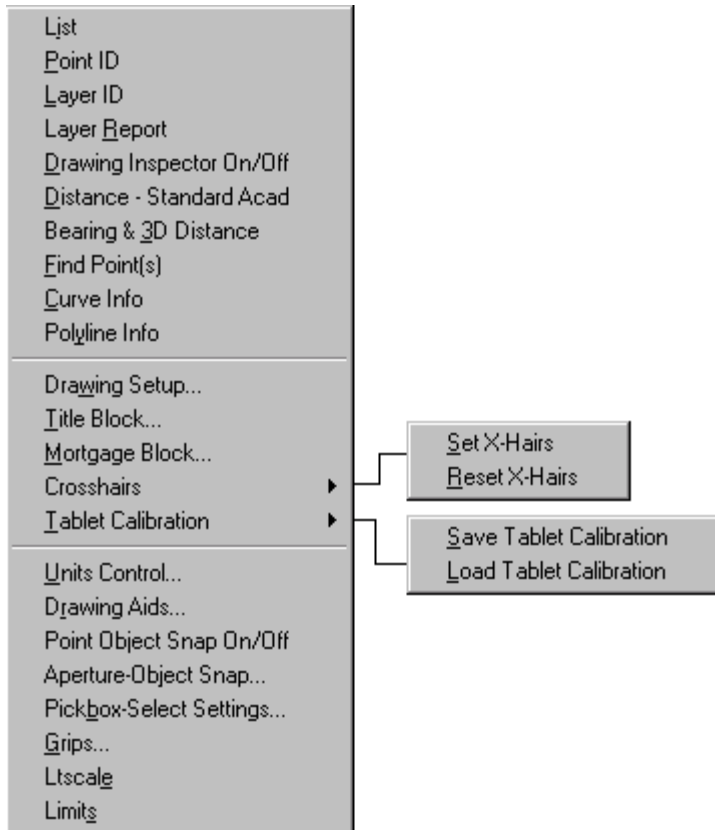**Prerequisite:** A polyline to offset.
Keyboard Command: plnear
File Names: \lsp\crdutil.arx

Regular Offset

Buffer Offset

Inquiry & Settings Menu

Shown here is the Inq-Set menu. The top section contains the inquiry commands. *Drawing Setup* is located in the middle section. You should run Drawing Setup prior to beginning your drawing. The last section of the menu includes AutoCAD settings commands

List
Point ID
Layer ID
Layer Report
Drawing Inspector On/Off
Distance - Standard Acad
Bearing & 3D Distance
Find Point(s)
Curve Info
Polyline Info

Drawing Setup...
Title Block...
Mortgage Block...
Crosshairs   ▶
Tablet Calibration   ▶

Set X-Hairs
Reset X-Hairs

Save Tablet Calibration
Load Tablet Calibration

Units Control...
Drawing Aids...
Point Object Snap On/Off
Aperture-Object Snap...
Pickbox-Select Settings...
Grips...
Ltscale
Limits

Layer ID

Function
This command reports the layer name of the selected entity.

Prompts
Pick entity to read layer: *pick an entity*
Layer: FINAL
Pick entity to read layer: *Press Enter to end*

Pull-Down Menu Location: Inq-Set
Prerequisite: None.
Keyboard Command: layerid
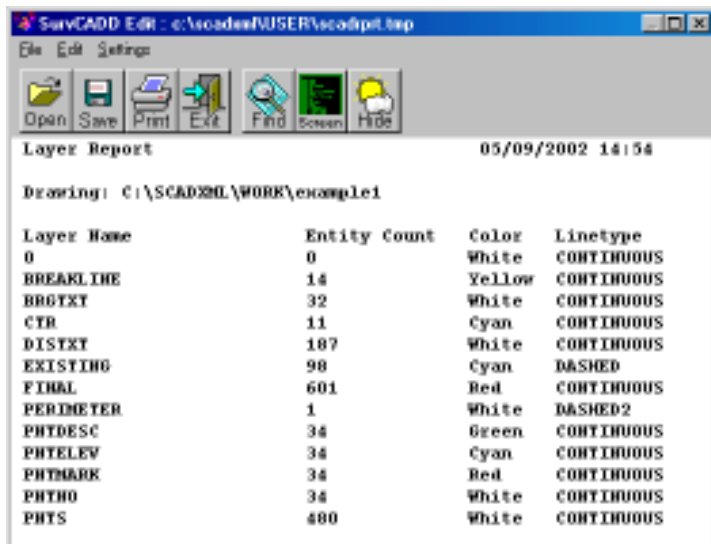**File Name:** \lsp\surv1.lsp

Layer Report

Function
This command generates a report containing each layer name, the number of entities on each layer, and the color and linetype applied to each layer.

Pull-Down Menu Location: Inq-Set
Prerequisite: None.
Keyboard Command: layerid
File Name: \lsp\surv1.lsp

SurvCADD Edit : c:\scadem\USER\scadrpt.tmp

File Edit Settings

Open Save Print Exit   Find Screen Hide

Layer Report   05/09/2002 14:54

Drawing: C:\SCADXML\WORK\example1

Layer Name	Entity Count	Color	Linetype
0	0	White	CONTINUOUS
BREAKLINE	14	Yellow	CONTINUOUS
BRGTXT	32	White	CONTINUOUS
CTR	11	Cyan	CONTINUOUS
DISTXT	187	White	CONTINUOUS
EXISTING	98	Cyan	DASHED
FINAL	601	Red	CONTINUOUS
PERIMETER	1	White	DASHED2
PNTDESC	34	Green	CONTINUOUS
PNTELEV	34	Cyan	CONTINUOUS
PNTMARK	34	Red	CONTINUOUS
PNTNO	34	White	CONTINUOUS
PNTS	480	White	CONTINUOUS

Drawing Inspector

Function

This command reports object properties to you as you move the cursor over an entity. Once the Drawing Inspector is activated by running the Drawing Inspector command, you can display one of several properties of an object. The available properties are: Layer Name, Elevation, Bearing-Distance, Azimuth-Distance, Point Data, and Text Data. You can simply move the pointer over an entity and the selected property will be displayed either in a pop-up window next to the pointer and/or on the status bar, depending on the selected option. The options for this command are set in the menu that pops up by clicking the right mouse button.

Enable Highlighting: Highlights the object that Drawing Inspector is reporting.

Enable Tag Display: Enables the information to be displayed next to the cursor on the screen.

Show Data On status Bar: Enables the information to be displayed in the status bar (lower left corner of the AutoCAD screen).

Use Default Cursor: When enabled, shows only the AutoCAD cursor. When disabled, mouse pointer is also shown.

Other commands can be run as usual while Drawing Inspector is active. To turn off the Drawing Inspector, pick the Drawing Inspector command from the menu a second time.

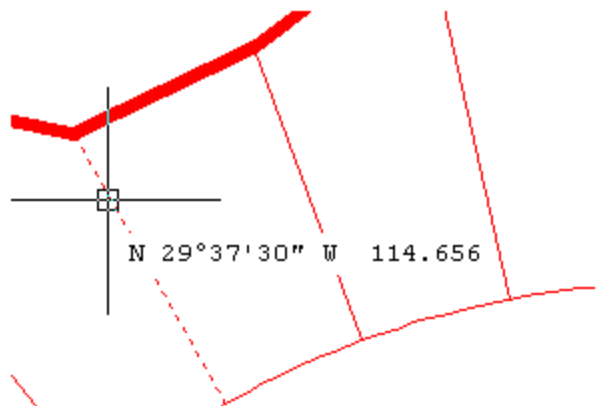This is an example of Drawing Inspector reporting Bearing-Distance using the Tag Display:
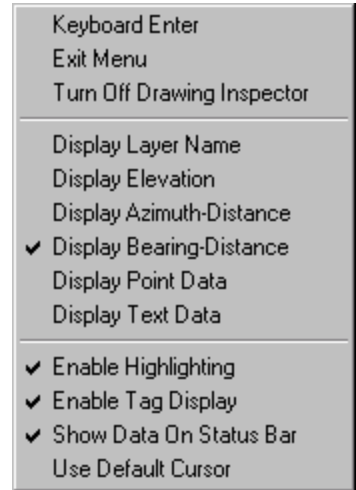
Pull-Down Menu Location: Inq-Set
Prerequisite: None.
Keyboard Command: inspector
File Name: \lsp\autotag.arx

N 29°37'30" W   114.656

Bearing & 3D Distance

Function

This command reports the slope distance, slope ratio, bearing, azimuth and vertical angle between two 3D points. Pick or enter the coordinates of two points or select a line or polyline segment to calculate between the segment endpoints.

Prompts

Specify bearing-distance from (Line/PLine/<Points>)? *Press Enter*
Pick point or enter point number: *pick a point*
Pick second point or enter point number: *pick a point*
Horiz Dist: 233.4 Slope Dist: 233.4 Elev Diff: 0.0 Vert Ang: 0d0'0"
Slope: 0.0% 0.0:1 Bearing: S 71d15'37" W Azimuth: 198d44'23"

Pull-Down Menu Location: Inq-Set
Prerequisite: None.
Keyboard Command: 3DIST
File Name: \lsp\3dist.lsp

Find Point

Function

This command can be used to find a point in the current CRD file with a certain point number or description. Matching points are highlighted on the graphics screen with the preview arrow and listed on the text screen.

Prompts

Find by point [N]umber or [D]escription <N>: *[Enter]*
Point number or range of point numbers to find <1>: *8*10*

8	4856.75	4747.20	0.00
9	4909.25	4648.37	0.00
10	4223.30	4545.46	0.00 RADPT

If you respond with D for the first prompt the program prompts:
Conforms to AutoCAD's wild card matching.
Point Description(s) text to search for <>: *rad**
Searching file C:\SCADXML/DATA/LOT.CRD for point descriptions matching RAD* ...

7	4817.02	4662.73	0.00 RADPT
10	4223.30	4545.46	0.00 RADPT

Point(s) found 2
For example, if you entered RAD* the command would plot a preview arrow at all the points that have the letters RAD as part of the description. i.e. RADPT1, RADPT2, RADPT3, etc. This

command is case insensitive (test is considered the same as TEST).

Pull-Down Menu Location: Inq-Set
Prerequisite: None.
Keyboard Command: FPOINT
File Name: \lsp\fpoint.lsp

Curve Info

Function

This command displays information about a curve/arc. The curve can be defined by an arc entity or polyline arc segment or by selecting three points on the arc. The three points can be defined by point number or picked on the screen. The curve data is displayed in the text window with an option to be displayed in the Standard Report Viewer. Press Enter to return to the graphics window.

Prompts

Define arc by, Points/<select arc or polyline>: *(pick arc or polyline arc segment)*
Endpoint: (8343.46 4117.68 0.0)
Other Endpoint: (8428.21 4136.91 0.0)
Radius Point Coords: (8397.54 4075.68 0.0)
Chord Bearing: N 77d13'10" E
Chord Azimuth: 77d13'10"
Delta angle in radians: 1.3748473110
RoadWay Degree of Curve: 83d40'4"
RailRoad Degree of Curve: 93d47'46" Chord Crv Length: 83.98 Excess: 10.17
External: 20.12 Mid Ord: 15.55 Tangent: 56.22
Delta: 78d46'23"
Chord: 86.91
Length: 94.15
Radius: 68.48
Display curve data in report viewer (Yes/<No>)? *N*

Pull-Down Menu Location: Inq-Set
Keyboard Command: CURVINFO
Prerequisite: None.
File Name: \lsp\curvinfo.lsp

Polyline Info

Function

This command reports the length and elevation of the selected line or polyline.

Prompts

Pick Polyline or Line: *pick a polyline*
Polyline length: 145.43 Elevation: 100.0

Pull-Down Menu Location: Inq-Set
Keyboard Command: polylen
Prerequisite: None.
File Name: \lsp\polylen.lsp

Drawing Setup

Function

This command allows you to specify drawing parameters, including the plotting scale, size of symbols, label annotation size, and the angle mode.

English 1in=?ft or Metric 1m=?m: Specify the unit mode to use. This affects the prompting and reports. When you are working on a drawing in English units, one unit equals one foot. In metric, one unit equals one meter.
**Metric 1m=?m:** This option sets the metric scale to meters only.
Horizontal Scale: Specify the horizontal scale of the drawing. For example, if the horizontal scale is set to 50, then 1" = 50' is your drawing scale.
Symbol Plot Size: This value is a scaler that represents the size on the plot. The Drawing Units are determined by multiplying the scaler by the horizontal scale. In English mode the scaler represents the plotted size in inches. In Metric mode, this value is the plotted size in centimeters.
Drawing Units: This field shows the result of the Symbol Plot Size value (the scaler) multiplied by the horizontal scale.
Text Plot Size: This value is a scaler that represents the size on the plot. The Drawing Units are determined by multiplying the scaler by the horizontal scale. In English mode the scaler represents the plotted size in inches. In Metric mode, this value is the plotted size in centimeters. The Text Plot
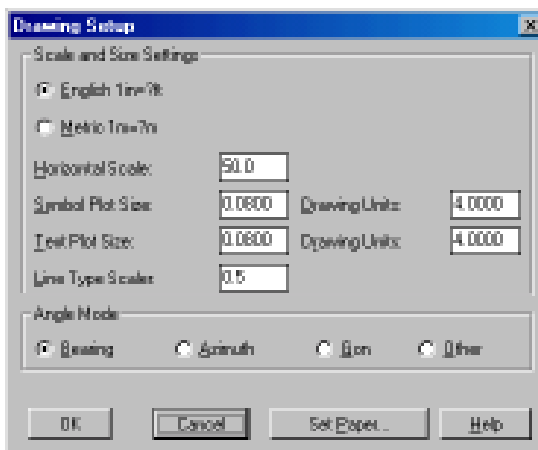
Size is not entered in Drawing Units.

Drawing Units: This field shows the result of the Text Plot Size value (the scaler) multiplied by the horizontal scale.

Line Type Scaler: This option sets the linetype scale by multiplying this scaler by the horizontal scale.

Angle Mode-Bearing: This option sets reporting to bearing mode for any of the inquiry commands. (Modifies the settings in the AutoCAD *UNITS* command.)

Angle Mode-Azimuth: This option sets reporting to north based azimuth mode for any of the inquiry commands. (Modifies the settings in the AutoCAD *UNITS* command.)

Angle Mode-Gon: This option sets reporting to gon mode for any of the inquiry commands. (Modifies the settings in the AutoCAD *UNITS* command.)

Angle Mode-Other: This option lets the user determine angle mode by using the AutoCAD *UNITS* command.

Set Paper: This button allows you to draw a rectangle on the screen that represents the edge of your paper. After you have set the horizontal scale, press the Set Paper button and the Set Paper dialog appears.

Layout: This option lets you specify landscape or portrait paper orientation. Landscape layout is where the width of the page is greater than the height of the page. Portrait layout is the opposite.

Paper Size: This option allows you to specify the paper size. The numbers in parenthesis represent drawing units and will be multiplied by the horizontal scale to determine the rectangle to be drawn. If you select the Other option, you will be prompted on the command line for the horizontal and vertical sizes of the paper.

Prompts (for Set Paper)

**Pick or Type lower left corner point for border <(5000.00 5000.00 0.0)>:** *pick point*

Erase existing Set Paper boundary [<Yes>/No]? *Y*

This prompt only appears if there is an existing paper boundary in this drawing

Set Limits [Yes/<No>]? *Y*

If you answer Yes to Set Limits, drawing limits are enabled, and AutoCAD restricts the coordinates you can enter to within the paper boundary. Drawing limits also determines the area of the drawing that can display grid dots, and the minimum area displayed by the Zoom All command on the View menu. To turn drawing limits off, type in LIMITS on the command line and set to Off.

Drawing Setup also sets the AutoCAD dimension scale (DIMSCALE) and linetype scale (LTSCALE) to the Horizontal Scale.
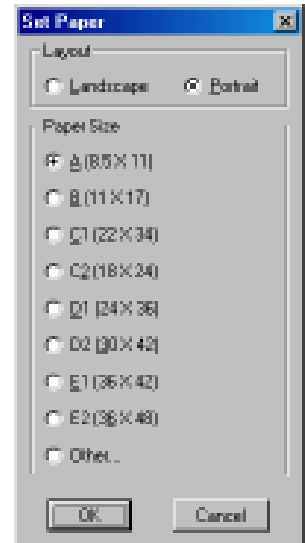
Pull-Down Menu Location: Inq-Set
Prerequisite: None
Keyboard Command: setup
File Name: \lsp\survset.lsp, \lsp\scadenvr.dcl

Title Block

This function is different depending on your AutoCAD version

Function (AutoCAD R14)

This command draws a border and title block for the selected sheet size. The margins to use are specified at the bottom of the dialog. Margins are needed so that the border fits in the plotter's plotable area. For sheet 11x17 or smaller, a 1/2 inch margin is typical. For larger sheets, a typical margin is 3/4 inch. The *LIMITS* of the drawing can be set to the lower left and upper right corners of the border. To change the title block, edit the drawing TBLOCK.DWG in the \SUP directory. Click the toggle User Defined to set a custom sheet size. The default user defined size can be stored in the Configure SurvCADD command under the General Settings option. After the title block is drawn, the contents can be edited using the Attribute Edit command under the Modify menu. The Change Scale button will change the scale for the title block and for the drawing.

Function (AutoCAD R2000 and up)

This command draws a border and title block for the selected sheet size. At the top of the dialog, choose your horizontal scale and sheet size. The *other* choice at the bottom of each list will allow you to add your own scale or size if yours is not listed. Anything added to these lists will be retained for future use. Next, choose either "landscape" or "portrait" format. A blue rectangle next to this choice shows you the difference. Below this, you can choose what layer to draw the border and title block on. The margins to use are specified next at the bottom of the dialog. On the right hand side of the dialog. you can choose from several title blocks. As you choose each one, a preview will be shown below this list. This routine looks for all drawings named "tblock" in the \SUP directory. If you want to add your own title block, simply create a new drawing (or copy an existing one) in the \SUP directory and give it a name that starts with tblock. Example: tblock22.dwg and tblock-Jones.dwg are both valid names for this routine, but "MyTitleblk.dwg" is not. After you have made all your decisions in the dialog box, press OK. Depending on your current zoom level, your drawing may be zoomed out to allow you to see the entire area that will be covered by the drawing border. At this point, you have the border attached to your cursor and it is waiting for you to pick a point for insertion. As soon as you do this, a secondary dialog will appear for you to fill out the attributes associated with the particular title block you selected.

Pull-Down Menu Location: Inq-Set

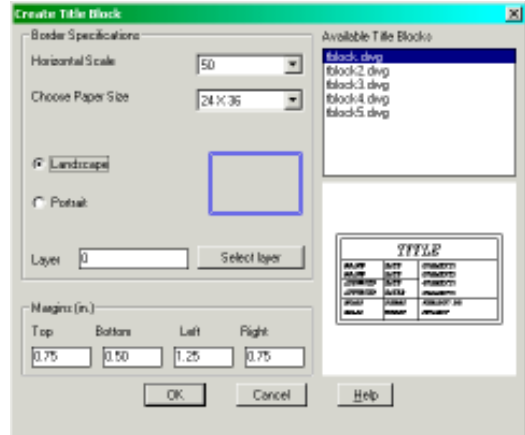**Prerequisite:** set horizontal scale in Drawing Setup

Keyboard Command: tblock

File Name: \lsp\title.lsp, \lsp\title2.fas, \sup\tblock*.dwg(s)
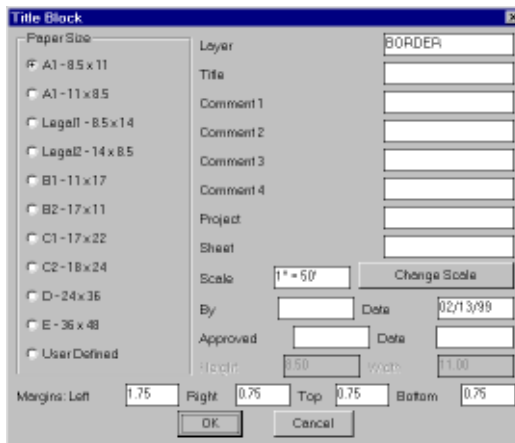
Title Block Dialog for R14

Title Block Dialog for R2000 & up

Mortgage Block

Function

This command draws a personalized title block for a mortgage survey. You may select an 8½" x 11" sheet, an 8½" x 14" sheet, or define your own sheet size. The dialog box allows the user to edit all block information and input unique data for every layout. The mortgage block drawing is called from the *mortgage.dwg* file located in the *\sup* directory and can be easily opened and edited within AutoCAD, allowing for the user to alter the size, text, or any other aspect of the drawing to fit the user's particular needs. However, this is usually unnecessary since the original *.dwg* file places this block for a standard 8 ½ x 11 ratio drawing. Inaddition to the block, the user can include the inputs and prescribed text for a Flood Note, which is placed in the bottom left hand corner of the drawing. You may also select a custom drawing file for your flood note. All inputs are saved and recalled from a *mortgage.ini* file located in the *\lsp* directory.

The *LIMITS* of the drawing can be set to the lower left and upper right corners of the border. After the title block is drawn, the contents can be edited using the *Attribute Edit* command under the *Edit* menu.

Pull-Down Menu Location: Inq-Set
Prerequisite: set horizontal scale in *Drawing Setup*
Keyboard Command: mortgage
File Name: \lsp\mortgage.lsp,
\sup\mortgage.dwg

Set/Reset X-Hairs

Function

> *Set X-Hairs* sets the cross-hairs either to align with the selected line or polyline or to a user-specified slope.
> *Reset X-Hairs* restores the cross-hairs alignment to horizontal.

Pull-Down Menu Location: Inq-Set
Prerequisite: Line entity.
Keyboard Command: setxhairs,resetxhairs
File Name: \lsp\xh.lsp, \lsp\rh.lsp

Save/Load Tablet Calibration

Function

> A common problem with calibrating maps on a large format digitizer is that if you leave the current drawing session, AutoCAD forgets the tablet calibration. Tablet save can be used to save the calibration when a drawing is taped down properly. This calibration file can be restored at any time later and be accurate so long as the drawing did not move on the tablet.

> *Save Configuration Procedure:*

> 1) Command: ***TABSAVE***

> 2) Designate filename (*.TCF) to save configuration into.

> *Restore Configuration Procedure:*

> 1) Command: ***TABREST***

> 2) Select filename (*.TCF) to restore configuration from.

Pull-Down Menu Location: Inq-Set
Prerequisite: None
Keyboard Command: tablet1, tablet2
File Name: \lsp\tablet.lsp

Point Object Snap

Function

When this toggle is turned on, you can move your cursor near a SurvCADD point and snap to the actual coordinates of the point without having to use the AutoCAD *NODE* snap. Point Object Snap can be used alone to display the point information or it can be turned on and used during other commands. In the example illustration, the *2DP* command (2D polyline) has been started and the first point picked was point number 2074. As the cursor nears point number 2067, the point snap marker appears and the point information is displayed, click the mouse and the next polyline vertex will snap to the coordinates of point 2067.

Pull-Down Menu Location: Inq-Set
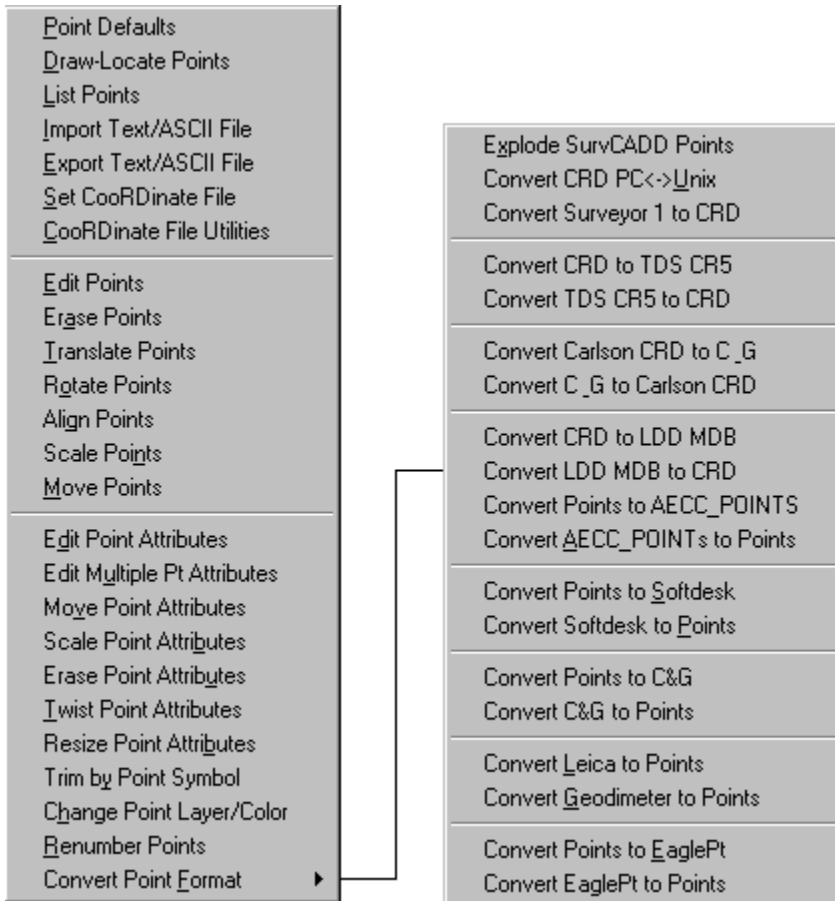**Prerequisite:** None
Keyboard Command: 'pointsnap
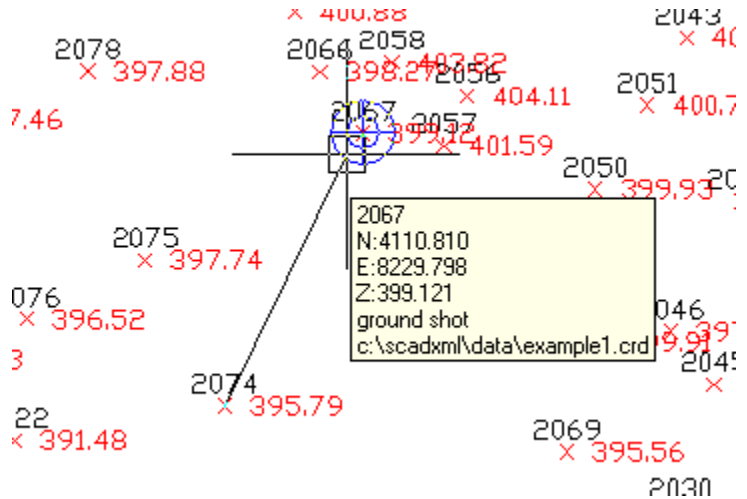
Points Menu Commands

All the routines in this menu operate on points in a SurvCADD coordinate (.CRD) file. Coordinate (.CRD) files are binary files that contains point numbers, northings, eastings, elevations and descriptions. At any given time, there can only be one (1) coordinate (.CRD) file set current. If a command is initiated that requires a coordinate (.CRD) file and there is not one set, SurvCADD will prompt for a coordinate (.CRD) file name. From that point on, this is the current coordinate (.CRD) file. Another coordinate file can be used by choosing *Set Coordinate File* or Open Coordinate File in *Coordinate File Utilities*.

Whenever asked for point numbers you can enter any combination with commas and dashes or *All* to use all points. For example 1-3,7,20-23 would use 1,2,3,7,20,21,22,23. Coordinate files have either numeric or alphanumeric point numbers. Alphanumeric point numbers consist of nine or less digits and letters (i.e. point# 7A). The type of point number format is set when the coordinate file is created. This setting is found under General Settings in *Configure SurvCADD*. This setting only affects new coordinate files.

Point Defaults
Draw-Locate Points
List Points
Import Text/ASCII File
Export Text/ASCII File
Set CooRDinate File
CooRDinate File Utilities

Edit Points
Erase Points
Translate Points
Rotate Points
Align Points
Scale Points
Move Points

Edit Point Attributes
Edit Multiple Pt Attributes
Move Point Attributes
Scale Point Attributes
Erase Point Attributes
Twist Point Attributes
Resize Point Attributes
Trim by Point Symbol
Change Point Layer/Color
Renumber Points
Convert Point Format ▶

Explode SurvCADD Points
Convert CRD PC<->Unix
Convert Surveyor 1 to CRD
Convert CRD to TDS CR5
Convert TDS CR5 to CRD
Convert Carlson CRD to C_G
Convert C_G to Carlson CRD
Convert CRD to LDD MDB
Convert LDD MDB to CRD
Convert Points to AECC_POINTS
Convert AECC_POINTs to Points
Convert Points to Softdesk
Convert Softdesk to Points
Convert Points to C&G
Convert C&G to Points
Convert Leica to Points
Convert Geodimeter to Points
Convert Points to EaglePt
Convert EaglePt to Points

Each point is drawn by three entities: point block, point node and symbol. The point block is an AutoCAD INSERT entity with PNTNO, PNTELEV and PNTDESC attributes. These attributes represent the point number, elevation and description respectively. The point node is an AutoCAD POINT entity and is used for picking the point with the NODE snap. The point node is also used as the X, Y, Z coordinate in surface modeling in the DTM-Contour module. The symbol can be any symbol defined in the Symbol Library. (Use SPT0 for no symbol). Since points use SurvCADD point symbols, the AutoCAD system variables PDMODE and PDSIZE should usually be set to 0.

Point Links

The points in the drawing can be linked to their coordinates in the coordinate file. The link updates the coordinate file when a point is modified in the drawing. For example, when points are moved with the AutoCAD *Rotate* command, their coordinates will be automatically updated in the coordinate file. To update the coordinate file without this automatic link, you can run the command *Update CRD File from Drawing* in *Coordinate File Utilities*. This option is called *Link Points with Coordinate File* and can be set in *Configure SurvCADD* under General Settings. This setting does not affect points currently in your drawing, only points drawn after you change this setting.

Point Notes

Each point in the coordinate file has room for a 32 character description. To have a longer description, an associated point note file can be used. The note file has the same file name as the coordinate file with a .NOT extension and is stored in the same directory. For example, survey.not would be the note file for survey.crd. The note file is a text file that stores a point number together with the additional description for the point. There is no limit to the length of the note. Notes can be added to points using the command *Input-Edit Point* found in *Coordinate File Utilities*. The *List Points* command can be used to print out the notes.

Point Entity Grouping

For each point, the point attribute block, node, and symbol can be bound together. This means that if you choose to use the *Move* command (or other AutoCAD tools) the entire collection moves together. This is done using the grouping functionality in AutoCAD.

To disable this system altogether, go to *Configure SurvCADD*, choose General Settings, and turn off the toggle for Group Point Entities. If you need to temporarily disable grouping in a drawing, you can use the AutoCAD toggle for grouping, which is Ctrl-A. Holding down the Ctrl key and pressing the letter A on the keyboard activates this two way toggle, with the current status echoed to the command prompt area.

Extended Point Information

SurvCADD points include additional information on each element that makes up the point collection (attribute block, node and symbol). This information allows SurvCADD to know such things as which coordinate (.CRD) the point came from. Commands like *Drawing Inspector* can then display the point information for the point entities. This also makes it easier for SurvCADD to identify which AutoCAD objects belong to a point, making commands like *Edit Point Attributes* a single pick instead of a selection set.

Transparent '2 & '3

Function

Unlike other SurvCADD commands that are initiated from a menu, the transparent '2 and '3 commands are utilized at the command prompt whenever AutoCAD is prompting you for a point. Like other transparent commands in AutoCAD they must begin with the apostrophe ('). This combined with the number 2 or 3 will prompt you for a point number or range of point numbers. SurvCADD will then supply the correct 2D or 3D coordinates to the current command. If you use '2 it will return only the X(Easting) and Y(Northing) of the point(s) specified. The elevation used with '2 is the current elevation as set by the ELEVATION command. However, if you use '3 then SurvCADD will return the full X,Y & Z values of the point as stored in the coordinate file.

These options provide a tremendous benefit to any AutoCAD command asking for point(s), be that the INSERT of a user block, or a collection of survey points supplied to the SPLINE command.

Prompts:

Command: -INSERT Enter block name or [?] <HYDRANT>: USERBLOCK
Specify insertion point or [Scale/X/Y/Z/Rotate/PScale/PX/PY/PZ/PRotate]: **'2**
>>Enter point numbers: 250
Resuming -INSERT command.
Specify insertion point or [Scale/X/Y/Z/Rotate/PScale/PX/PY/PZ/PRotate]:
14921.4695,79597.2114,1519.2400

Enter X scale factor, specify opposite corner, or [Corner/XYZ] <1>: 50
Enter Y scale factor <use X scale factor>:
Specify rotation angle <E>:

Command: SPLINE
Specify first point or [Object]: **'3**
>>Enter point numbers: 278,263,250,234
Resuming SPLINE command.
Specify first point or [Object]: 14823.2709,79619.8673,1537.4000
Specify next point: 14876.9617,79621.0749,1522.8500
Specify next point or [Close/Fit tolerance] <start tangent>:
14921.4695,79597.2114,1519.2400
Specify next point or [Close/Fit tolerance] <start tangent>:
14966.4588,79574.6625,1512.9700
Specify next point or [Close/Fit tolerance] <start tangent>:
Specify start tangent:
Specify end tangent:

Point Defaults

Function

This command sets SurvCADD point options.

Descriptions: Specify whether you are prompted for a point description when creating points and whether the point descriptions are labeled in the point block.

Elevations: Specify whether you are prompted for a point elevations when creating points and whether the point elevations are labeled in the point block.

Locate on Real Z Axis: When checked, points are located at their actual elevation, otherwise points will be located zero elevation.

Attribute Layout ID: Controls the location of the point number, elevation and description. These attribute layouts are defined in AutoCAD drawings that are stored in the SurvCADD SUP directory with the file name of SRVPNO plus the ID number (i.e. SRVPNO1.DWG, SRVPNO2.DWG, etc.). If you want to change the attribute positions for a layout ID, then open and edit the associated SRVPNO drawing.

Symbol Name: Enter the default symbol name to use. You may also pick the Select Symbol button to select a symbol from the symbol library.
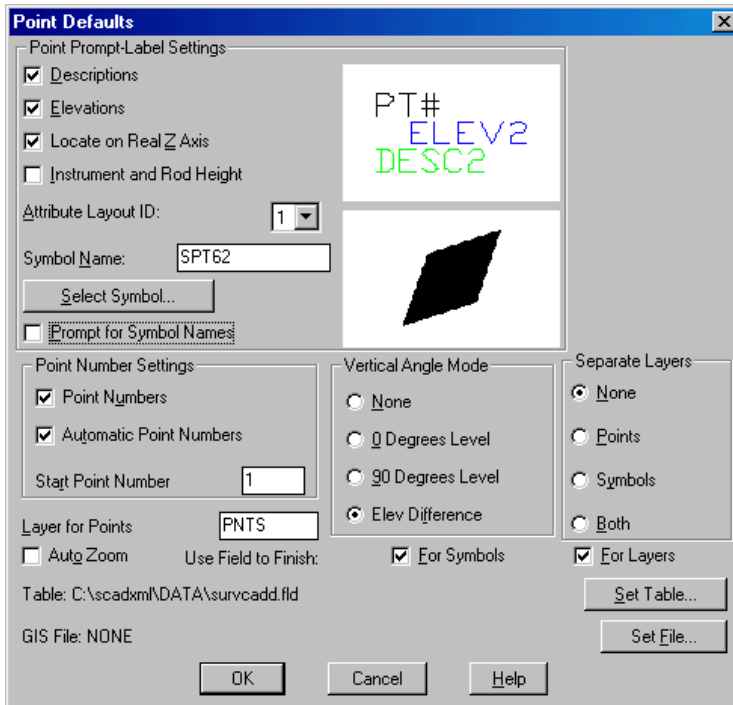
Prompt for Symbol Names: When checked, you will be prompted for each symbol name instead of using the default symbol.

Point Numbers: When this toggle is OFF, no point number will be created and no points will be stored in the coordinate (.CRD) file.

Automatic Point Numbers: When this toggle is OFF, commands that locate a point will prompt for a point number. Otherwise, point numbers are numbered sequentially. If the Start Point Number field is set to 0, no point will be plotted. An exception to this is when you use the *Draw-Locate Points* command and use the Range option, then a point entity is plotted.

The following table illustrates the effects of elevation settings:

Picked Point Point Number	Elevations Yes Real Z No Labels point, Prompts for elevation, uses 0 for z coordinate Labels point, No Prompt, uses 0 for z coordinate
Picked Point Point Number	Elevations Yes Real Z Yes Labels point, Prompts for elevation for z coordinate Labels point, No Prompt, uses z coordinate from file
Picked Point Point Number	Elevations No Real Z No No Label, No Prompt, uses 0 for z coordinate No Label, No Prompt, uses 0 for z coordinate
Picked Point Point Number	Elevations No Real Z Yes Labels point, No Prompt, uses z coordinate of picked point Labels point, No Prompt, uses z coordinate from file

Start Point Number: Specify the next point number to use.

Vertical Angle Mode: Specify how SurvCADD should prompt you for vertical angles. None means no prompt. Applies to creating points with commands such as *Traverse*. The vertical angle is used to calculate the point elevation.

Separate Attribute Layers: Specify settings for point attribute layers.

None: The point symbol, point number, elevation and description use the layer names PNTMARK, PNTNO, PNTELEV and PNTDESC.

Points: The point number, elevation and description layers are composed by concatenating the point layer and the string NO, ELEV, and DESC respectively. For example, if the point layer is UTIL then the attribute layers will be UTILNO, UTILELEV and UTILDESC.

Symbols: The point symbol layer is composed by concatenating the point layer and the string MARK. For example, if the point layer is UTIL then the symbol layer will be UTILMARK.

Both: The point symbol, point number, elevation and description layers are composed by concatenating the point layer and the string MARK, NO, ELEV, and DESC respectively. For example, if the point layer is UTIL then the symbol/attribute layers will be UTILMARK, UTILNO, UTILELEV and UTILDESC.

Layer for Points: Specify the layer name for SurvCADD points.

Auto Zoom: When checked, AutoCAD will perform a Zoom|Center around new points to keep the display centered around current working area. This only applies during commands such as Traverse. This setting is also available in *Configure SurvCADD* under General Settings where it is called Auto Zoom Center for New Points.

Use Field to Finish For: Allows you to use the code definitions from Field to Finish for the point symbols and/or layers when creating new points. For example, when creating a point with description "EP", SurvCADD would look up "EP" in the Field to Finish table and will use the symbol and layer defined in this code table instead of the symbol and layer set in Point Defaults.

GIS File: This option lets you specify a GIS file to be used when creating new points. The GIS file contains a list of fields to prompt for. For each point that is created, the program will prompt for these fields and store the results to the note file (.not) associated with the current CRD file.

Pull-Down Menu Location: Points
Prerequisite: None
Keyboard Command: ptsetup
File Name: \lsp\ptsetup.lsp & \lsp\scadenvr.dcl

Draw-Locate Points

Function

This command inserts either new or existing points into the drawing. New points are created by picking points or by entering northing and easting coordinates. Existing points are placed by entering the points numbers which reference the current coordinate file. You will be prompted to choose a coordinate file if no coordinate file is set current.

Symbol Name: Enter the symbol name to use. You may also pick the Select button to select a symbol from the symbol library.

Symbol Rotation Azimuth: Specifies the rotation angle that will be used for the point symbols. This angle is used in a counterclockwise direction relative to the current twist screen .

Layer by Desc: When checked, points are inserted in the layer named by the point description. Using Layer by Desc. organizes the points by description and allows for layer management such as using *Isolate Layers* to show only points on a certain layer. If a character is detected that cannot be used in a layer name, the layer name will be truncated at the invalid character. For example, a point description of "UP=105" would use layer "UP". The Field to Finish command is a more powerful method to insert points by description.

Layer Prefix: This string is added to the beginning of the layer name when using Layer by Dec. For example, a Layer Prefix of "PNT_" and a point with the description "EP" would use the layer "PNT_EP". Layer Prefix is optional. It allows all the point layers to be grouped so that you can select all the point layers by PNT*.

Draw Nodes Only: When checked, only the AutoCAD POINT entities are inserted and not the point block and symbol. This option is most useful when there are a lot of points to insert because inserting the nodes only is much faster. SurvCADD routines like Triangulate & Contour and Make 3D Grid File can use these points and do not need the point block and symbol.

Elev Text Only: When checked, the text of the point elevation is drawn

without the point block, symbol or node. The decimal place of elevation text is placed at the northing and easting point location.

Locate Within Polyline: When checked, you will be prompted to select a closed polyline. Only the points that are inside this closed polyline will be drawn.

Locate Within Distance: When checked, you will be prompted for a reference point and a distance. Only the points that are within the search distance from the reference point will be drawn.

Locate Within Coordinate Range: When checked, only the points that are within the specified range of northing, easting and elevation will be drawn. The program prompts for the minimum and maximum northing, easting and elevations. These values default to the actual min and max in the CRD file. Then the program prompts for the point number range of points to check.

Descriptions: Specify whether you are prompted for a point description when creating points and whether the point descriptions are labeled in the point block.

Elevations: Specify whether you are prompted for a point elevations when creating points and whether the point elevations are labeled in the point block.

Locate on Real Z Axis: When checked, points are located at their actual elevation, otherwise points will be located zero elevation.

Notes: Works with the note file (.not) associated with the current CRD file. The note file contains unlimited point descriptions in addition to the fixed 32 character point descriptions in the CRD file. When creating points with *Notes* on, the program will prompt for point notes to be stored with the point. When drawing existing point with *Notes* on, any notes for the points are drawn as text entities below the point description.

Use '+': When checked, labels the positive elevations with a leading '+'. Only applies when drawing points from a coordinate file.

Use '-': When checked, labels the negative elevations with a leading '-'. Only applies when drawing points from a coordinate file.

Label Zeros: When checked, points with zero elevation will be labeled when the *Elevations* option is on. Otherwise only points with nonzero elevation will be labeled.

Decimals: Specify the display precision for the elevation labels.

Point Numbers: When this toggle is OFF, no point number will be created and no points will be stored in the coordinate (.CRD) file.

Automatic Point Numbers: When this toggle is OFF, commands that locate a point will prompt for a point number. Otherwise, point numbers are numbered sequentially.

Start Point Number: Specify the next point number to use.

Wildcard Match of pt description: Can be used to filter the points to be drawn. For example, entering "EP" for the wildcard would drawn only points with a description of "EP". An asterisk (*) is the default setting, it matches any character sequence, meaning no filtering occurs.

Erase Duplicates: When this option is checked, Draw-Locate Points will detect and erase duplicate points on the screen. For example, if you are drawing points 1-10 and point 6 is already in the drawing, point 6 will be erased before points 1-10 are drawn.

Layer Name: Specify the layer name for SurvCADD points. You may pick the Select Layer button to select from the list of existing layers.

Draw Range: This command will draw a user specified range of points from the current CRD file.

Draw All: This command will draw all the points in the CRD file and then the program will perform a zoom extents the display to show the points.

Enter and Assign: This command can be used to create new points by typing in the point northing and easting.

Screen Pick Point: This command allows you to create points by picking the point coordinate on the screen. For example, you could set the Object Snap to EndPoint and pick the end point of a building polyline to create a point at the building corner.

Prompts

To create a new point.
Locate Point dialog Choose Screen Pick Point.
Pick point to create: *(pick point)*
Enter Point Elevation <500>: *498.43* This prompt only appears if elevation prompting is turned on.
Enter point description: *HUB* This prompt only appears if description prompting is turned on.

To locate a point in the coordinate file (point number 3 in this example).
Locate Point dialog Choose Draw Range.
Point numbers to draw: *3*

PtNo.	North(y)	East(x)	Elev(z)	Description
3	4154.28	4147.35	0.00	

Point numbers to draw: *1-2*. Locates a range of points. From 1 to 2.

PtNo.	North(y)	East(x)	Elev(z)	Description
1	4252.76	4158.32	0.00	RADPT
2	4258.11	4059.38	0.00	

Point numbers to draw: *Press Enter*. This ends the routine.

Pull-Down Menu Location: Points in all modules, Cogo in Cogo-Design module
Keyboard Command: LP
Prerequisite: You may want to execute *Drawing Setup* to set the scale and size
File Name: \lsp\lp.lsp & \lsp\crdutil.arx

List Points

Function

This command generates a report of point numbers, northings, eastings, elevations and descriptions.

Selection Method-Range: Allows you to specify the points to list by point number range

Selection Method-Area: Allows you to select a closed polyline to list all of the points inside of that polyline.

Selection Method-Selection Set: Allows you to specify the points to list by selecting them from the drawing.

Range of Points: If you are using the Range method, specify the range of points to list here. To quickly specify all points, click the All button.

Description Match: Can be used to filter the point list. For example, entering "EP" for the Description Match would only list those points with a description of "EP". An asterisk (*) is the default setting, it matches any character sequence, meaning no filtering occurs.

Report Coordinate Range: When checked, the point list will include the minimum and maximum northing, easting and elevation.

List Point Notes: When checked, any additional point notes assigned to the points will be included in the point list. Point notes can be entered using the *Input-Edit Point* command found in *Coordinate File Utilities*.

Use Report Formatter: When checked, you may customize the fields and layout of the point report using the Report Formatter. The Report Formatter can also be used to export the point report to Excel or Access.

Double Space Between Points: When checked, the report will be double spaced.

The point list report is displayed in the Standard Report Viewer which can print, draw and save the report file. This report viewer cannot be used to edit the coordinate file. Instead use the *Edit Points* command in the *Points* menu.

Pull-Down Menu Location: Points

Prerequisite: points in a coordinate file or on the screen

Keyboard Command: listpt

File Name: \lsp\crdutil.arx

```
List Points Report
File> C:\SCADXML\DATA\POINTS.CRD
Job Description>
Job Number> 0.000   Job Date> 06/01/2002
PointNo.   Northing(Y)    Easting(X)     Elev(Z)     Description
1          5355.240       5000.000       91.8        CP2
2          5000.000       5000.000       90.0        CP2
1000       5355.236       5000.000       91.8        CK
1001       4941.911       4622.029       91.4        FPC
1002       4952.629       4642.818       90.6        FH
1003       4959.931       4634.440       89.8        TOE1
```

Example of List Points report

Import Text/ASCII File

Function

This command converts point data from an ASCII text file into the current SurvCADD coordinate (.CRD) file. Each line of the text file can contain any combination of point number, northing, easting, elevation and description. All point information should be on one line with the values separated by a comma, space or other delimiter. Under the Source File Format setting you can choose from some specific formats or User-Defined. For User-Defined, the format of the text file is specified in the Coordinate Order field where the value identifiers are listed with the appropriate delimiters. For example:

For a text file with northing, easting, elevation and comma delimiters:
        5100.0,5150.5,485.1
        5127.1,5190.3,487.3
        The Coordinate Order would be:
        Y,X,Z

For a text file with point number, easting, northing, elevation, description and space delimiters:
        1   5000.0   5000.0   490.3   TRAV
        2   5030.4   4930.5   495.5   TRAV
   The Coordinate Order would be:
        P X Y Z D

Common formats can be selected from the Common Format List. All the lines in the text file should contain only point data and any header lines should be removed. To read the text file, pick the Select Text/ASCII File button and choose the file to read. Then the selected file is displayed in the Preview Window to help with filling out the Coordinate Order. When the Coordinate Order is set, click OK to read the text file. The Wild Card Descriptions Match allows for only point with matching

descriptions to be imported. With Point Protect active, the program will check if a point number already exists in the CRD before importing the point. If a point conflict is found, you can either assign a new point number or over-write the old point. The Value to Add to Point Numbers allows you to renumber the points as they are imported. The Header Lines to Skip value is the number of lines not to be processed at the start of the text file.

Multiple files can be imported at once. In the Select Text/ASCII Files routine, you can select multiple files by using the Shift or Ctrl keys while picking files. You can also run Select Text/ASCII Files multiple times. The files to import are listed in the top scroll display window. The point data from all the import files can be stored to the current CRD file or to separate files for each import file. The separate file option will name the CRD files by the import file with a .CRD file extension. For example, the import file job125.txt would create job125.crd.
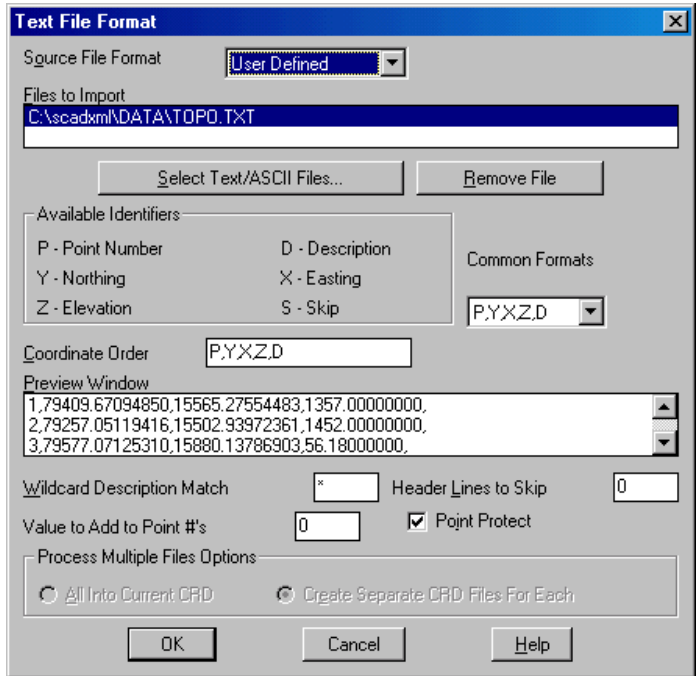
The special formats of Leica *.gsi files, TDS *.cr5 files, Geodimeter *.obs/*.raw files, Laser Atlanta *.txt files, Trimble *.pos files, Zeiss *.txt files, Traverse PC *.trv files, Maptech and Benchmark *.dat files can be directly imported by choosing that File Format at the top of the dialog.

Pull-Down Menu Location: Points
Prerequisite: A text file to read
Keyboard Command: readpt
File Name: \lsp\crdutil.arx

Export Text/ASCII File

Function

This command outputs point data from the current SurvCADD coordinate file to an ASCII text file. Specify the type of file to write with the Coordinate Order radio buttons. There are several variations on point number, northing, easting, elevation and descriptions as well as specific formats for Leica, Geodimeter, Zeiss, Maptech and D45 formats.

In addition there is an option, User-Defined Format, to define the order of the fields output. When using the User-Defined format, after selecting OK, the User-Define Export Format dialog will appear.

On this dialog, specify the order of the fields by defining a number sequence in each field. You can skip fields and omit data in the output file by leaving None in the sequence field for this data.

The point data to export can be specified by selecting a range of points, or by a selection set of points from the screen. The desired option is specified by selecting the option under the Selection Method on the Export

Text/ASCII File dialog. A description filter is also available for exporting only points from the range or selection set with certain descriptions. After selecting the OK button, another dialog appears that allows you to specify a new text?ASCII file or to append data into an existing file. The standard file selection dialog allows you to specify the export file name.
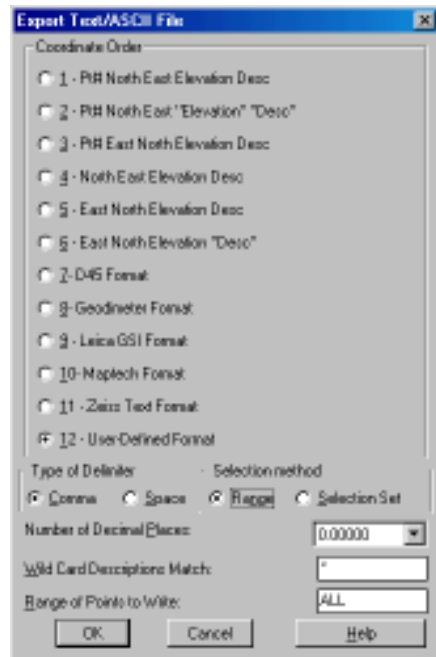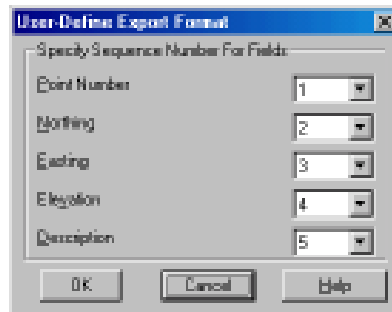
Pull-Down Menu Location: Points
Prerequisite: A Coordinate File (.CRD)
Keyboard Command: writept
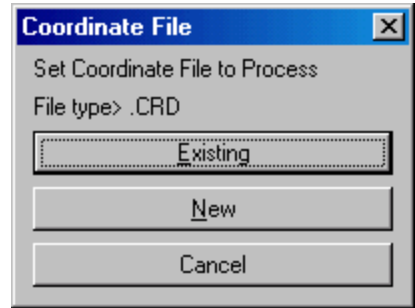**File Name:** \lsp\crdutil.arx

Set Coordinate File

Function

This command allows the user to set the name of the current coordinate file. This file is used by different commands that compute, store and recall the coordinates. The file has an extension of .CRD and by default is stored in the configured data subdirectory. When prompted for the name, if you type in a path name the file will be stored in the specified path. If you don't specify a path then the default path that is configured in the *Configure SurvCADD* command will be used.

The Existing button is the default and can be selected by pressing [Enter] (note the thicker highlighting around the button) or select either button by clicking on it with your pointing device. The underlined characters are the short cut keys that can be selected by the character and pressing [Enter].

Pull-Down Menu Location: Inq-Set

Prerequisite: None

Keyboard Command: setcrd

File Name: \lsp\pcrdfile.lsp & \lsp\scadfile.dcl

CooRDinate File Utilities

Function

This command allows you to manipulate the coordinates stored in a coordinate (.CRD) file. One of the most important commands is the Update CRD File from Drawing which allows you to update the file after editing the drawing with commands such as *Erase*, *Move*, *Rotate* or *Change Elevations*. Another handy option is the *Draw Entities by Point Number* which allows the user to input point number ranges and plot Lines, Arcs, Polylines or 3D polylines. Coordinate files have either numeric or alphanumeric point numbers. Alphanumeric point numbers consist of nine or less digits and letters (i.e. point number 7A). The type of point number format is displayed at the top title bar of the dialog shown on the next page.

Coordinate File Utilities Options

Open CRD File: Allows the user to switch to another file. When you exit Coordinate File Utilities this will be the current file that you work with in SurvCADD.

Copy CRD File: Copies a coordinate file to another file name. This can be used to make a backup of your coordinate file.

Switch Point Number Format: Allows you to convert the current CRD file from numeric format to alphanumeric format.

Import Text/ASCII File: This routine converts point data from a text file into the current coordinate (.CRD) file. See the *Import Text/ASCII File* command in this chapter for more information.

Export Text/ASCII Text File: This routine outputs point data from the current coordinate (.CRD) file to a ASCII Text file. See the *Export Text/ASCII File* command in this chapter for more information.

Edit Header: Enter or edit the job information associated with the coordinate file.

Fields include Job Description, Job Number and Job Date.

Compress CRD File: Removes unused point numbers by renumbering high point numbers into the unused spaces. For example, for an original file with points 1,2,105,107,108,109 would be compressed to 1,2,3,4,5,6.

Coordinate Transformation: Transforms coordinates between local, state plane 27, state plane 83, latitude/longitude, and Universal Transverse Mercator (UTM). Works on individually entered coordinates, by range of point numbers and with on-screen entities. For converting between state plane 27 and 83, SurvCADD calls upon NADCON from the National Geodetic Survey to apply the latitude/longitude adjustment. The NADCON program, ndcon210.exe, is stored in the SurvCADD EXEC directory.

The Enter Coordinates input option transforms one coordinate at a time. The coordinates can be typed in or use the Input Point Number option. Output Point Number is an option to store the results in the coordinate file.

When transforming a local coordinate system, there are three methods as shown in this dialog. The Align by Two Pairs of Points option uses two pairs of source and destination coordinates. The first pair defines the translation as the difference between the source and destination northing and easting. This destination point is also the pivot point for rotation. Rotation can be entered directly or defined by a second pair of points where the bearing between the first and second source points is rotated to align with the bearing from the first and second destination points. There is an option to also apply scaling. The scaling holds the angle between points and adjusts the distances by the scale factor. The scale factor is calculated for each point as the elevation factor at the first source point times the grid factor at the first destination point averaged with the elevation factor at the transform point times the grid factor at the transform point.

The other local transformation options are used when there are more than two pairs for translation points. Since two pairs of points are sufficient to define the translation and rotation, more than two pairs of points provides more than enough information. Over Determination by Plane Similarity is used to find the least squares best fit
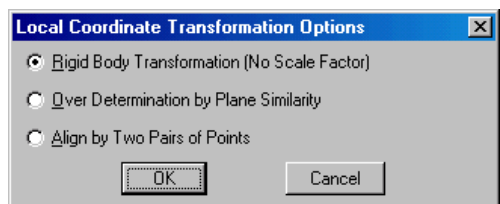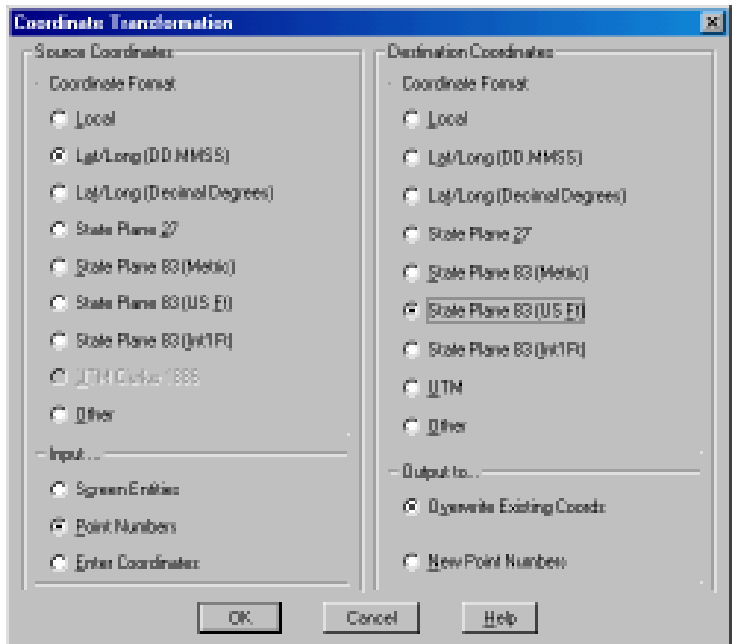
transformation for all the given source and destination points. Besides doing a translation and rotation, this option will also scales the points during the transformation. The Rigid Body Transformation also does a best fit least squares transformation but applies only translation and rotation with no scale.

When running SurvCADD with AutoCAD Map, the Coordinate Transformation dialog has an option called "Other" which activates all the AutoCAD Map transformations.

Draw Entities by Point#'s: Draw Lines, Arcs, 3DLines, Polylines or 3DPolys by defining a range of point numbers.

Example Prompts:

Enter Menu Option? <L>: *P*

Plot Entities by Point Number

Type of entity, Arc/Polyline/3dpoly/2dline/Exit/<Line>: *P*

This response causes the program to plot polylines.

Example: '1*4-7-10*12-5-8' would draw lines from point number's 1 through 4 then to 7, to 10 through 12, then to 5 to 8. (limit 132 characters)

Undo/<Enter point numbers or ranges>: *1*10-20*30*

The program draws a polyline from point number 1 through 10 to point number 20 through 30.

New Last Point Number: This option sets the highest point number in the CRD file. All points above this number are erased.

Update Drawing from CRD File: This function updates the position of SurvCADD points in the drawing to match the position stored in the coordinate file. This command also has options to erase and draw points. For the erase option, point are erased from the drawing if the point number does not exist in the coordinate file. For the draw option, if a point number in the CRD file does not exist in the drawing, then this point is drawn using the settings from the dialog. The number of points modified, erased and drawn is reported at the end of the command.
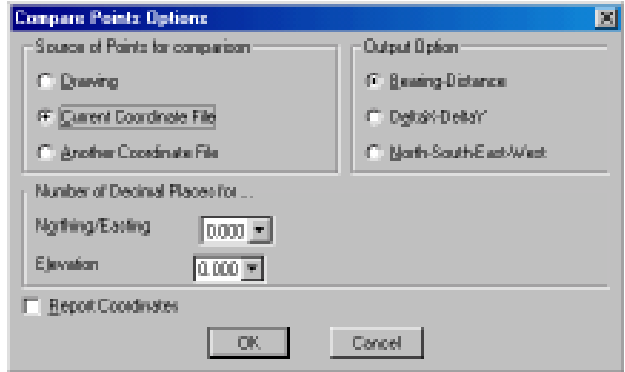
Update CRD File from Drawing: This function allows you to select all or some of the points in the drawing and add or update them to the .CRD file. The points can be filtered with AutoCAD's Select Objects: selection mechanism and/or wild card matching of the point descriptions. The Update Point Descriptions option determines whether the point descriptions from the drawing will be stored to the CRD file. Use this command to update the file after a global edit such as *Move*, *Rotate*, *Renumber Points*, *Change Elevations*, *Erase*, etc. This routine directly reads Leica (Wildsoft), Softdesk, Geodimeter, InRoads, Land Development Desktop, and Eagle Point point
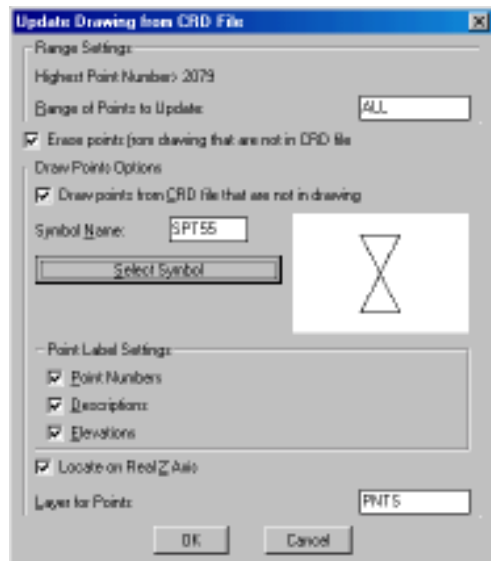
blocks.

Compare Points: This function compares the coordinates in the .CRD file with either the coordinates for the matching point numbers in the drawing file, with matching point numbers from another CRD file or with different point numbers from the same CRD file. A report is created for any differences that shows the point numbers and the differences. The difference can be reported as a bearing and distance between the two points, as distance North/South and East/West or as the delta-X and delta-Y. There is an option whether to include the point coordinates in the report.

Compare Points Options

Source of Points for comparison
- ☐ Drawing
- ⦿ Current Coordinate File
- ☐ Another Coordinate File

Output Option
- ⦿ Bearing-Distance
- ☐ DeltaX-DeltaY
- ☐ North-South-East-West

Number of Decimal Places for ...

Northing/Easting `0.000`

Elevation `0.000`

☐ Report Coordinates

OK   Cancel

```
Compare Drawing to CRD File> northpark.crd

Point#   North   South   East    West    Elevation
─────────────────────────────────────────────────
1125     0.28            0.30            0.00
1124     1.97            1.73            0.00
1123     1.99            1.45            0.00
1085     1.53            1.45            0.00
1084     1.53            1.73            0.00
1083             0.17    0.31            0.00
```
Example North-South-East-West format Compare Points Report

```
Point#   Northing       Easting         Elevation HzDiff    Bearing
1125     5000.14        4939.65         89.97     Drawing
1125     4999.86        4939.35         89.97     CRD File
                                        0.41      S 47d36'46" W
1123     5079.43        4941.93         90.94     Drawing
1123     5077.44        4940.48         90.94     CRD File
                                        2.46      S 36d02'36" W
1083     4999.03        4875.04         89.95     Drawing
1083     4999.21        4874.73         89.95     CRD File
                                        0.35      N 60d26'44" W
```
Example Bearing-Distance with Coordinates format Compare Points Report

List Points: List the points stored in the .CRD file. See the *List Points* command in this chapter for more information.

Delete Points: Deletes points in the file by defining a range of point numbers to delete or by picking a polyline that defines a perimeter from which points inside or outside the perimeter are deleted.

Screen Pick Point: Pick a point on the graphics screen and add or update it's coordinate values
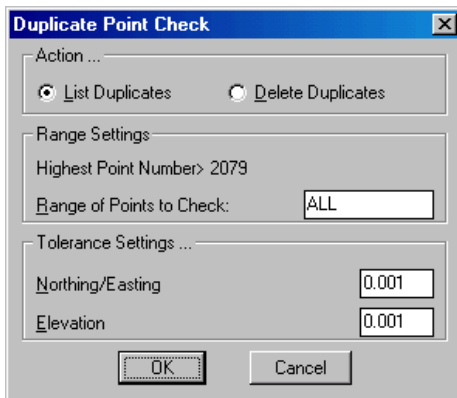
to the .CRD file. This command does not plot a point, point attributes or point symbol. Use the command *Draw-Locate Points* command to do this.

Scale Points: This option multiplies the point northing, easting, and elevation by the scale conversion factor. You can use this routine for metric-english conversion. See the *Scale Points* command in this chapter for more information.

Translate Points: This option translates a range of points based on entered delta x and delta y, entered coordinates or translation point numbers. See the *Translate Points* command in this chapter for more information.

Rotate Points: This option rotates a range of points based on entered degrees or rotation, entered azimuths, entered bearings or rotation point numbers. See the *Rotate Points* command in this chapter for more information.

Align Points: This option does a translate based on a source point and destination point and then rotates to align the first source point and a second source point with the first destination point and a second destination point. See the *Align Points* command in this chapter for more information.

Duplicate Point Check

Action ...
- (•) List Duplicates   ( ) Delete Duplicates

Range Settings
Highest Point Number> 2079
Range of Points to Check: ALL

Tolerance Settings ...
Northing/Easting   0.001
Elevation   0.001

OK   Cancel

Duplicate Points: This function searches the CRD file for points with the same northing, easting and elevation. The tolerances for considering points to have the same coordinate are set in the dialog separately for northing/easting and elevation. To be counted the same coordinate, both the northing/easting and elevation must be within the tolerance distance. The duplicate points can be erased or only reported. For the erase option, the first point number is kept and any higher point numbers with duplicate coordinates are erased from the CRD file.

Point Number Report: This routine list the used and unused point numbers in the .CRD file.

Renumber Points: This option renumbers points in the user-specified range starting from a new point number. The old point numbers are erased. The condense points will renumber such that there are no unused point numbers in the renumbered range. Otherwise the spaces between the points is maintained. In the example shown, renumbering 1-25 with points 1,2,24,25 to starting point number 101 will result in points 101,102,103,104 if condense is on or 101,102,124,125 if condense is off.

Assign Descriptions to Points

Highest Point Number: 2079
Range of Points: 2-13,85-150
Description to Assign: topo

OK   Cancel

Description for Points: This option sets the point description field with the user-specified text for a range of point numbers.

Input-Edit Point: Enter or edit the coordinate values or the
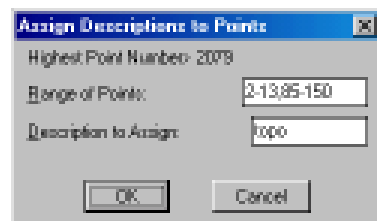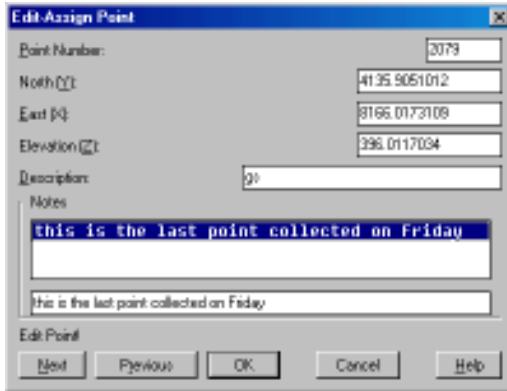
description of a point. The Notes section is for adding optional point notes which are additional point descriptions. The standard description field is limited to 32 characters. Under notes, any number of lines of text can be assigned to the point. A list box shows the lines of notes. To add a note line, pick a blank line in the list box and then type in the note in the edit box belong the list box and press Enter. To edit a note, highlight the line in the list box and edit the text in the edit box.

Map Points from 2nd File: This routine adds point to the current CRD file from points stored in a second CRD file. The points to copy are specified by numbers one at a time.

Destination Point Number: *55* This is the point number to create in the current CRD file.
Source Point Number: *25* This is the point number to copy from the second CRD file.
Point# Northing Easting Elevation
25   52.516   13.328   0.000
Destination Point Number: *Press Enter to end*

Point Protect Toggle: Toggles point protection on and off.

Pull-Down Menu Location: Cogo in Cogo-Design module, Points in all modules
Keyboard Command: CFU
Prerequisite: None
File Name: \lsp\crdutil.lsp, \lsp\crdutil.arx, \lsp\scadcfu.dcl and \lsp\scadfile.dcl

Edit Points

Function

This command edits point data in the current coordinate file. The current coordinate file can be set with the Set Coordinate File command. Edit Points shows all the points in the coordinate file. New points can be added and points can be deleted by using the Insert and Delete keys.

This tool also lets you edit notes associated with each point. While the standard point description is limited to 32 characters, the drawing notes are not. When you click on a given point, you can add numerous lines of notes about that point in the bottom of the dialog. Keep in mind that these notes are stored in a separate file with the extension ".not" having the same name as the CRD and residing in the same folder.

Pull-Down Menu Location: Points
Keyboard Command: EDITPT
Prerequisite: None
File Name: \lsp\rawedit.arx

Coordinate Data Sheet

File Edit Search

	Point#	Northing	Easting	Elevation	Description
1	1	79409.6709485	15565.2755448	1357.0000000	IP/EDGE ROAD
2	2	79257.0511942	15502.9397236	1452.0000000	T/H CL DITCH
3	6	79613.6619975	15619.7250234	1481.1700000	
4	7	79658.3581236	15636.0962271	1498.3700000	
5	8	79703.1481491	15652.5018241	1530.4500000	
6	9	79744.4638959	15667.6348696	1545.9700000	
7	45	79547.4889989	15488.9903904	1434.6000000	
8	46	79579.8843004	15500.8560738	1457.3500000	
9	47	79576.7856194	15499.7210954	1452.1500000	
10	48	79637.1629494	15521.8359777	1460.0500000	
11	49	79681.6431645	15538.8606539	1489.7300000	
12	50	79768.9977415	15570.1241501	1543.2000000	

Point 1 Notes

1	A lengthy note about the first point goes here.
2	You can add as many lines as you would like.
3	

Erase Points

Function

This command erases SurvCADD points inserts from the drawing. The points to erase can either be selected from the screen or specified by point number. Erasing a SurvCADD point will erase the point symbol, point attributes, and point node. The points may optionally be erased from the coordinate file. As long as the points are not deleted from the coordinate file, they can be redrawn with *Draw-Locate Points*.

Prompts

Select points from screen or by point number (Screen/<Number>)? *Press Enter*
Point numbers to erase: *1-5*
Delete points from coordinate file (Yes/<No>)? *Press Enter*
Erasing SurvCADD Points ....
Number of points erased > 5

Pull-Down Menu Location: Points
Keyboard Command: DELPT
Prerequisite: SurvCADD points to be erased
File Name: \lsp\delpt.lsp

Translate Points

Function

This command translates points in a coordinate file. The delta X, Y, and Z can be entered directly or calculated from original and destination coordinates. The coordinates can be entered directly, specified by point number, selecting the point number from a point list by selecting the list icon, or selected from the screen by selecting the pick icon. Any points in the drawing will be updated automatically in addition to updating the coordinate file.

After selecting okay to the translate points dialog, the range of Points to Translate dialog will appear. On this dialog, the range of points to translate is specified, and the description of points to translate is specified, if translating only points with certain descriptions. If all the points are to be translated, no matter what the description, in the range of points field the word "ALL" can be input while leaving an asterick (*) in the description match.

Various output options for the translated points are available.

Overwrite Existing Coordinates will overwrite the existing coordinate points with the new translation coordinates thus changeing the coordinate values in the existing crd file.

New Point Numbers will assign new point numbers to the translated coordinate points and leave the original coordinate points unchanged and present in the coordinate file. When using this option, on the Range of Points to Translate dialog, there is a Value to add to point numbers field. In this field, enter the value to add to the point numbers. For example if the existing point numbers are 1-20, and the value to add is 100, the resulting new point numbers will begin at 101 and end at 120.

New CRD File will place the translated coordinates in a new crd file. After selecting okay to the range of points to translate dialog, the Coordinate File to Create dialog will appear. On this dialog enter the name of the new crd file and select save. The original crd file will remain unchanged and the new file will contain the points with the translated coordinates.

The AutoCAD command *MOVE* can be used to translate points on the screen but this does not update the coordinate file unless you have the option Link Points with CRD File turned ON in *Configure SurvCADD*. (Note: This toggle
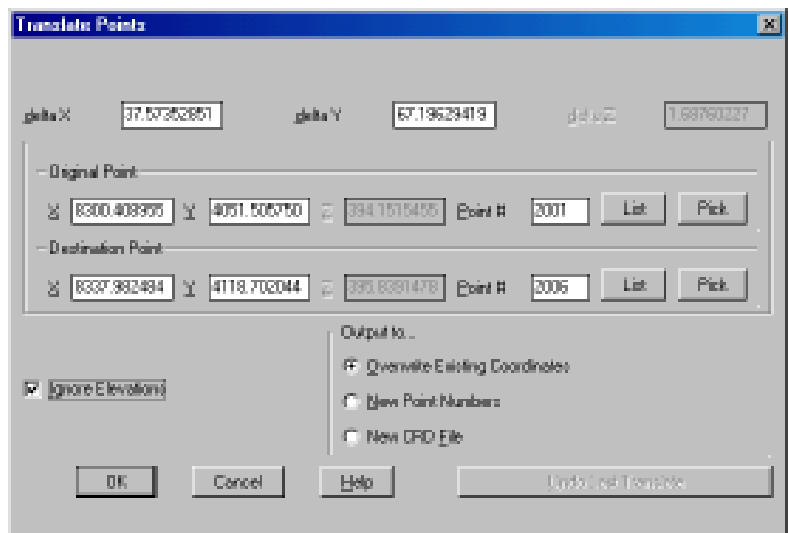
must have been turned ON prior to locating the points). If you do use the *MOVE* command and the CRD file needs updating, run the command *Update CRD file From Drawing* found in *Coordinate File Utilities*.

Ignore Elevations: When checked, elevations are ignored during translation. If uncecked, this option can be used to translate the points from an assumed elevation to a true elevation. Example: After data collection is complete and a true elevation is established on one of the points, uncheck this option and enter the elevation difference between the assumed and the true elevation of the point. If point 1 has an assumed elevation of 100 and then it is determined that the true elevation is 105.16, then 5.16 is entered in the delta z field. After this the translation is continued as described above with all the output options available.
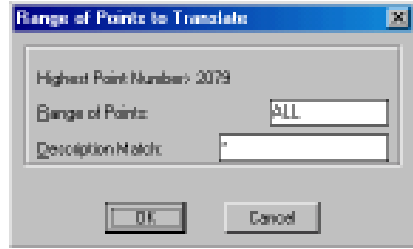
Pull-Down Menu Location: Points
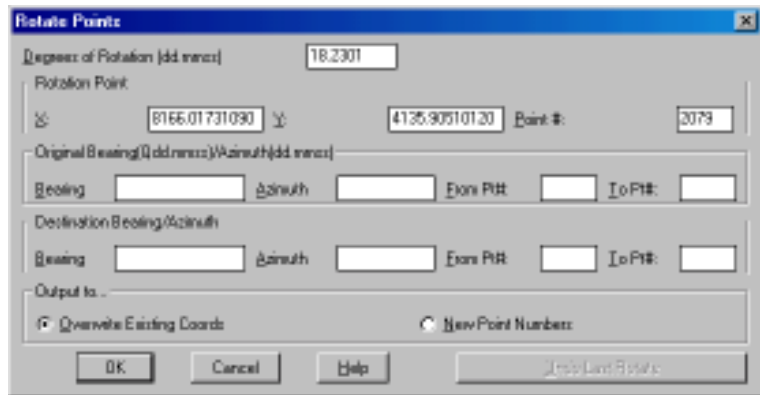**Keyboard Command:** transpt
Prerequisite: points in a coordinate file
File Name: \lsp\crdutil.arx

Rotate Points

Function

This command rotates points in a coordinate file. The degrees of rotation can be entered directly or calculated from original and destination bearings or azimuths. The bearings and azimuths can be entered directly or specified by point numbers. Any points in the drawing will be updated automatically in addition to updating the coordinate file.

Pull-Down Menu Location: Points
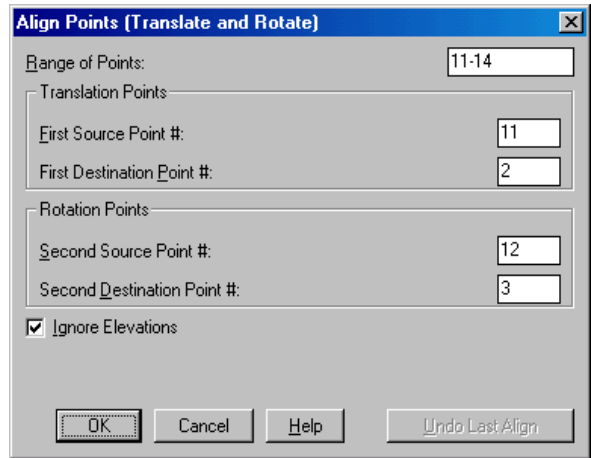**Keyboard Command:** rotatept
Prerequisite: points in a coordinate file
File Name: \lsp\crdutil.arx

Align Points

Function

This command translates based on a source point and destination point and then rotates to align the first source point and a second source point with the first destination point and a second destination point. The AutoCAD *ALIGN* command can be used to align points on the screen but this does not update the coordinate file.
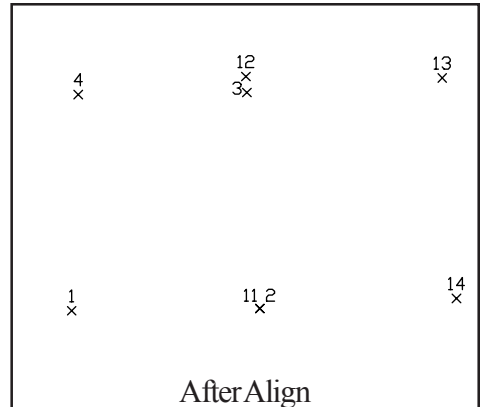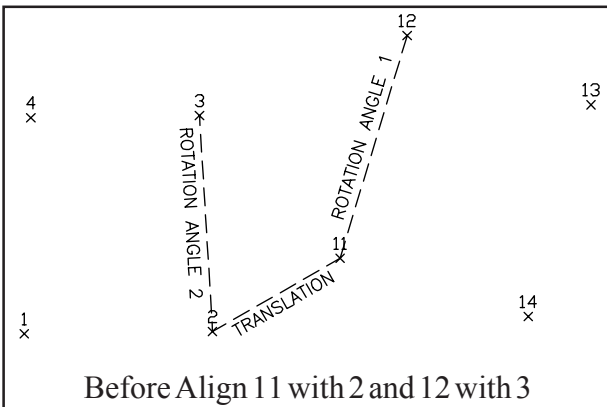
Pull-Down Menu Location: Points
Keyboard Command: alignpt
Prerequisite: points in a coordinate file
File Name: \lsp\crdutil.arx


Before Align 11 with 2 and 12 with 3

After Align

Scale Points

Function

This command scales points in a coordinate file. The northing, easting and optionally the elevation are multiplied by the specified scale factor. You can use this routine for metric-English conversion or a specific conversion by choosing the Use Customized Scale Factor option and specifying the desired Scale Factor in the edit box.

The AutoCAD command *SCALE* can be used to scale points on the screen from a reference point but this does not update the coordinate file.

Pull-Down Menu Location: Points
Keyboard Command: scalept
Prerequisite: points in a coordinate file
File Name: \lsp\crdutil.arx
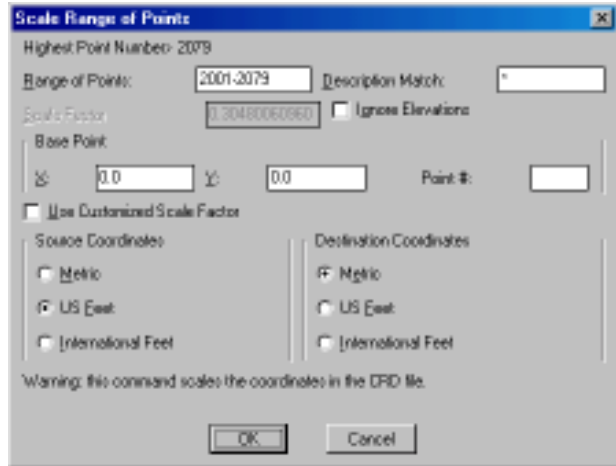
Move Points

Function

This command allows you to move SurvCADD points, one at a time by selecting any part of the point. Each SurvCADD point is made of three entities: an AutoCAD POINT entity, a symbol, and a point block with the point number, elevation and description. All these parts of the point are moved together with this routine. The point is only moved in the drawing. The coordinate file is not updated unless the points were located while the *Link Points with CRD File* toggle was turned on. This toggle is found in the General Settings part of *Configure SurvCADD*. As mentioned, points located while this setting is off will not be updated in the CRD file, you may update the CRD file by using the *Update CRD file from Drawing* command found in *Coordinate File Utilities*.

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points
Keyboard Command: MPNT
File Name: \lsp\mpnt.lsp

Edit Point Attributes

Function

This command will edit the attributes of a SurvCADD point such as the symbol type, point number, elevation and description. When this command is invoked, the command line will prompt the user: **Select SurvCADD point to edit (Enter to end)**. At this point, you can select any part of the point including the symbol, elevation, point number or the description. Next, a dialog will appear as shown.

To change the symbol, either type in a new symbol name in the edit box, or choose the "Select Symbol" button where you can choose from a list of symbols. To change any of the other properties of the point, simply change or replace the contents of the edit box with the new information. If you change the point number to a number that already exists in the current CRD file, and point protect is ON, you will be prompted **[O]verwrite w/new coordinates, overwrite [A]ll, or use number <1000>:.** You can choose to use the next available point number in the CRD file (this is the default) or overwrite the point number. The properties that you modify with this command will update the current CRD file and the screen entities.

You may also choose to use the AutoCAD *DDATTE* command to change the attributes of a point. If you do this, then the CRD file will not be updated and if you change the elevation attribute, the point will not change its current Z location.

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points
Keyboard Command: EDITPNT
File Name: \lsp\editpnt.lsp

# Edit Multiple Pt Attributes

Function

This function allows you to modify certain properties of multiple point attributes. For example, you could rotate the elevation text of some points to 45 degrees or change the height of the description text for all the points in the drawing.

One attribute type (point number, elevation or description) can be changed at a time. If you wish to modify two attributes such as the elevation and the point number, simply edit one of them then repeat the command.

For each attribute, you can change any number of the properties (layer, height, etc.) at one time. The dialog will reflect the current status of each attributes properties. If you select 10 points and 5 of them have the elevation rotation set at 45 degrees and the other 5 are set at 0 (zero) degrees,

then the rotation edit field will say *varies* to let you know that the properties of the points you selected are not the same.

The X location refers to the distance in the X direction from the center (or insertion point) of the point symbol. The Y location refers to the distance in the Y direction from the center (or insertion point) of the point symbol. The Layer refers to the layer of the individual attribute, not the entire attribute block. The Height is expressed in real units (generally feet or meters), not plotted size. The Rotation angle is expressed in absolute decimal degrees.
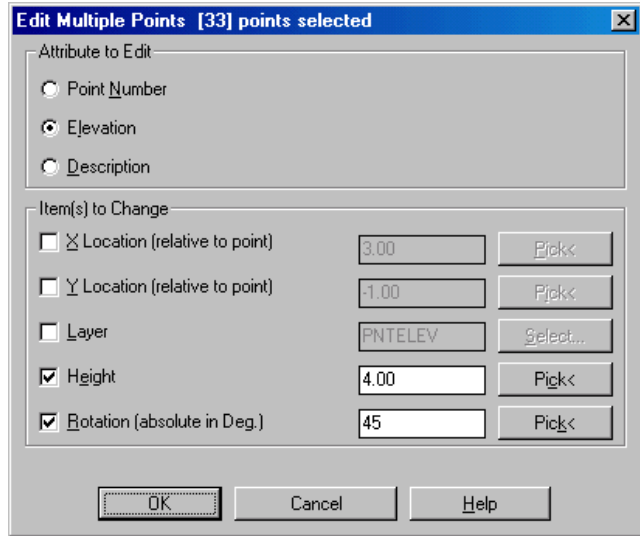
The Pick buttons allow you to pick two points to define a distance (or angle in the case of Rotation). If you want to select a line to define a distance or angle, select two points on the line with the appropriate OSNAP.

Prompts

Select objects: *pick point entities*
Edit Multiple Points dialog
The number of points selected will be shown in the dialog title. By default, the Elevation attribute will be selected to edit. You may only edit one attribute at a time. In this example, suppose we want to rotate the elevation text to a 45 degree angle and double its size. Click on the Rotation checkbox. Then type in the new rotation angle or press the Pick button to choose an angle on the screen. For this example, simply type 45 in the edit box. Next we want to double the elevation text size, so click on the Height check box and type 4.00 in the box (our old size was 2.00). The dialog should now look as shown. Press OK.

Before

After
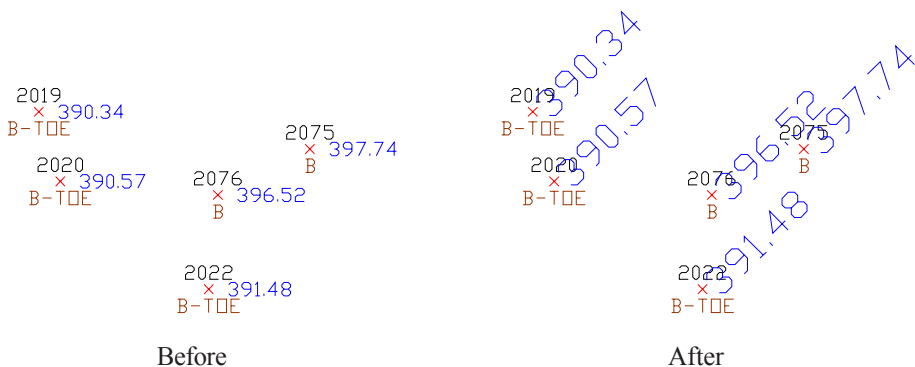
Move Point Attributes

Function

This command allows the user to move SurvCADD point attributes (including the point number, elevation or description) one at a time.

Prompts

Select Point Number, Elevation, or Description to Move: *(select point attribute)*
Pick new location: *Pick point*
Pick new angle: *Pick new angle or Press Enter*

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points
Keyboard Command: movepnt
File Name: \lsp\surv1.lsp

Scale Point Attributes

Function

This command will scale point attribute text (number, elevation and descriptions) and point symbols up or down in size. The routine prompts for a scale multiplier and a selection set of objects. If you want to enlarge, enter a value greater than one. If you want to reduce, enter a decimal fraction such as .5. This would reduce the text size by 50%. This command is very useful if you have set up your drawing for one plotting scale and decide to change to a new plotting scale. This command has the added benefit that it will adjust the point attributes and symbols to a new screen twist angle.

Prompts

Scaling Multiplier : *2.5*
This response would enlarge the point attributes and symbols by 250 percent.
This command will adjust the point attributes to the current screen twist !
Select SurvCADD Point Attributes & Symbols to Enlarge/Reduce.
Select objects: *C*
First corner: *(pick point)*
Other corner: *(pick point)*
Select objects: *[Enter]*
Number of entities changed 30

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points
Keyboard Command: pntenl
File Name: \lsp\pntenl.lsp

Erase Point Attributes

Function

This command allows you to erase point attributes like the number, elevation or description individually by picking on the attribute to erase.

Prompts

Select Point Number, Elevation, or Description to Erase: *(select point attribute)*

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points
Keyboard Command: erasepnt
File Name: \lsp\surv1.lsp

Twist Point Attributes

Function

This command will rotate the orientation of the text of SurvCADD point attributes (point #, elevation, description) and point symbols. The Twist Screen option aligns the point attributes to appear horizontal in the current twist screen. The Azimuth option allows you to enter an azimuth or pick two points to align the point attributes. The Entity Segment option aligns the point attributes by the selected line or polyline segment in the direction the entity is drawn. The Follow Polyline option aligns the point attributes by the polyline segment that is closest to the point.

Prompts

Twist by (<Twist Screen>/Azimuth/Entity segment/Follow polyline): *F for follow*
Select polyline to follow: *pick a polyline*
Select SurvCADD Point Attributes & Symbols to Rotate.
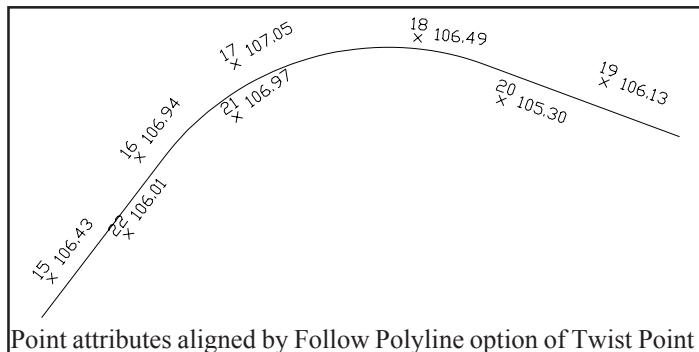**Select objects:** *pick the SurvCADD point inserts*

Pull-Down Menu Location: Points
Prerequisite: None
Keyboard Command: twistpts
File Name: \lsp\twist_pt.lsp

Point attributes aligned by Follow Polyline option of Twist Point

Resize Point Attributes

Function

This command sets the size of the selected point attributes (point number, elevation, description) and point symbols. This command is similar to Scale Point Attributes but instead of scaling the size by a factor, all the select points are set to the same specified size.

Prompts

Enter point attribute and symbol size <4.0>: *Press Enter*
Select SurvCADD Point Attributes & Symbols to resize.
Select objects: *pick the point entities*
Finding SurvCADD Point Attributes....
Number of entities changed > 39

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points
Keyboard Command: sizepnt
File Name: \lsp\sizepnt.lsp

Trim by Point Symbol

Function

This command will trim lines and polylines that pass through the selected point symbols such that the lines do not appear within the symbol. This should be a last step because this routine explodes the points and modifies the lines and polylines by trimming which makes these entities unusable by some of the other Cogo routines.
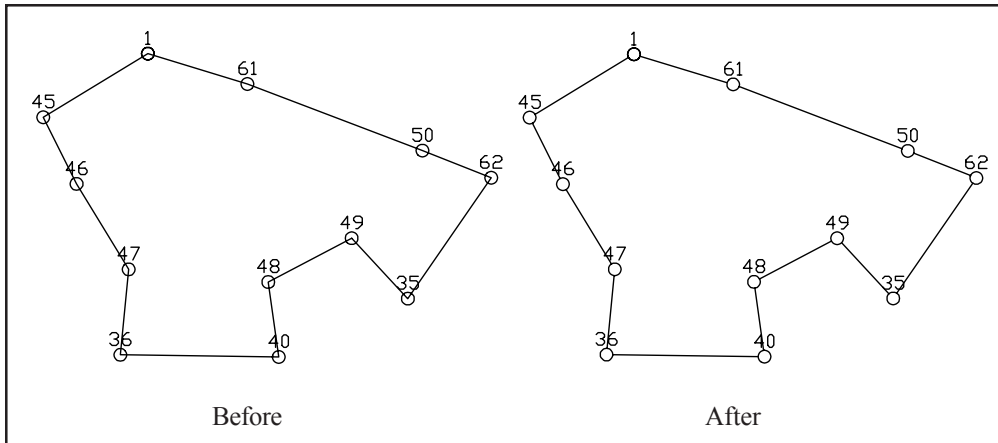
Prompts

Select SurvCADD point symbols to trim against.
Select objects: *select the point symbols*

Pull-Down Menu Location: Points
Prerequisite: SurvCADD point symbols.
Keyboard Command: trimpts
File Name: \lsp\trim_pts.lsp

Trim by Point Symbol

Change Point Layer/Color

Function

This command changes the layer and optionally the color of SurvCADD points. The points are initially put in the layer set in Point Defaults. The symbol, point number, elevation and description are in the layers PNTMARK, PNTNO, PNTELEV, and PNTDESC. To change the point attribute colors, this routine creates new attribute layers based on the new layer name. For example, TRAVMARK, TRAVNO, TRAVELEV and TRAVDESC. These new layers can be given different colors. To select an attribute color, pick on the color button. To permanently change attribute colors, edit the drawing SRVPNO1.DWG in the SurvCADD SUP directory. To permanently change a symbol color, edit the symbol drawing itself.

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points
Keyboard Command: pntchg
File Name: \lsp\pntchg.lsp
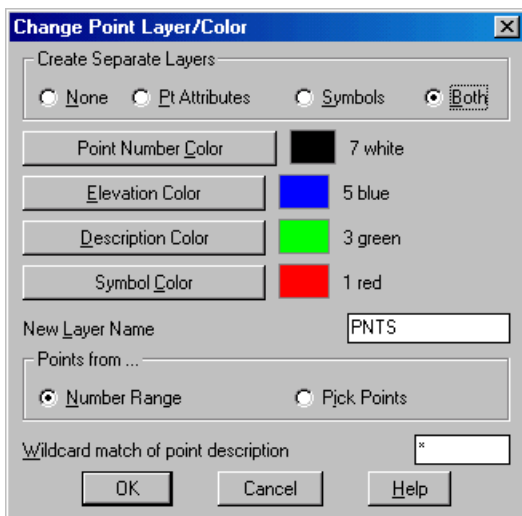
Renumber Points

Function

This command will edit the point number attributes of a group of SurvCADD points. The command prompts for the user to enter the point number difference. Enter the positive or negative amount you would like to have added/subtracted from the current value.

Prompts

Point Number difference <1>: *100*
This response would add 100 to the current point number value.
Select objects: *(select a point number or a group of points by window or crossing)*
The command then edits the point numbers and prints the numbers changed.
The command warns:
This command DOES NOT change the numbers in the CooRDinate file!
Use CooRDinate File Utilities menu option Update from Drawing to update the file.

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points
Keyboard Command: renumpt
File Name: \lsp\renumpnt.lsp

Explode SurvCADD Points

Function

This command can be useful if you need to send your drawing to another firm who does not have AutoCAD/SurvCADD. Drawing transfer problems occur when the receipent does not have the same block/inserts defined or available. This command explodes all blocks and replaces the SurvCADD point attributes with TEXT entities of the same value. **Caution:** After using this command, the link between the points and the coordinate file are destroyed and you can no longer extract the attributes from the drawing. If you want to use this command but retain your point information, follow these steps:
1. Save your drawing
2. Run this command to explode the points
3. Execute the SAVEAS command and save the drawing as a different name (you can also choose DXF format if you wish).
4. Exit the drawing **without** saving.

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points
Keyboard Command: explode_scad
File Name: \lsp\scexp.lsp

Convert CRD PC<->Unix

Function

The coordinate file in SurvCADD is a binary file. The order of bytes differs between Intel based PC computers and Unix Sun or Silicon Graphics computers which makes directly reading coordinate files across these systems impossible. This command enables exchange of coordinate files by converting the coordinate file between these two formats. Given a PC format .crd file, this command outputs a Unix format file. Given a Unix format .crd file, this command outputs a PC format file. Running the routine twice on the same file would have no effect..

Pull-Down Menu Location: Points
Prerequisite: a .crd file
Keyboard Command: bconvert
File Name: \lsp\bconvert.lsp

Convert Surveyor1 to CRD

Function

This command will convert a Surveyor1 coordinate file to the current SurvCADD format
Pull-Down Menu Location: Points
Prerequisite: a Surveyor1 coordinate file
Keyboard Command: SURVEYOR2CRD

Convert CRD to TDS CR5 / TDS CR5 to CRD

Function

These commands convert coordinate file formats between a SurvCADD CRD file and a TDS CR5 file. Both of these file formats are binary which require these special routines. These commands will prompt for the file names to process.

Pull-Down Menu Location: Points
Prerequisite: A CRD or CR5 file
Keyboard Command: crd_cr5, cr5_crd
File Name: \lsp\cogoutil.arx

Convert SurvCADD CRD to C&G CRD / C&G CRD to SurvCADD CRD

Function

These commands convert coordinate file formats between a SurvCADD CRD file and a C&G CRD file. Both of these file formats are binary which require these special routines. Each command has a dialog containing controls to the file names.

Pull-Down Menu Location: Points
Prerequisite: A SurvCADD CRD or C&G CRD file
Keyboard Command: crd2cg, cg2crd

Convert CRD to LDD MDB

Function

This command converts a SurvCADD CRD file into an Autodesk Land Development Desktop (LDD) point database file in Access MDB format. The LDD point database always has the file name of POINTS.MDB. So to specify the LDD file to create, you only need to specify the directory/path and not the file name. This path corresponds to the LDD project directory. The conversion program has point protect so that if a point number from the CRD file already exists in the LDD file then you will be prompted to skip or replace the point.

Pull-Down Menu Location: Points
Prerequisite: a .CRD file
Keyboard Command: crd_ldd
File Name: \lsp\gisutil.arx

Convert LDD MDB to CRD

Function

This command converts an Autodesk Land Development Desktop (LDD) point database file into a SurvCADD CRD file. The LDD point database always has the file name of POINTS.MDB and is stored in the LDD project directory.

Pull-Down Menu Location: Points
Prerequisite: an LDD point database file
Keyboard Command: ldd_crd
File Name: \lsp\gisutil.arx

Convert Points to AECC_POINTS / Convert AECC_POINTS to Points

Function

These commands convert point objects in the drawing between SurvCADD point blocks and AECC_POINT objects. AECC_POINT objects are used in Autodesk Land Development Desktop. AECC_POINT objects can also be read into the current CRD file by using the command *Update CRD from Drawing* in *Coordinate File Utilities*, this updates the CRD file without modifying the screen entities.

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points or AECC_POINT objects
Keyboard Command: pt_aec, aec_pt

Convert Points to Softdesk

Function

This command converts SurvCADD point blocks in the drawing to Softdesk point blocks. These point block formats are similar and converting only requires reordering and renaming the attributes.

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points
Keyboard Command: 2soft
File Name: \lsp\2soft.lsp

Convert Softdesk to Points

Function

This command converts Softdesk point blocks in the drawing to SurvCADD point blocks. These point block formats are similar and converting only requires reordering and renaming the attributes. Softdesk points can also be read into the current CRD file by using the command *Update CRD from Drawing* in *Coordinate File Utilities*, this updates the CRD file without modifying the screen entities.

Pull-Down Menu Location: Points
Prerequisite: Softdesk points
Keyboard Command: 2surv
File Name: \lsp\2surv.lsp

Convert Leica to Points

Function

This command converts LisCad or Leica point blocks in the drawing to SurvCADD point blocks. These point block formats are similar and converting only requires reordering and renaming the attributes. Leica points can also be read into the current CRD file by using the command *Update CRD from Drawing* in *Coordinate File Utilities*, this updates the CRD file without modifying the screen entities.

Pull-Down Menu Location: Points

Prerequisite: Leica points

Keyboard Command: 2surv3

Convert Geodimeter to Points

Function

This command converts Geodimeter point blocks in the drawing to SurvCADD point blocks. These point block formats are similar and converting only requires reordering and renaming the attributes. Geodimeter points can also be read into the current CRD file by using the command *Update CRD from Drawing* in *Coordinate File Utilities*, this updates the CRD file without modifying the screen entities.

Pull-Down Menu Location: Points

Prerequisite: Geodimeter points

Keyboard Command: 2surv4

Convert Points to Eagle Point

Function

This command converts SurvCADD point blocks in the drawing to Eagle Point point blocks. These point block formats are similar and converting only requires reordering and renaming the attributes.

Pull-Down Menu Location: Points
Prerequisite: SurvCADD points
Keyboard Command: 2eds

Convert Eagle Point to Points

Function

This command converts Eagle Point point blocks in the drawing to SurvCADD point blocks. These point block formats are similar and converting only requires reordering and renaming the attributes. Eagle Point points can also be read into the current CRD file by using the command *Update CRD from Drawing* in *Coordinate File Utilities*, this updates the CRD file without modifying the screen entities.

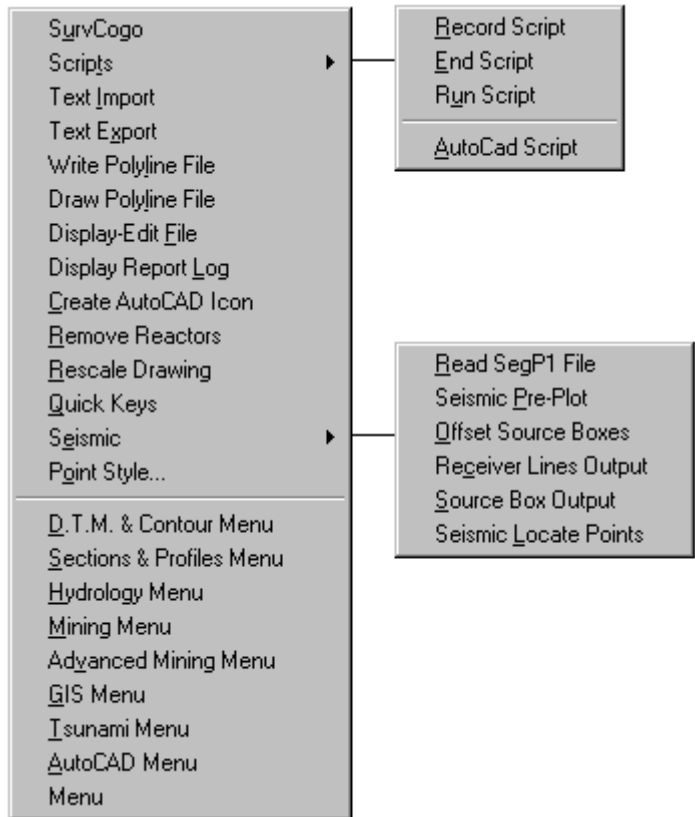**Pull-Down Menu Location:** Points
Prerequisite: Eagle Point points
Keyboard Command: 2surv2
File Name: \lsp\2surv2.lsp

Misc Menu Commands

The Misc menu has commands for text import/export, defining command shortcuts and accessing other SurvCADD modules. The Misc menus of the COGO-Design, Section-Profile and Mining modules have additional commands that are specific to those modules.

Menu contents:

- SurvCogo
- Scripts ▶
  - Record Script
  - End Script
  - Run Script
  - AutoCad Script
- Text Import
- Text Export
- Write Polyline File
- Draw Polyline File
- Display-Edit File
- Display Report Log
- Create AutoCAD Icon
- Remove Reactors
- Rescale Drawing
- Quick Keys
- Seismic ▶
  - Read SegP1 File
  - Seismic Pre-Plot
  - Offset Source Boxes
  - Receiver Lines Output
  - Source Box Output
  - Seismic Locate Points
- Point Style...

- D.T.M. & Contour Menu
- Sections & Profiles Menu
- Hydrology Menu
- Mining Menu
- Advanced Mining Menu
- GIS Menu
- Tsunami Menu
- AutoCAD Menu
- Menu

SurvCOGO

Function

SurvCOGO is a DOS based COGO program. It is optionally included with SurvCADD for those users who still perform some tasks in this enviroment. SurvCOGO is limited to working with numeric coordinate (.CRD) files. Make sure that the coordinate (.CRD) file format is not set to alphanumeric in *Configure SurvCADD*.

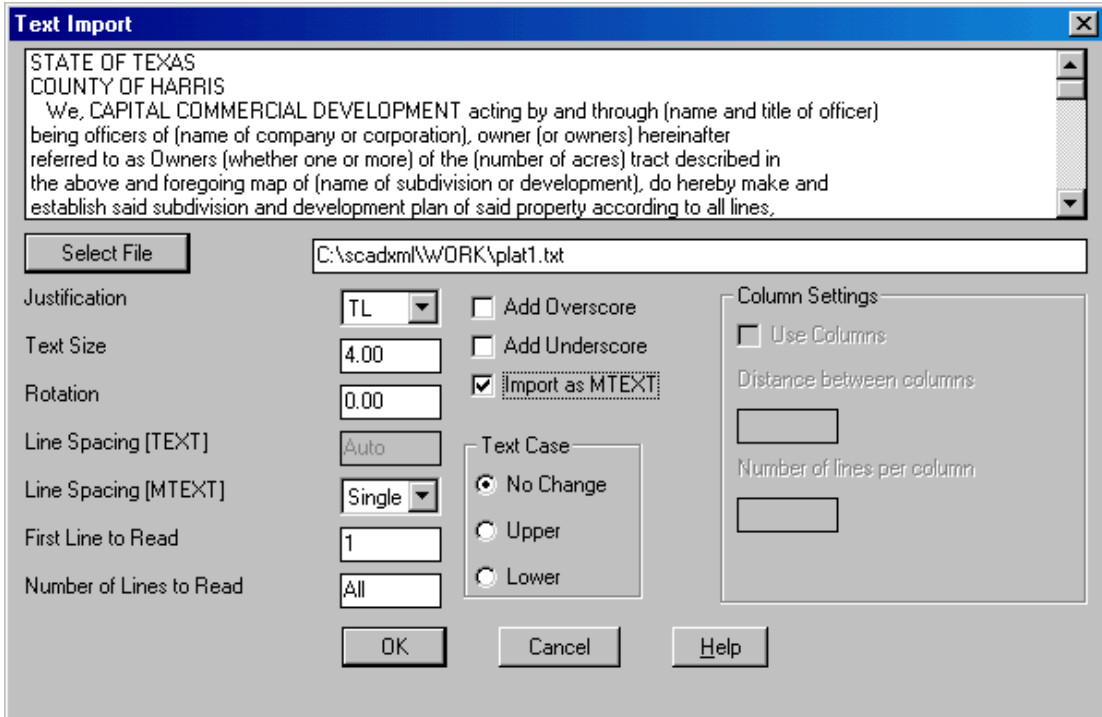Contact Carlson Software for prices and availability on SurvCOGO manuals.

Keyboard Command: scogo
Pull-Down Menu Location: Misc

Text Import

Function

This command allows you to import an ASCII file into an AutoCAD drawing. The Text Import dialog is displayed as shown.

Select File: Pick this button to select the text file using a standard windows file selection dialog. After you select the file name it will be displayed in the edit box to the right. You may also type in the file name. A preview of the selected text file will be displayed above. If you type in a file name that is not found, the preview window will report [File not found]

Justification: Specify the text justification. See the AutoCAD Reference Manual for available options.

Text Size: Specify the text height.

Rotation: Specify the text rotation angle.

Line Spacing [TEXT]: Specify the line spacing in AutoCAD units. The default and recommended value is Auto which is approximately 1.71 units. This value varies depending on the font used in the current textstyle.

Line Spacing[MTEXT]: Specify the line spacing. See the AutoCAD Reference Manual for a detailed description of the available options.

First Line to Read: Specify the line number of the first line to read. For example, if you are importing a file that includes 4 lines of header information that you do not want, set this value to 5.

Number of Lines to Read: Specify how many lines of the file to read. For example, if you only wanted to import the first 3 lines of a text file, set the First Line to Read (described above) to 1 and set this value to 3.

Add Overscore: If checked, all imported text will include an overscore.

Add Underscore: If checked, all imported text will be underlined.

Import as MTEXT: If checked, text will be imported as a single MTEXT entity, otherwise text will be imported as individual TEXT entities.

Text Case: Imported text can either be changed to all upper case, all lower case, or select No Change to leave text as it is.

Column Settings: Only available if Import as MTEXT is not checked. Allows you to import text into columns. Specify the distance between columns and the number of lines per column.

> *Alternative Method*: ASCII Text can be quickly imported as MTEXT by copying the text onto the Windows clipboard, then in AutoCAD, use the command *Pasteclip*.

Keyboard Command: textin
Pull-Down Menu Location: Misc
Prerequisites: None
File Name: \lsp\asctxt.lsp

Text Export

Function

This command allows you to export AutoCAD Text entities to an ASCII file. Selected text is sorted during export so you can use a window selection method.

Prompts

Text File to Export: *Specify file name in this standard Windows dialog*
Select text entities to write to file.
Select objects: *W*
First corner: *(pick point)*
Other corner: *(pick point)* **5 found**
Select objects: *[Enter]*

Pull-Down Menu Location: Misc
Keyboard Command: textout
Prerequisite: Text entities
File Name: \lsp\txtout.lsp

Display-Edit File

Function

This command allows you to edit or review an ASCII/text file. Files are displayed in the *Standard Report Viewer* which is described in detail in Chapter 1.

Pull-Down Menu Location: Misc
Prerequisite: A file to edit.
Keyboard Command: scedit
File Names: \lsp\scedit.lsp, \lsp\scadutil.arx & \lsp\scedit.dcl

Display Report Log

Function

This command brings up the *Standard Report Viewer* for the accumulated report log. The report log is created by certain SurvCADD commands such as Inverse that have command output. The Generate Report Log option in *Configure SurvCADD* must also be on to create a report log. The *Standard Report Viewer* is described in detail in Chapter 1.

Pull-Down Menu Location: Misc
Prerequisites: a report log
File Name: \lsp\scadutil.arx

Quick Keys

One frustration of using AutoCAD is when your command initialization cannot keep up with your train of thought, and you are constantly seeking the fastest way to initiate commands. Quick Keys can provide an enormous time savings on initiating keyboard commands. Numerous command aliases are already set up for you, which you can customize easily. You can also add any new commands quickly and easily using the Quick Keys editor, without leaving AutoCAD. The Quick Keys are so productive, that even dedicated menu users appreciate, and use them.

The Quick Keys Editor can be broken down into areas. The list box at the top of the screen, edit fields, list control buttons, and program control buttons. Each area and button is explained below.

List Box: Contains a list of the loaded quick keys. There are usually more items than will display on the list box. Use the scroll bar to move up and down through the list. Picking on an item in the list box makes it the current item, which can be affected by nearly all edit commands explained below.

Edit Fields: When an item on the list box is picked, its record is displayed in the edit fields. Each record item consists of up to a 5 character quick key (the portion typed in at the AutoCAD command

line), and a long command or AutoLISP expression. Note that if you are adding a shortcut to a lisp function, you must use the following syntax: (C:FUNC) where FUNC is the command name. There are several examples of this included with Quick Keys.

If you intend to make changes in an item, use standard editing procedures, including the use of arrow keys along with the tab key and/or pointer movements to make changes. Once changes to a key have been made, you must use the *UPDATE* or *ADD* options explained below. Pressing enter on either field will have no effect on the item in the list. Choosing the CLEAR button at the end of the edit fields erases the contents of both edit fields allowing you to enter new fields not based on existing records. However, it is fairly efficient to select an item that has nearly what you need in a command, make changes, then add the modified record as a new item.
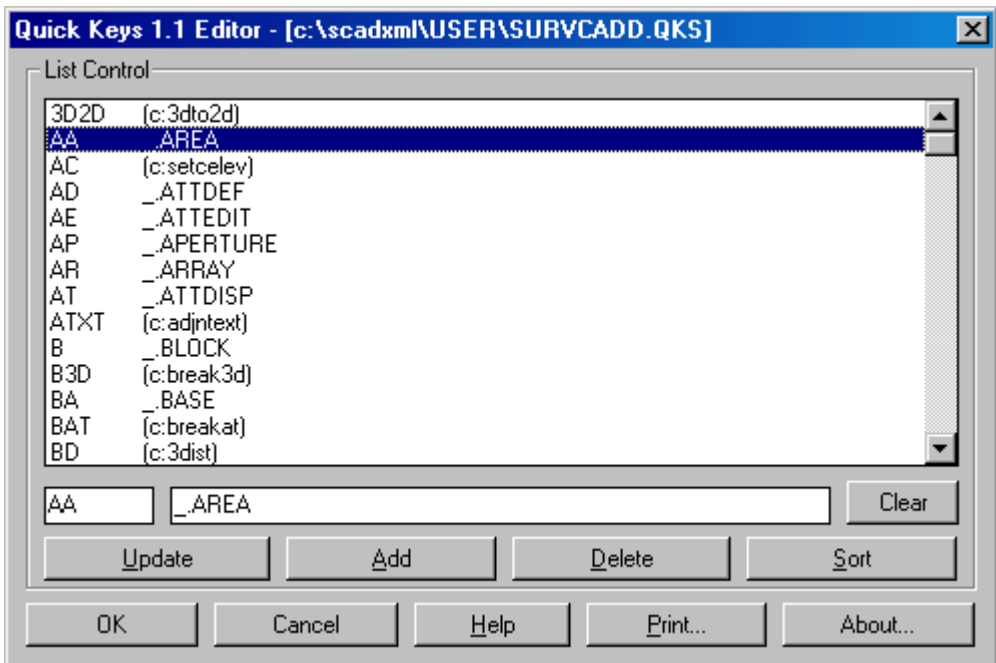
List Control: Changes made to items are not automatically changed in the list, you must use the ADD or UPDATE buttons to record changes to be saved.

Update: When changes have been made to an existing record, this button must be pressed to make the changes effective in the list. Pressing enter on the edit fields do not record changes. After the changes are made the item will remain the highlighted item in the list.

Add: When a new item has been created in the edit fields, you must choose this button to add the item to the list. Pressing enter on the edit fields do not add new items. The newly added item will appear at the bottom of the list and will be highlighted.

Delete: Highlight the item you wish to delete in the list box, then press this button to remove it from

the list. In the event you accidentally delete items, simply choose Cancel to exit without saving changes.

Sort: At any time during processing of Quick Keys (except during a UPDATE or ADD operation), you may choose the sort button to sort the list of Quick Keys. The most common use of sort will be after adding several new items to the list.

Program Control: The options presented here are used to control files. Changes made to the Quick Keys table are stored when exiting the dialog with the OK button. The original key definition file supplied is called SURVCADD.QKS. However, when you make changes for the first time and use the OK button to exit the dialog, the program writes changes to a file called CUSTOM.QKS. The Quick Keys editor looks for the existence of the file CUSTOM.QKS when loading, and will use this file when available. This approach will shelter your (CUSTOM.QKS) from overwrites if you reinstall SurvCADD.

OK: When all changes are complete, choose the OK button to save changes, which will automatically build and load the run time file. Any Quick Keys added or updated will be immediately available at the command prompt. However, if a key definition was deleted, it will not be removed from memory until another drawing is loaded or you begin a new drawing.

Cancel: Exits the Quick Keys dialog without making any changes to your system.

Print: This option is used to obtain a printed list of the Quick Keys currently loaded. First consider sorting the list, then use this option and enter a filename. The program will write the list to a file that can be brought into any editor or word processor, then printed.

Pull-Down Menu Location: Misc
Keyboard Command: quickkey
Prerequisite: none

Create AutoCAD Icon

Function

This command will create an icon on your desktop to launch plain AutoCAD. Many people assume that the stock AutoCAD icon will launch plain AutoCAD, this is not always true. The problem occurs because if no profile is specified, AutoCAD always starts with the last used profile. If you run SurvCADD, then exit and then execute the stock AutoCAD icon (which does not specify a profile) SurvCADD loads anyway.

When you run this command, an AutoCAD profile called Vanilla is created and a AutoCAD icon is created on the desktop that specifies this startup profile.

Technical Note: In its attempt to create the vanilla profile, this routine removes references to SurvCADD from the support file search path and replaces the SurvCADD menu with the stock AutoCAD menu. If the program cannot locate the AutoCAD menu (due to it being deleted or moved), you may have to create the icon manually. The Carlson Software website includes this detailed procedure.

Remove Reactors

Function

This command removes the reactor links from the selected points, text, polylines and lines. This disables the links for points to the coordinate (.CRD) file, annotation with linework and linework with points. Reactors can be turned off for entities created later by clicking off these three link options in *Configure SurvCADD*.

Prompts

Select entities to remove reactors from:
Select objects: *pick the entities*

Pull-Down Menu Location: Misc
Keyboard Command: delreact
Prerequisite: Entities with reactors
File Name: \lsp\crdutil.arx

Keyboard Macros/Commands

There are some keyboard macros/commands defined by the SCAD.LSP file that are automatically loaded. You can type these commands at the AutoCAD Command prompt.

SZ
Prompts and sets the symbol size.
TS
Prompts and sets the text size.
TO
Prompts and sets the offset divisor for bearing/azimuth and distance text.
D0
Sets the linear units precision to 0 decimal places.
D1
Sets the linear units precision to 1 decimal place.
D2
Sets the linear units precision to 2 decimal places.
D3
Sets the linear units precision to 3 decimal places.