AutoPLAN 2.0
User's Guide

Floor Plan and Elevation Generation
within AutoCAD

License Agreement

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Introduction

AutoPLAN is an architectural plan generator developed for use within AutoCAD, the leading CAD software on the market. Due to the enormous demands placed on today's designers the need for a set of tools to increase not only productivity but also the accuracy of construction documents influenced the creation of **AutoPLAN**.

AutoPLAN was written with ease of use in mind because it was written by designers who draw in AutoCAD day in and day out. They felt the need to go beyond the graphic engine provided by Autodesk in the form of AutoCAD and supply not only a set of tools to increase productivity, but also a "user friendly" interface to place these tools at your fingertips.

AutoPLAN implements the use of AutoLisp routines to parametrically create many objects such as walls, doors and windows eliminating the need for cumbersome blocks. Where needed highly detailed blocks are used and can be accessed through either pull-down or icon menus.

Complete layer control is achieved through the "AutoLayering" of all symbols, routines and helpful point-n-click utilities. You may never use the layer dialogue box again! Notation of the document has been simplified with many utilities and symbols.

Future releases of **AutoPLAN** will increase the productivity you will enjoy from using our product. Your input as a user is vital to the adaptability of **AutoPLAN** to fit most every architectural need. Through continued development the usefulness of **AutoPLAN** will only increase.

We at **AutoPLAN** appreciate your business and hope you find this software to be one of the most used tools in your collection.

With regards,

Timothy K. Bose
Developer of AutoPLAN

Chapter 1 - Getting Started

Chapter 1 details the methods of starting **AutoPLAN** and the system requirements of your computer.

System Requirements

To use **AutoPLAN** the following requirements must be met.

- IBM compatible PC with a 386 or higher processor.
- 16 MB of RAM *(minimum)*, 32-64 MB recommended.
- AutoCAD R12, R13, R14 or 2000.
- A VGA display of 640 X 480 @ 16 colors *(minimum)*, 256 colors recommended.
- Windows 95 or higher (*for installation only*). If installing on a machine with Dos or Windows 3.11, please call technical support for installation instructions.

Installation of AutoPLAN

To install **AutoPLAN** follow the steps indicated below:
Installation Instructions are for Windows 95, 98 or NT only:

1. Insert the **AutoPLAN** CD into your CD-Rom drive.
The Setup program will autorun. If it does not start then:
2. Launch Windows Explorer.
3. Click on the CD-Rom drive.
4. Double click the **Setup.exe** file on the CD.

Select **AutoPLAN** from the list of AutoWORX Software to install AutoPLAN 2.0. If you want to install the other software to preview, you may select them also. If you want to use the online manuals, then you must have Acrobat Reader installed on you system. If you do not have Acrobat Reader already installed on your computer, then select **Acrobat Reader** to install it also.

*Note: The installation drive for AutoWORX **must** be the drive that AutoCAD is currently installed on or else AutoWORX will not operate.*

Now select the version of AutoCAD you will use AutoPLAN 2.0 with. Setup will now install AutoPLAN 2.0. Upon completing Setup you will then be ready to run **AutoPLAN**.

Configuring AutoCAD for AutoPLAN

AutoPLAN is written to run entirely within the AutoCAD environment. Before using AutoPLAN for the first time you must setup the AutoCAD environment for AutoPLAN. First load AutoCAD. Find the version of AutoCAD that you are using and continue.

AutoCAD R12 and R13 for Dos:
Edit the AutoCAD.bat file you use to start AutoCAD with Notepad or any other text editor. Find a line in the file that starts with **PATH=**. Add to the end of this line:
> ;**C:\AutoWORX\Support**

Save and exit the file.

AutoCAD R12 for Windows:
R12 for Windows is no longer supported by AutoPLAN.

AutoCAD R13 for Windows:
Type **Preferences** at the command prompt. Go to the **Environment** tab and add **C:\autoplan\support** to the end of the Support path environment variable. Now close Preferences.

AutoCAD R14:
Type **Preferences** at the command prompt or right click the command line and pick it. Pick the **Files** tab. Now pick the plus sign [+] in front of the line titled **Support File Search Path**. Now pick **Add...**, then **Browse...** and navigate to the **AutoWORX\Support** folder, then pick **OK**, then **Apply**. Now close Preferences.

AutoCAD 2000:
Type **Options** at the command prompt or right click the command line and pick it. Pick the **Files** tab. Now pick the plus sign [+] in front of the line titled **Support File Search Path**. Now pick **Add...**, then **Browse...** and navigate to the **AutoWORX\Support** folder, then pick **OK**, then **Apply**. Now close Options.

Loading AutoPLAN

One AutoCAD is configured to run AutoPLAN, you must load the AutoPLAN Menu.

Method 1
Type **Menu** and pick **AutoPLAN.MNU** located in the AutoWORX\Support directory.
This must be done *each* time **AutoPLAN** is to be used unless:
- For R13: the "Use Menu in Header" option is set in preferences.
- For R14 & 2000: the last menu remains until a new one is loaded.

Method 2
Modify the **Acad.mnu** file located in the ACAD\SUPPORT directory, with any text
editor such as Notepad or Edit. (Refer to the editor's help for opening and saving files
and searching for specific text). Once the file is open in the editor, search for the text:
> **POP2**

After locating this line of text, arrow up several lines to locate a line to exit autocad,
then type the following lines immediately above it as shown:
> **[AutoPLAN]^c^c(command "menu" "AutoPLAN")**
> **[--]**
> [Exit Autocad]

After typing the shown lines save and exit the file.

*Note: After modifying any menu file, the menu must be recompiled before any changes
will take effect. This can be done by reloading the menu's **.mnu** source file.*

Method 2 is preferred since it allows access to **AutoPLAN** simply by picking
AutoPLAN under the **File** pull-down menu. Once in the **AutoPLAN** menu, the
AutoCAD menu can be accessed by picking **AutoCAD** under the **File** pull-down menu.

After completing either method, **AutoPLAN** is loaded and ready for use. The last three
command lines should read:

> AutoPLAN source code loaded...
> Finished AutoPLAN setup...
> *** Current Floor Level = 1 ***

*NOTE: If you did not receive this message, **AutoPLAN** was not installed properly! Exit
AutoCAD, reinstall and reload **AutoPLAN**. If the message does not appear again,
contact technical support.*

Registering AutoPLAN

Registration of **AutoPLAN** occurs when you obtain an authorization code. Registration insures that you will receive technical support and be notified of any updates, bug fixes, or future releases of **AutoPLAN**.

Obtaining Your Authorization Code

When you first run any **AutoPLAN** command you will receive a prompt on the command line to "*Enter Authorization Code:* ". An authorization code that must be obtained by the customer to use **AutoPLAN**. If you wish to demo **AutoPLAN** simply hit **ENTER** when asked for an authorization code and you will be allowed to use **AutoPLAN** 5 times, after which **AutoPLAN** will cease to operate unless the correct authorization code is given. This code only needs to be entered once and is case sensitive, and if entered correctly, you will not be asked for it again.

NOTE: Entering a false authorization code more than twice will cause **AutoPLAN** *to be rendered useless and must be reinstalled.*

To obtain your authorization code you must:
- Have your AutoCAD serial number ready.
- Then call 812-234-2925 to receive your authorization code.

Note: This authorization code will activate **AutoPLAN** to run only with the copy of AutoCAD which matches the serial number given above. **AutoPLAN** will not work with any other copy of AutoCAD except as a 5 time demo only. Should you desire to run **AutoPLAN** on more than one machine a site license is available.

Also: Obtaining your authorization code will void any money back guarantee.

If you are upgrading from an older version it is recommended that you make a backup copy of any customized **AutoPLAN** files so they are not overwritten.

Chapter 2 - A Brief Tour

Introduction to AutoPLAN:

Chapter 2 provides an introduction to **AutoPLAN's** primary features, key concepts and familiarizing you with the primary menus needed to navigate within **AutoPLAN**.

In this chapter you will learn:
- How to navigate within **AutoPLAN**.
- How the MultiLevel concept will improve productivity.
- How **AutoPLAN** handles the AutoLAYERing of all features.
- The methods to display Levels and Systems.

Upon finishing Chapter 2 you will be taken through a complete tutorial which will detail how to create a residential structure, elevations and a commercial oriented structure.

To begin the tour of **AutoPLAN:**

Start AutoCAD.
Open the drawing named **HOME.DWG** located in the \AutoWORX\Samples\AutoPLAN\ directory.

Upon opening the drawing the last three command lines should read:

    AutoPLAN source code loaded...
    Finished AutoPLAN setup...
    *** Current Floor Level = 1 ***

NOTE: If you did not receive this message, **AutoPLAN** *was not installed properly! Exit AutoCAD, reinstall* **AutoPLAN***, and start this tour again. If the message does not appear again, contact technical support.*

You should now see the First Floor Plan of a residential home.

Before proceeding we will discuss the Pop-up Menu and Pull-down menus which are needed to navigate within **AutoPLAN**.

Chapter 2

Pop-up Menu Layout

AutoPLAN uses a **Pop-up Menu** to place a set of utilities at the cursor location. This menu is used extensively by **AutoPLAN** to aid in the construction and management of entities. To activate the **Pop-up Menu** with a mouse press **Shift + Right Click** on the mouse, or pick the **Third** button on a 3-button mouse. When either method is used, the following menu will appear at the cursor location:

| REF Point: ▷ |
| OSNAP ▷ |
| Layers ▷ |
| Lines ▷ |
| Match Properties ▷ |
| Display Level |
| Display System |
| Level utilities ▷ |
| Utilities ▷ |
| Main Menu |

From...
From point
Apparent intersection
Middle of 2 points
XY

Center
Endpoint
Insert
Intersection
Midpoint
Nearest
Node
Perpendicular
Quadrant
Tangent
None
Running OSNAP...

Layer Dialogue...
All ON
All OFF

Change to ??? layer
Change to current layer
Isolate layer
Set layer to
Layer OFF
Layer Lock
Layer Unlock
Freeze Layer
DELETE

AutoDIST
QuikList
Set marker to last
Get last group
Snap set

Copy to Level ?
Move to Level ?
Add Level
Set Level
? Level

Layer
Linetype
Color
All

Break Line ▷
Join 2 lines
Lines to polyline
Weld
Compare length
ID Length
ID Slope
Change Linetype

Break
Boxed
Straight
Curved

The Pop-up menu items are detailed in Chapter 13.

Pull-down Menu Layout

File ACAD Construction Doors Windows Symbols Electrical Elevations Notation Utility

AutoPLAN Pull-down menus.

| File |
| New... |
| Open... |
| Save... |
| Save As... |
| Recover... |
| Plot... |
| ASE ▷ |
| Import/Export ▷ |
| Xref ▷ |
| Configure |
| Compile... |
| Utilities |
| Applications... |
| AutoCAD Menu |
| Archillustrator |
| About AutoPLAN |
| Exit AutoCAD |

| Draw ▶ |
| Construct ▶ |
| Modify ▶ |
| View ▶ |
| Settings ▶ |
| Assist ▶ |

Displays the standard AutoCAD pull-down menus.

Loads the AutoCAD menu.

Loads the Archillustrator menu.

Displays a dialog box containing the AutoPLAN version number, authorization code, and the AutoPLAN README.TXT file.

Appearance of menu may vary slightly depending on which AutoCAD version you are using.

The AutoCAD *Draw, Construct, Modify, View, Settings, and Assist* menus have been compressed into the **ACAD** pull-down menu. This allows the user to have most of the AutoCAD commands available without loading the AutoCAD menu. Several commands dealing with 3D have been deleted from the **AutoPLAN** menu merely to conserve space. If you need any of these simply load the AutoCAD menu.

The **AutoPLAN** pull-down menus are described in later chapters.

Description of Toolbar Menu *(Windows Versions only)*

The **TOOLBAR Menu** in AutoCAD R13 or greater for Windows is a useful tool to place instant access to the main icon menu groups provided with **AutoPLAN** directly on the desktop.

To activate the toolbar for the first time (or if it should be turned off):
- Pick the **ACAD** pull-down menu.
- Pick **View**.
- Pick **Toolbars...**.
- Pick **AutoPLAN Main Menu**.

The following toolbar will appear. It can be moved anywhere on screen or docked onto the top or sides of the screen.

Docking the toolbar is recommended. It is also recommended that the OSNAP toolbar be activated and docked due to the fact that OSNAPs are used more often than most any other AutoCAD command.

	Loads the DOORS icon menu.
	Loads the WINDOWS icon menu.
	Loads the CONSTRUCTION icon menu.
	Loads the SYMBOLS icon menu.
	Loads the ELECTRICAL icon menu.
	Loads the NOTATION icon menu.
	Loads the ELEVATIONS icon menu.
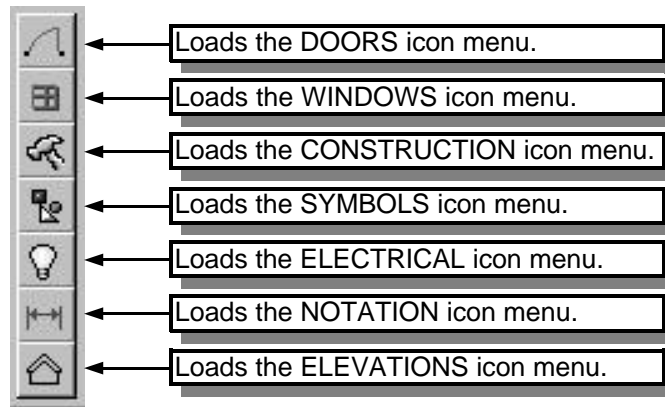
Navigation within AutoPLAN

Now that you are familiar with the AutoPLAN menus, we will take a tour of a completed plan to show how to navigate within the project file. AutoPLAN uses a MultiLevel and MultiSystem concept to create a virtual "model" of the home or building. What we mean by MultiLevel is that one drawing (*or project*) file may contain up to 99 numbered Floor Levels and numerous lettered floor levels. On each floor level there is the Floor Plan, just like the one before you. This Plan comprises solely of the basic structures, doors, windows, fixtures and appliances on each level.

As far as the electrical, plumbing and HVAC systems, they reside on a System within each Level. A System is nothing more than another plan within the project that contains data about that particular system, such as electrical symbols. When a System is displayed, only the walls, doors, windows and other layers from that Floor Level pertaining to that system are turned on.

What you see before you is the First Floor Plan. To show you just how much information is stored in this single project file, pick **Utility > Layers > All ON**. It looks like a nightmare, but AutoPLAN handles the display of the right objects at the right time flawlessly. You can display an individual level by using the **Utility > Display Level** command. Let's try it out.

Pick **Utility > Display Level** or hit **F11** (*for Windows only*) and type **1** for Level One. You now see the First Floor Plan again. Now Display Level **2**. The Second Floor Plan is displayed. Display Level **F** to see the Foundation Plan. Display Level **C** to see the Cover Sheet. Display Level **D** to see the Details Sheet. Display Level **R** to see the Roof Plan. To see a list of all Levels that exist in the project file, pick **Utility > Level Utilities > ? Level**. Notice that when you change Levels, the title block's information changes also.

Now pick **Utility > Display System** or hit **F12** (*for Windows only*) and select **Framing** and type **1** for the Level. The Framing Plan for Level 1 is now displayed. Using the same method, display the Electrical Plan for Level 2.

The MultiLevel concept that AutoPLAN uses can increase productivity tremendously. Using AutoPLAN we can draw a set of plans like this one for a single story ranch style home in about 7 hours. By the way, that also includes the elevations. So next time you hear a sales pitch from the other guys, look at the bottom line. How long to create construction documents from start to finish. After all, that is all the contractor needs to build the home anyway.

Chapter 3 - Residential Plan Tutorial

This chapter will take you step-by-step through the process of creating a basic residential floor plan in AutoPLAN. In this chapter you will learn to:

- Set up the drawing environment
- Layout exterior and interior walls
- Create doors and windows
- Insert Appliances and Fixtures
- Inserting a Title Block
- Annotate a Floor Plan
- Create a Foundation Plan
- Create a Dimensional Plan
- Create an Electrical Plan
- Create a Cover Sheet
- Display a specific Floor Level
- Display a specific Floor System

Residential Plan Tutorial

This tutorial will guide you step by step through the methods of creating a floor plan. Though this home is obviously simple, it does provide an adequate example of the most basic steps in creating a floor plan. What you learn here will most certainly be used in most every plan you draw from here on. So get ready to draw you first set of home plans with AutoPLAN!

Getting Started:

To start a new plan, you must first start AutoCAD. After AutoCAD is loaded, if the AutoPLAN menu is not loaded, you must then load it (*refer to Chapter 2, Loading AutoPLAN*). When AutoPLAN is first loaded into a new drawing, the following setup dialog appears:
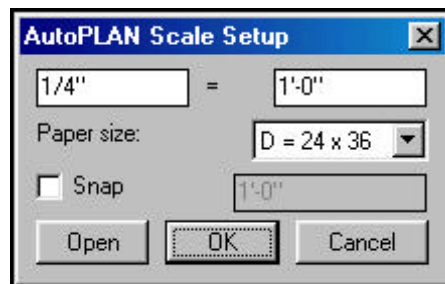
The Setup Utility allows you to initially set up the drawing environment to the scale you desire. This setup can be changed later if you need. For this tutorial we will use **1/4" = 1'-0"** on a **D** size paper and turn on the **Snap**, setting it to **1'-0"**. After setting these options, pick **OK** and the drawing environment will be set up, and you will be prompted in the command line **"Scale: 1/4" = 1'-0", Sheet size: D, Snap: 1'-0"."**

A red rectangle will appear representing the sheet of paper at this scale. This rectangle is not an AutoCAD entity and will disappear when you zoom in or out next. Use this rectangle to approximate where to start drawing the plan, assuring that it will fit on the paper.

After setting up the drawing environment, you are now ready to construct the perimeter walls of the home. Pick **Construction > Build Wall > New** and you will be prompted:

Current Floor Level = 1
New floor number <1>:   Hit **Enter** to accept **1** as the new level to create.

Pick start point of wall: Begin drawing the outside walls. To keep your drawing constitent with the tutorial, we will pick a starting point of **35', 33'**. In future drawings, pick any start point you desire.

Point 4   Point 3

Point 5

Point 1: 35',33'   Point 2
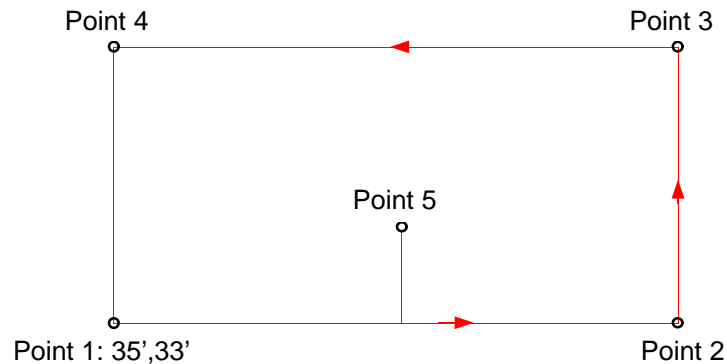
To draw the perimeter walls we will use AutoCAD's direct distance coordinate entry method. This is where you pick in a direction then type the distance to the next point in that direction. With the **Ortho** on, pick in the direction of **Point 2** and type the length of the wall, **48'**. Then pick towards **Point 3** and type **26'**, then towards **Point 4** and type **48'**, and finally type **C** to close the wall. You will then be prompted:

Width of wall <3 1/2">:   Hit **Enter** to accept 3 1/2" studs.
Thickness of exterior brick <0">:   Hit **Enter** to accept 0" for no brick.
Pick inside: Pick a point inside of the home (*Point 5*).

The perimeter walls will now be created, complete with a poche (*filled in walls*). Now pick **Utility > Display Level** and enter **1** for the floor level to display. Level One will now be properly displayed.

We will now add the garage onto the home. It is a good idea to add the garage as a separate entity so that a new baseline will be created. This allows different parameters to be added for the foundation (*discussed later in this chapter*). Since the garage is to be offset from the home in the upper left corner, we will place a construction line for the start point, which we will later erase. Pick the line command. At the **From point:** prompt, pick **Popup Menu > Ref Point > From point** and then:

Pick reference point:	Pick the upper left hand corner of the home.
Pick in direction of desired point:	Pick toward the right.
Enter distance to point:	Type **8** for the distance to offset.

Now pick about three feet down inside the building. A construction line will be drawn 8" from the upper left hand corner to about three feet down inside the building.

Pick **Construction > Build Wall > New** again. Hit **Enter** to accept **1** as the new level. Now pick the end of the construction line (**Point 1**) as the start point of the new wall.

With the **Ortho** on, pick in the direction of **Point 2** and type the length of the wall, **2'**. Then pick towards **Point 3** and type **24'**, then towards **Point 4** and type **24'**, now pick the OSNap Perpendicular then pick on the left side wall, followed by **Enter** to end picking points. You will then be prompted:

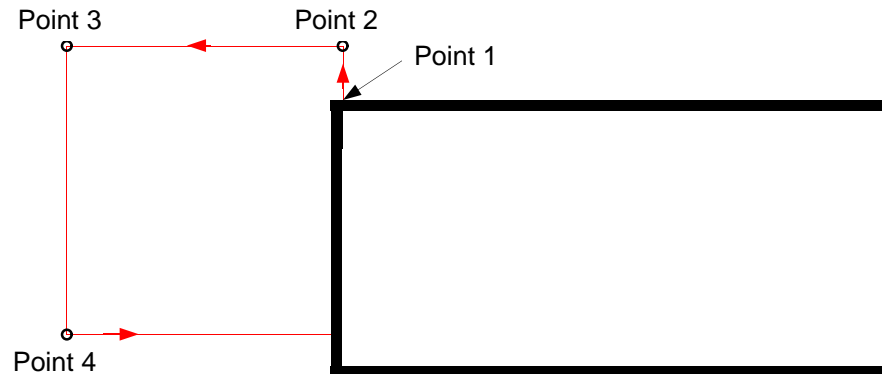|	
Width of wall <3 1/2">:	Hit **Enter** to accept 3 1/2" studs.
Thickness of exterior brick <0">:	Hit **Enter** to accept 0" for no brick.
Pick inside:	Pick a point inside of the garage.

The garage walls will now be created. Now Display Level 1 then erase the construction line created earlier.

Type **ZX** to fit the home on the screen. The home should now be easier to view.

Wall A
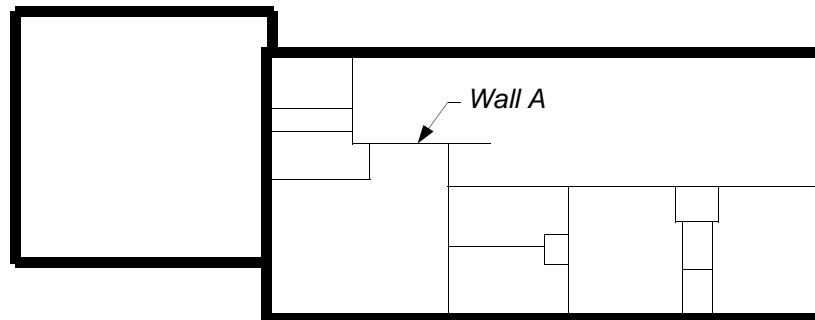
You are now ready to begin drawing the interior walls like the ones shown above. Before you start drawing interior walls, it is a good idea to "map" out a strategy. It is best to find a wall that does not tie into another to start with, and the others will fall into place much easier. For example, all of the interior walls tie into one another on both ends in some way or another except *Wall A*. Since this wall does not tie into another one both ends, we will lay it out first.

Pick the **Polyline** command. At the **From point:** prompt, pick **Popup Menu > Ref Point > From point** and then:

Pick reference point: Pick the inside upper left hand corner.
Pick in direction of desired point: Pick toward the right.
Enter distance to point: Type **5'8-1/2** for the distance to offset.
Now pick towards the bottom of the screen and type **9'7-1/2**, then pick to the right and type **12'4-1/2** followed by **Enter** to exit the Polyline command.

Now pick **Construction > Build Wall > Freeform** then:
New<Existing>:   Type **E** for an existing polyline.
Width of wall <3 1/2">:   Hit **Enter** to accept 3 1/2"
Select baseline to offset: Select the polyline just drawn.
Pick side for opposite wall line: Pick towards the top of the screen.

A new Freeformed wall will be created. Since Freeform walls do not AutoTRIM the adjoining walls, you must manually trim the intersection by picking **Utility > Walls > Clean-up > Tee** and pick in the area of the intersecting walls and trim out the connection.

Wall A should now appear like the exterior walls. Though this was somewhat complex to create, it is as difficult as it gets. Since not every conceivable wall shape can be compensated for, the Freeform wall routine allows for most any shape. Now that *Wall A* has been created, the rest of the walls will fall into place.
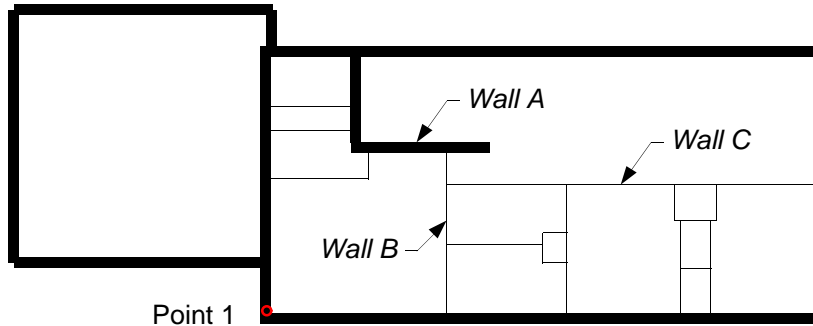
The next phase of "mapping" a strategy is to determine which wall to draw next. Since *Wall C* ties into *Wall B*, we will draw *Wall B* first, giving *Wall C* a wall to "tie into".

To draw *Wall B* pick **Construction > Walls > Partition** then:

Enter wall thickness <3 1/2">:	Hit **Enter** to accept 3 1/2"
Middle of wall/<Pick inside corner of existing wall>:	Pick **Point 1**
Pick opposite corner of existing wall:	

Pick the OSNap Perpendicular and pick the lower wall line of *Wall A*.

Pick side of existing wall to place new wall:	Pick to the right.
Distance to new wall <6'-0">:	Type **13'9-1/2**
Is this the Inside, Middle or Outside of wall? <Inside>:	Hit **Enter** to accept *Inside*

Wall B is now created and the adjoining walls are automatically trimmed.

Wall C is located **12'-5 1/2"** from the bottom wall inside wall line. Pick **Construction > Walls > Partition** then:

Enter wall thickness <3 1/2">:	Hit **Enter** to accept 3 1/2"
Middle of wall/<Pick inside corner of existing wall>:	Pick **Point 1**
Pick opposite corner of existing wall:	Pick **Point 2**
Pick side of existing wall to place new wall:	Pick towards *Wall C*.
Distance to new wall <6'-0">:	Type **12'5-1/2**
Is this the Inside, Middle or Outside of wall? <Inside>:	Hit **Enter** to accept *Inside*

Wall C is now created and the adjoining walls are automatically trimmed.
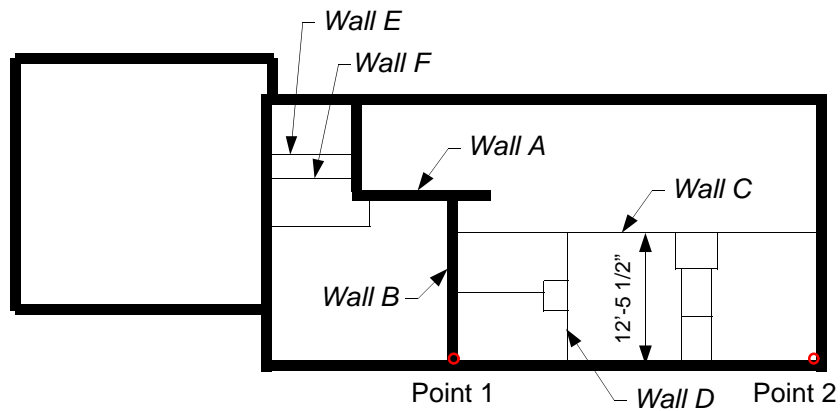
Using the same methods used for *Wall C*, place *Wall D* 10'-5 1/2" from *Wall B*, *Wall E* 7'-0 1/2" from the top wall line, and *Wall F* 1'-1 1/2" from *Wall E*.
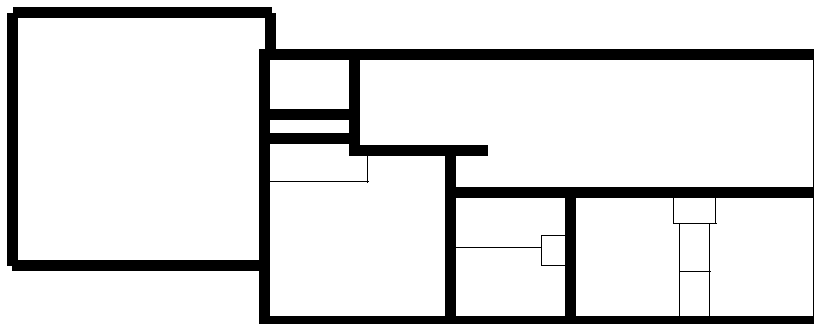
To layout **Wall G** we need another construction line to locate from. Point Filters can also be used to locate the start point, but due to their complexity it is easier to draw a construction line than try to explain to a new user how to use them. The intersection of the construction line and the outside wall will become **Point 1**.
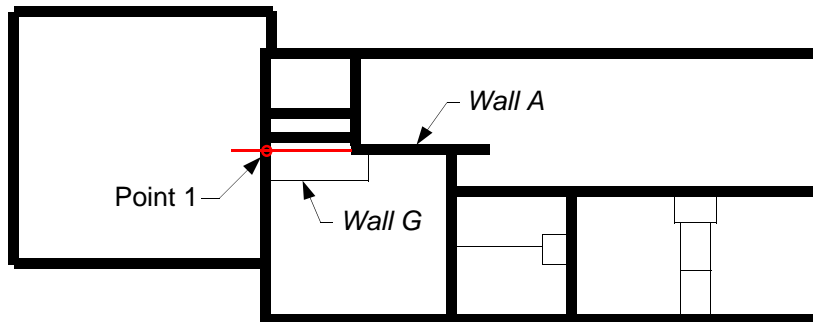
To draw *Wall G* pick **Construction > Walls > L-Shaped** then:

Enter wall thickness <3 1/2">:	Hit **Enter** to accept 3 1/2"
Pick inside corner of existing wall:	Pick **Point 1**
Horizontal distance to opposite corner:	Type **7'**
To which corner? Outside/<Inside>:	Type **O** for *Outside*
Vertical distance to opposite corner:	Type **3'6**
To which corner? Outside/<Inside>:	Type **O** for *Outside*

Wall G is now created and the adjoining walls are automatically trimmed. Now erase the construction line.

Before we can draw *Wall J*, *Wall H* must be created first. Since *Wall H* is made up of three separate wall lines, we can use the **U-Shaped** wall command to create them in one step.
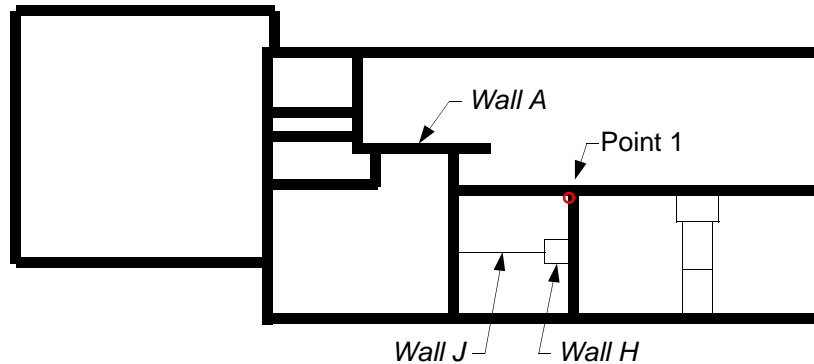
To draw *Wall H* pick **Construction > Walls > U-Shaped** then:

Enter wall thickness <3 1/2">:	Hit **Enter** to accept 3 1/2"
Reference point/<Start point of wall>:	Type **R** for *Reference point*
Pick reference point:	Pick **Point 1**
Pick in direction of wall:	Pick towards the bottom of the screen
Enter distance to wall <3'-4 5/16">:	Type **5'**
Pick opposite wall line <Perp>:	Pick the right wall line of *Wall D*
Length along wall <4'-0">:	Type **2'5-1/2**
Offset from wall <4'-0">:	Type **2'-8**

Wall H is now created and the adjoining walls are automatically trimmed.

To draw *Wall J* pick **Construction > Walls > Partition** then:

Enter wall thickness <3 1/2">:	Hit **Enter** to accept 3 1/2"
Middle of wall/<Pick inside corner of existing wall>:	Type **M** for *Middle*
Pick first wall:	Pick **Point 1**
Pick opposite wall:	Pick **Point 2**

Wall J is now created and the adjoining walls are automatically trimmed. The new wall divides the two rooms evenly.
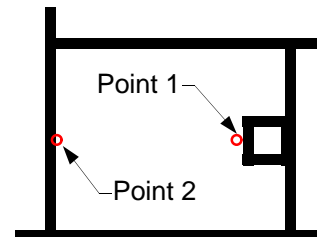
To layout **Wall L & M** we need to create **Wall K** first. Using the same methods to draw **Wall H**, draw a 3 1/2" thick **U-Shaped** wall starting **9'-3"** from **Wall D** that is **4'-1"** long and offset from the wall **3'-4 1/2"**.
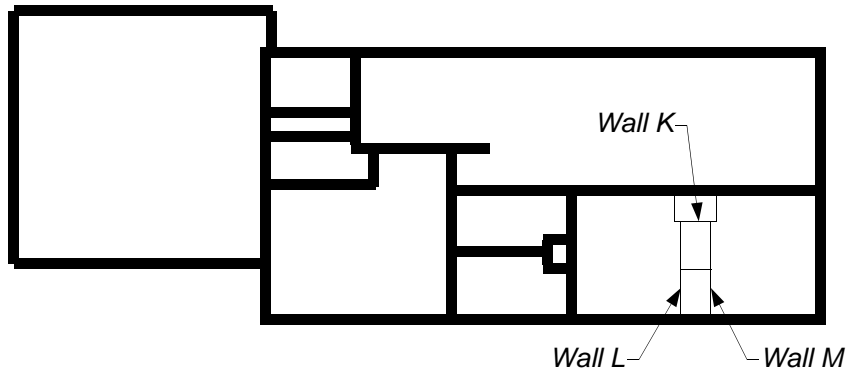
To draw **Wall L** pick **Construction > Walls > Partition** then:

Enter wall thickness <3 1/2">:   Hit **Enter** to accept 3 1/2"
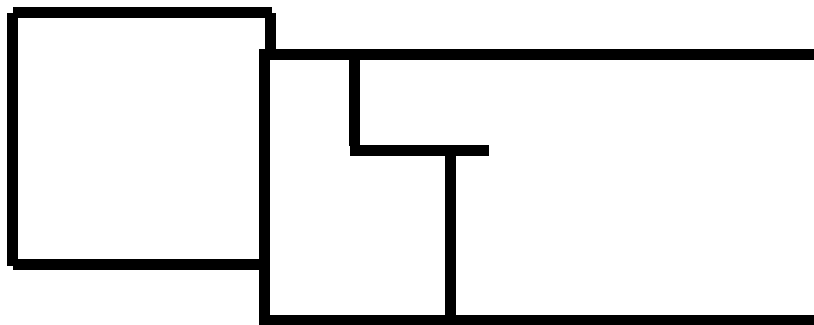**Middle of wall/<Pick inside corner of existing wall>:** Pick the Midpoint @ **Point 1**
Pick opposite corner of existing wall:
    Pick the OSNap Perpendicular and pick the lower wall line @ **Point 2**.
Pick side of existing wall to place new wall: Pick to the left.
Distance to new wall <6'-0">:   Type **1'**
Is this the Inside, Middle or Outside of wall? <Inside>: Hit **Enter** to accept *Inside*
Wall L is now created and the adjoining walls are automatically trimmed.
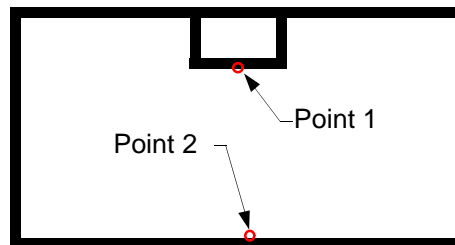
To finish drawing all of the interior walls, place **Wall M** 2'-0" from **Wall L**, then center **Wall N** on **Wall L** using the Middle option of the Partition Wall command.
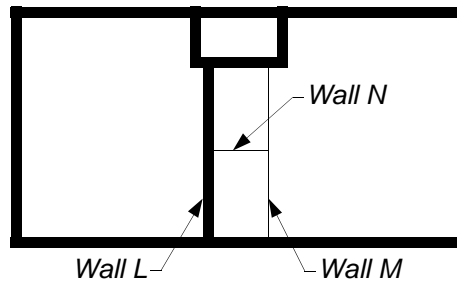
At this point you should have a drawing very similar (*actually exactly like*) the one below. All walls have been created and you are now ready to add doors and windows.
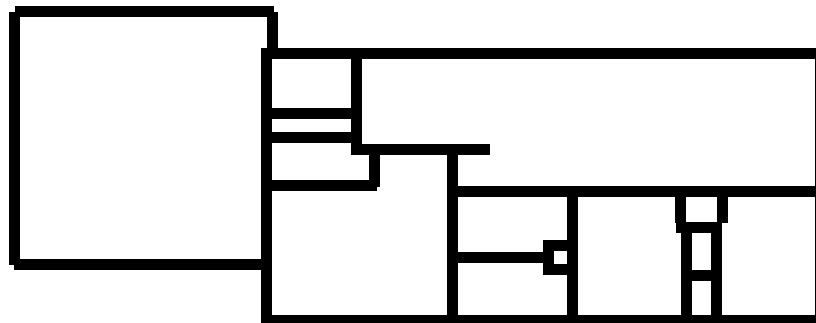
Finished Walls

Creating Doors and Windows:

This section shows how to place doors and windows in the plan. AutoPLAN does not use block insertions for doors and windows, but rather uses parametric routines, so the user can have an almost infinite number of sizes and styles. For clarity purposes the wall poche is not shown in the following examples.

Zoom in around *Walls K, L & M*. First we will create a cased opening from the living area. Pick **Doors > Opening** then:

Reference point/Opposite wall/Between two points/<Mid point of wall>:
                                                  Pick **Point 1**
Pick opposite wall line: Pick **Point 2**
Enter width of opening <2'-6">:   Type **36**
Show header? Yes/<No>:   Type **Y** for *Yes*
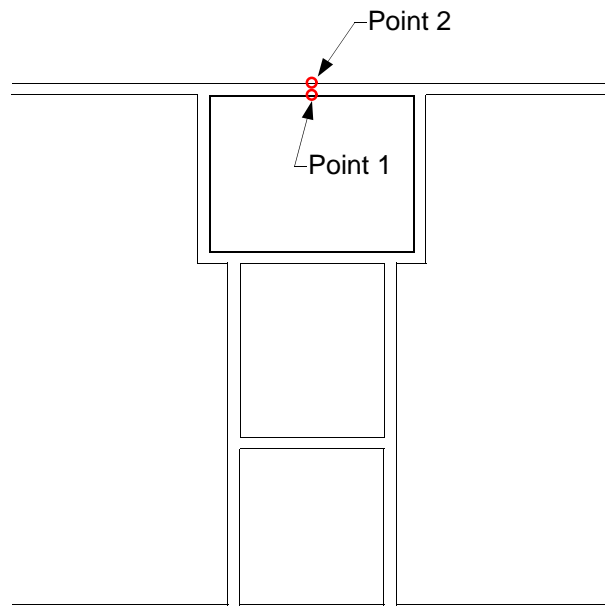
We will now place a single door entering into the bedrooms from the living room. Pick **Doors > Single > Single** then:

Reference point/Opposite wall/Between two points/<Mid point of wall>:
    Type **B** for *Between two points*.
Pick first point: Pick **Point 1**
Pick second point: Pick **Point 2**
Pick door side of wall: Pick **Point 3**
Enter width of door <2'-6">:   Type **30**
Degree of door swing <90>:   Hit **Enter** to accept 90 degrees
Door swing (Right/Left) <L>:   Type **R** for a *Right hand door*.
The door is now created and the wall is trimmed out.
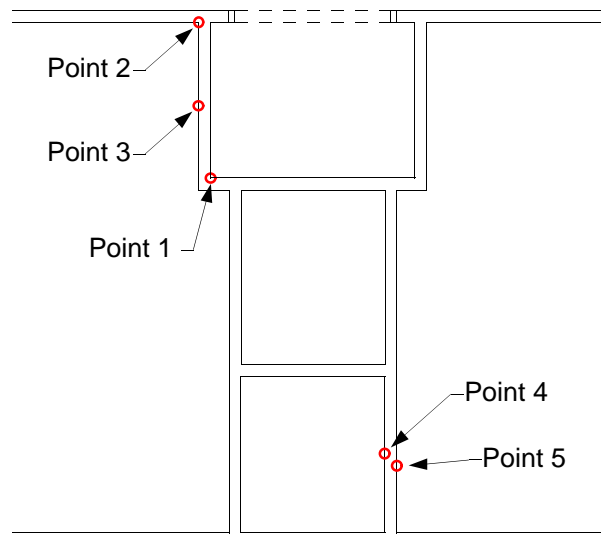
Place a 24" single door for the closet.
Reference point/Opposite wall/Between two points/<Mid point of wall>:
    Type **O** for *Opposite wall*.
Pick opposite wall line: Pick **Point 4**
Pick door side of wall: Pick **Point 5**
Enter width of door <2'-6">:   Type **24**
Degree of door swing <90>:   Hit **Enter** to accept 90 degrees
Door swing (Right/Left) <L>:   Type **R** for *Right a hand door*.
The door is now created and the wall is trimmed out.

Using the same method for creating the first closet door, place a 24" left hand door on the remaining closet. You could also create the second bedroom entry door the same as the first, but we will use another command this time.

Pick **Doors > Utilities > Mirror Door** then:

Select door:	Pick on the first bedroom entry door.
First point of mirror line:	Using the OSNap Midpoint, pick **Point 1**
Second point:	With Ortho On, Pick **Point 2**
Delete old door? <N>:	Type **N** for *No*.

Point 1

Point 2
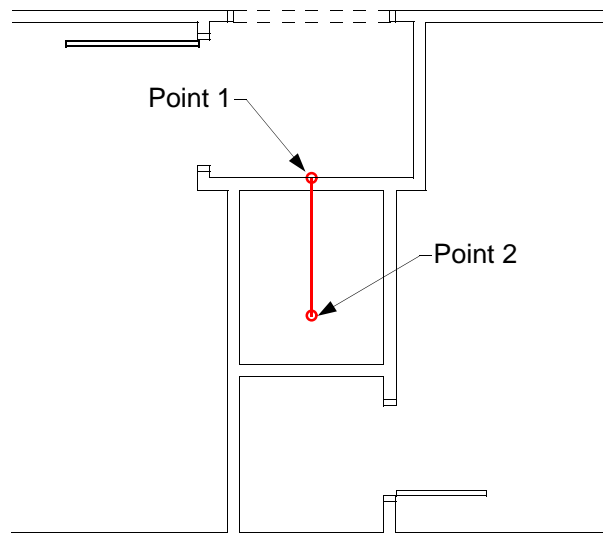
The bedroom entrances and closets should now appear as below. If they do not, somthing went wrong. If you place a door incorrectly and wish to undo the operation, you may do so by typing **UB**. This command replaces the **Undo** command within AutoCAD for such operations as doors and windows. The reason for this is that some operations (*such as a door*) might actually carry out a dozen or so individual AutoCAD commands at once, and using the AutoCAD **Undo** command only undoes one command at a time. The AutoPLAN **UB** command undoes the entire operation.
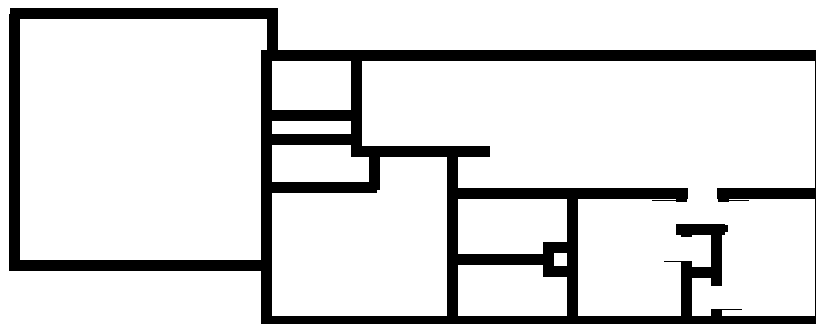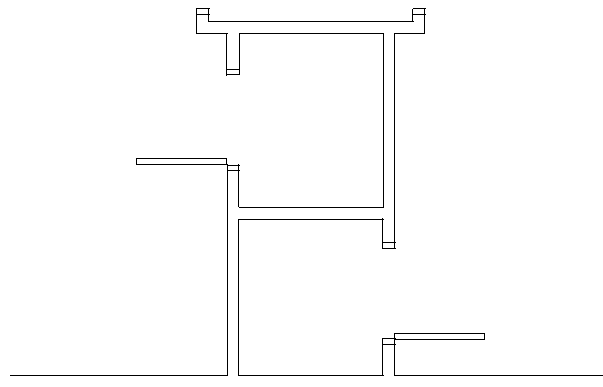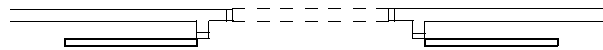
Results So Far

Now zoom in around where the front door is to be located. We will use a different method for locating the front door. I would like the center of the front door to be located 24" from the inside corner of the living room.

To accomplish this, pick **Doors > Single > Single** then:

Reference point/Opposite wall/Between two points/<Mid point of wall>:
    Type **R** for *Reference point*.

Pick reference point:	Pick **Point 1**
Pick in direction of door:	Pick **Point 2**
Enter distance to center of door <2'-1 27/32">:	Type **24**
Pick opposite wall line:	Pick **Point 3**
Enter width of door <2'-6">:	Type **36**
Degree of door swing <90>:	Hit **Enter** to accept 90 degrees
Door swing (Right/Left) <L>:	Type **L** for a *Left hand door*.

The door is now created and the wall is trimmed out.

Since this is an exterior door that swings in, we will attach a door sill to it.
Pick **Doors > Door sill** then touch the door.

Point 2

Point 3

Point 1

Before

After
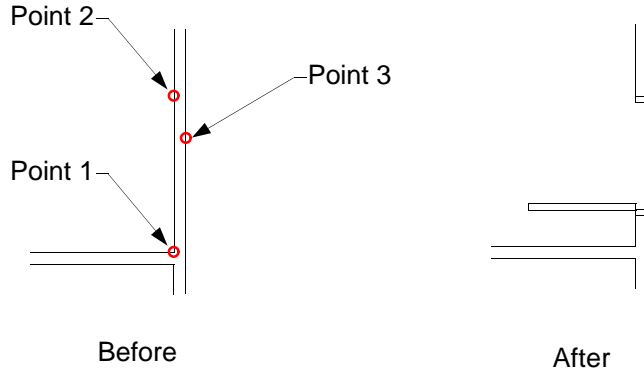
We have now covered all ways of locating the center of a door. You should now be able to add the rest of the doors using the knowledge you have just learned. For more detailed instructions for creating doors, refer to *Chapter 7, Doors*.

Below is a diagram and a chart of the door styles and sizes. Use the methods described to create and locate the doors.
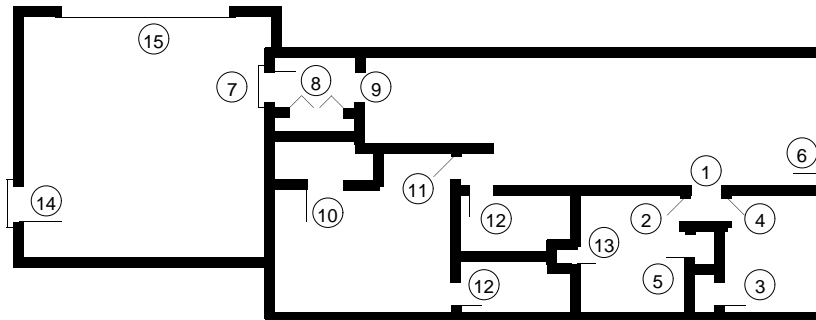
Layout of Doors

All of the doors have now been created! Once you get up to speed, the tutorial up

Door #	Size	Type	Method	Distance
1-6	As noted earlier	As noted earlier	As noted earlier	As noted earlier
7	36"	Single	Reference point	4'-6" from top
8	48"	Bi-Fold, 4 doors	Middle of Wall	-
9	36"	Opening	Reference point	4'-6" from top
10	30"	Single	Middle of Wall	-
11	30"	Single	Opposite Wall	-
12	24"	Single	Reference point	24"
13	18"	Single	Opposite Wall	-
14	36"	Single	Reference point	5'-8 1/2"
15	16'	Overhead	Middle of Wall	-

should take only about 10 -15 minutes. That's right! 10 - 15 minutes to create this plan with 15 different doors! Try it out. Start a new drawing and redo the tutorial up to this point and you will be amazed! Or take our word for it and continue the tutorial.

Now zoom in around the upper right hand corner of the living room. We will place a 36" single window 5'-1 1/2" down from the inside corner using the Reference point locator.

To accomplish this, pick **Windows > Single** then:

Reference point/Opposite wall/Between two points/<Mid point of wall>:
    Type **R** for *Reference point.*

Pick reference point:	Pick **Point 1**
Pick in direction of window:	Pick **Point 2**
Enter distance to center of window <2'-1 27/32">:	Type **5'1-1/2**
Pick opposite wall line:	Pick **Point 3**
Enter width of window <2'-6">:	Type **36**

The window is now created and the wall is trimmed out.

Point 1

Point 3

Point 2

Before   After
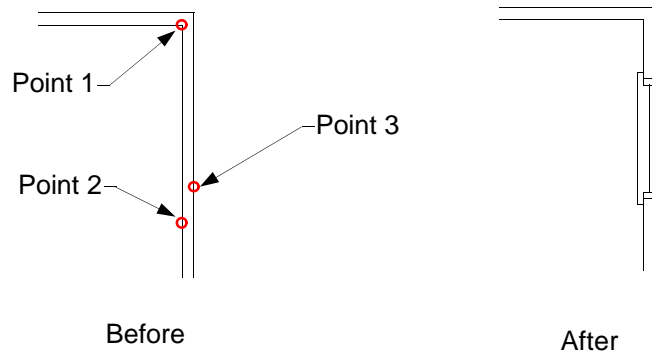
Using the same method as above, place 2 **Multi:Connected** 36" wide windows with a 2" wide x 3" deep mullion 7'-6" to the left of **Point 1** in the above diagram.

Now that the double window has been created, we will copy it to make the matching window in the dining area. Pick **Windows > Utilities > Copy window** then:

Select objects:	Pick the double window created above.
Base point or displacement:	Pick a point on the screen.
Second point of displacement:	With Ortho ON, drag to the left and type **14'8**.

The new double window will be copied and the wall will be trimmed out. Now copy the first single window down **15'-2"**.

We have now covered all ways of locating the center of a window. You should now be able to add the rest of the windows using the knowledge you have just learned. For more detailed instructions for creating windows, refer to *Chapter 8, Windows*.

Below is a diagram and a chart of the window styles and sizes. Use the methods described to create and locate the windows.
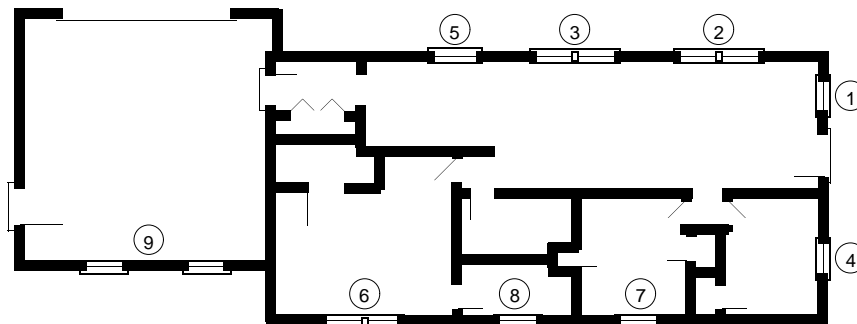
Layout of Windows

Win. #	Size	Type	Method	Distance
1-4	As noted earlier	As noted earlier	As noted earlier	As noted earlier
5	36"	Single	Reference point	6'-0 1/2" from left
6	(2) 36"	Multi:Connected	Middle of Wall	-
7	36"	Single	Middle of Wall	-
8	24"	Single	Reference point	4'-0" from left
9	(2) 36"	Multi:Separated	-	9'-0" Centers

Now we can draw the front porch. Zoom in around the upper right hand corner of the living room. We will place the front porch 24" down from the outside corner.

To accomplish this, pick **Construction > Misc. > Deck** then:

Pick start point of deck: With the Snap ON, pick a point 24" from outside corner.
Arc/Close/Halfwidth/Length/Undo/Width/<Endpoint of line>: Go **7'** to the right
Arc/Close/Halfwidth/Length/Undo/Width/<Endpoint of line>: Go **14'** down
Arc/Close/Halfwidth/Length/Undo/Width/<Endpoint of line>: Go **7'** to the left
Width of rail <3 1/2">:   Hit **Enter** to accept 3 1/2"
Pick inside: Pick inside the porch.
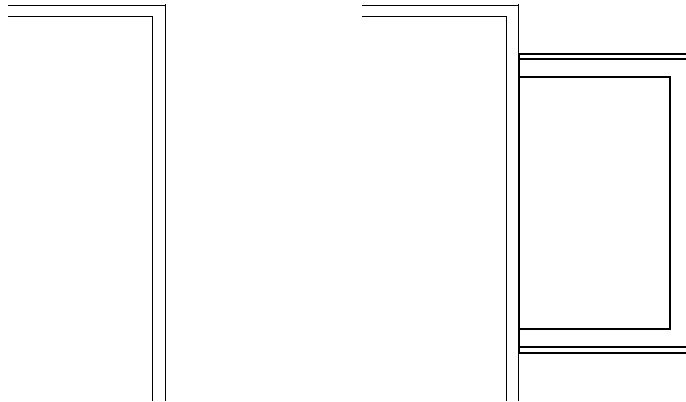
Before   After

Use AutoCAD lines   as needed to create the   steps. Use AutoPLAN's **Construction > Details >Stud** command to create the posts, then trim out any unneeded lines.

Now zoom around the closets and use AutoPLAN's **Construction > Millwork >Shelving** command to create the shelves in the closets.

At this point the framing, doors, windows and shelving is in place. Now we are ready to install fixtures in the bathroom. Zoom in around the bathroom above the master bathroom. First we will install the tub.

Pick **Symbols > Fixtures > Icon Menu**, the pick **Bath tubs**, then double-click the **30x60 Fcy** tub then:

Pick insertion point: Pick **Point 1**
The tub is inserted and you are allowed to rotate it into position. With Ortho ON, drag towards the top of the screen and pick.
Move block (Yes/No) <N>:   Hit **Enter** for No

Repeating the same process, install a toilet at **Point 2** and a 48" vanity at **Point 3**.
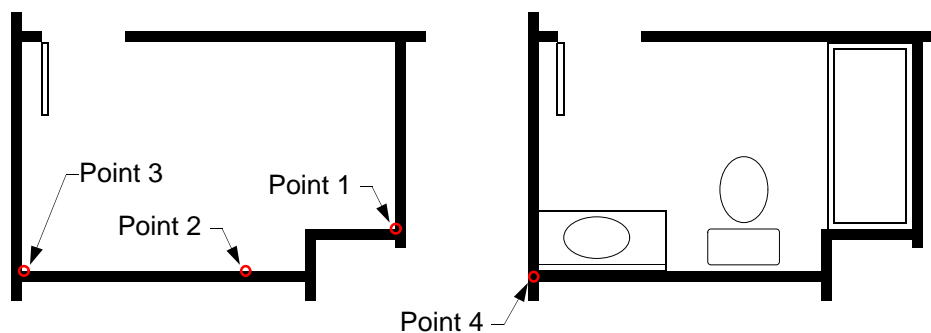
After installing the fixtures, we will mirror them about **Point 4** (*the endpoint of the poche*) to place copies in the master bathroom. Now type **ZX** (*a zoom to fit*).

Now zoom around the laundry room and pick **Symbols > Appliances > Icon Menu**, the pick **Laundry**, then double-click the **Combination** appliances then:

Pick insertion point: Pick **Point 1**
Move block (Yes/No) <N>:   Type **Y** for Yes
Pick new base point: Drag and pick to the left
to better center the laundry appliances within the room.
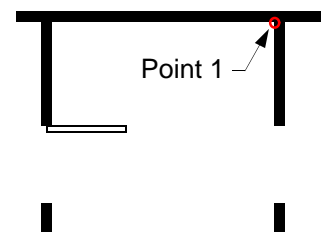
The last thing to create is the kitchen layout. Zoom in around the kitchen area.

Pick **Construction > Millwork > Cabinets** then:

Pick start point of cabinets:	Pick **Point 1**
Arc/Close/Halfwidth/Length/Undo/Width/<Endpoint of line>:	**12'** towards **Point 2**
Select baseline to offset:	Pick last drawn cabinet line
Pick in direction of cabinets:	Pick towards inside of kitchen
Enter counter top width <25>:	Hit **Enter** to accept 25"
Show base cabinet line? <Y>:	Hit **Enter** to accept Yes
Show wall cabinet line? <Y>:	Hit **Enter** to accept Yes
Show back splash? <Y>:	Hit **Enter** to accept Yes

Point 1

Point 2
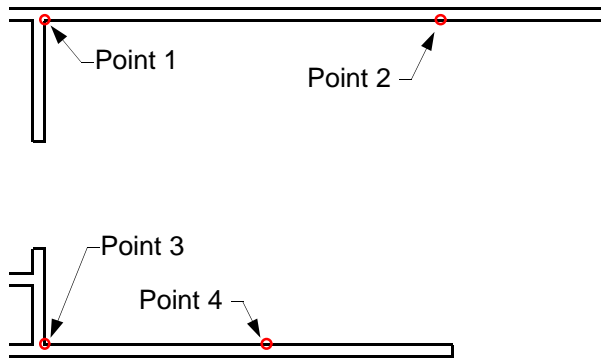
Point 3

Point 4

After cabinets are drawn, you must draw an end cap yourself (*See Cabinetry for more details*). Repeat the same process to create 9'-3" of cabinets from **Point 3** towards **Point 4**, then move them 33" to the right and draw end caps. Now offset the left end cap to the right 33" and then the last line to the right 30". Finally, trim out the base cabinet lines between the two offset lines, leaving the overhead cabinet line.

Result
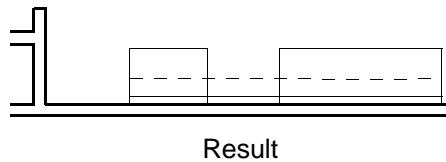
Note: The **Cabinets** command is being totally reworked to eliminate many of the short-comings of the program. Though it is crude, it does save some time.

Now trim out the overhead cabinets over the sink area. Then, using the same methods to place fixtures in the bathrooms, place appliances and fixtures in the kitchen.
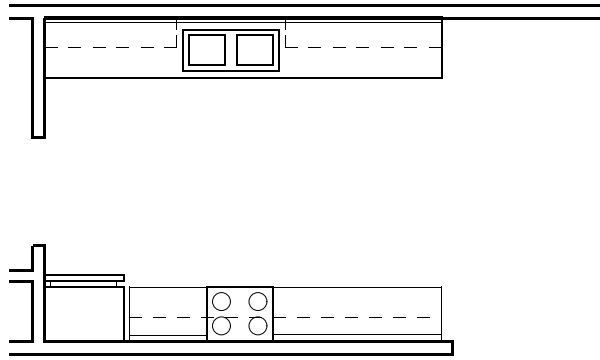
Completed Kitchen

Annotating the Plan

At this point of the tutorial, you should be ready to annotate the Floor Plan. However, prior to annotating any drawing, you need to be sure that the drawing environment is set up to the appropriate scale. To verify whether it is set to the scale you desire, pick **Utility > View > Scale Setup**. The drawing will be zoomed to the limits and a red rectangle representing the paper size will appear just as it did when the drawing was originally setup. If the plan still fits within the paper with adequate room for annotation and misc. details, then accept this scale and continue. Otherwise, try other scales until you find one that suits your needs.
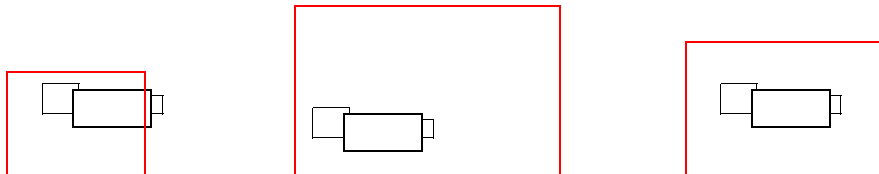
Scale set too low   Scale set too high   An adequate Scale

Before annotating the drawing, we will insert a title block. This will establish the boundaries which to stay within when creating annotations and misc. details.

Importing a title block is simplified by picking **Symbols > Title Block...** then select the desired scale and paper size. The scale defaults to the scale set previously with the **Utility > View > Scale Setup** command. We will use **1/4" = 1'-0"** on a **D** size paper. The title block is now brought into the drawing at the appropriate scale.

AutoPLAN uses a MultiBlock concept for title blocks. This means that the title block is separated into two major sections, the common attributes and entities, and the Level specific attributes. The common attributes and entities are ones that are used on every sheet, such as the outside paper border, your logo, the customer name and address and project name. The Level specific attributes are ones that change from sheet to sheet, such as sheet number, sheet title and date. This way only the smaller sized Level specific block needs to be copied from Level to Level, thus reducing the overall file size. The global attributes and entities reside on layer **0**, therefore they appear on every Level and System.

The paper border drawing supplied is an example only. You can modify them as needed by replacing logos, etc. To use your own title block with the **Title Block...** command the following rules apply:

- Draw a title block for each paper size you wish to use with a file name of **PAPER?** (*the* **?** *being the ANSI paper size designation*). Ex.: PAPERD for "D" size paper.
- Drawing of title blocks *must* be at **1:1**, not adjusted for scale.
- Any attributes or objects that remain constant (*such as the outside border, logo, etc.*) should be on layer **0** so they will display on all Floor Levels.
- The attributes themself which contain Level specific information (*such as sheet number, title, date, etc.*) must reside in a separate block on the layer **Titl-01**, containing at least one entity to select (*such as a line or rectangle*).
- Writeblock the drawing with an insertion point of **0,0**.
- If the drawing does not reside in the **AutoPLAN\NOTATE** directory, then use the **Define...** option of the **Title Block...** command to locate the title block. This needs to be done only once for each paper size.

If you choose, you do not have to adhere to the MultiBlock concept, but rather insert a title block on each Level. However, each entire title block must reside on a separate layer with the Level modifier added, such as **-01** for Level 1. This will be harder to manage, but the option is there should you choose it. Before making a decision, finish this tutorial and see the advantage of the MultiBlock concept.

Paper Border

Logo Area

Global Title Block

0,0

Per Level Title Block
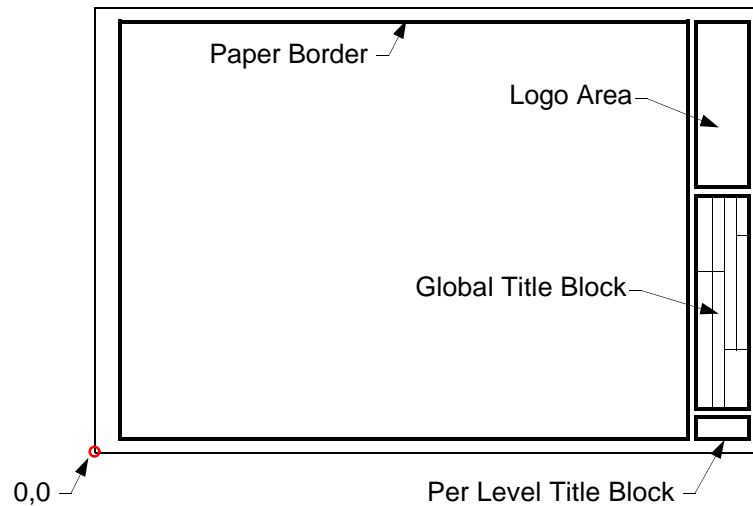
Once a paper border and title block is inserted into the drawing you will need to copy the title block itself (*the one that contains the drawing information such as the date, scale, etc.*) from Level to Level using the **Pop-up > Copy to Level ?** command. Then display each level independently and modify the attributes of the title block with the **Utility > Attributes > Edit** command.

Due to the complexity and unlimited variations of creating blocks with attributes, the above procedures might seem inadequate in detailing AutoPLAN's use of the MultiBlock concept for title blocks. Feel free to give us a call if you need further assistance. We also offer a service of creating a complete set of title blocks, size A thru E, complete with attributes and Multiple Blocks for $25 each or $75 for all five.

We are ready to annotate the drawing, which will consist of adding room names and sizes, general notes, and etc. Zoom in around the two bedrooms. Pick **Notation > Labels > Room Label w/Size** then:

Rotated room/<First corner>:	Pick the upper left hand corner (*Point 1*).
Second corner:	Pick the lower right hand corner (*Point 2*).
Room name:	Type **Bedroom #2**
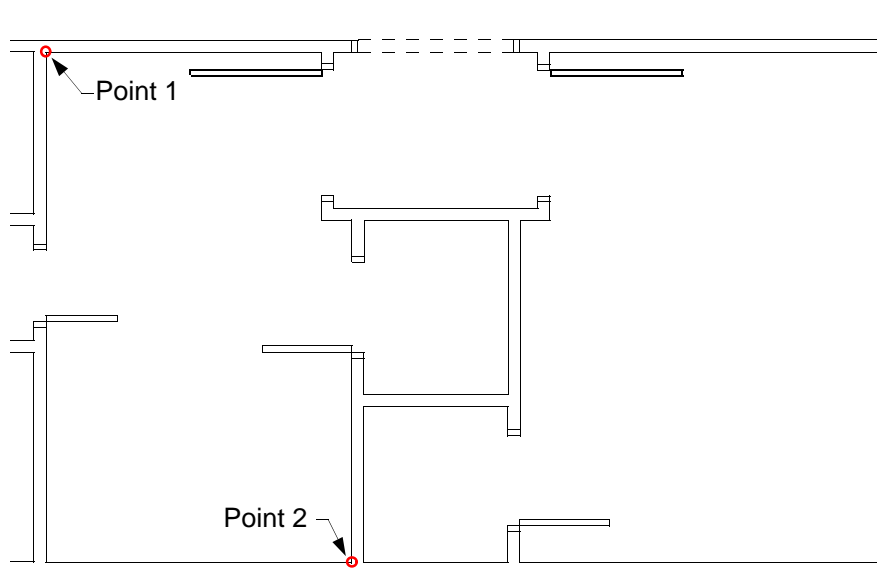
The points you pick determine the center and also the dimensions of the label. For example, if you do not want a closet to be included in the room dimensions, simply pick points that exclude the closet. After creating this label, proceed to place the remaining labels in the plan.

To place single text labels, such as in the closet, pick **Notation > Labels > Room Label w/Size** then pick two opposite corners of the area to label, type the name for the label, then drag and pick to establish the rotation angle of the label.

Finally, pick **Notation > Labels > Title w/Scale** then pick a point about the center of the page horizontally about an inch or two below the house, then type **Floor Plan**, then **1/4"** for the scale.

You can place notes in the drawing one of several ways:

- Use normal AutoCAD text and type the desired note.
- Insert predefined notes that you have already created as separate drawing files.
- Use AutoPLAN's **Notes** command under **Notation > Notes**. (*Refer to Chapter 13, Notation for more details on the Notes command*).

Once you have placed any desired notes on the drawing, the Floor Plan is finished. This floor plan just drawn does not have a lot of dimensions, does not show the electrical and plumbing, and may seem quite "plain". That is exactly our intent. We feel that there should be one presentation drawing in a set of plans that is not cluttered with too many notes and dimensions. This lets the home owner, the banker, etc. review the floor plan as a design, not construction documents.

However, AutoPLAN is designed to let you, the user, to do what you want with your drawings, not be "bound" by our rules. If you choose, you can place as many notes, dimensions, electrical and plumbing symbols as you wish on one drawing. The choice is up to you. But before you make that choice, lets finish the tutorial so you can see how we meant AutoPLAN to be used.

AutoPLAN uses a MultiLevel and MultiSystem concept to create a virtual "model" of the home or building. What we mean by MultiLevel is that one drawing (*or project*) file may contain up to 99 numbered floor levels and numerous lettered floor levels. On each floor level, we create the Plan, just like in this tutorial so far. This Plan comprises solely of the basic structures, doors, windows, fixtures and appliances on each level. You can display an individual level by using the **Utility > Display Level** command. To see a list of Levels that exist in the project file, pick **Utility > Level Utilities > ? Level**.

But what about the electrical, plumbing and HVAC systems? Where do they go? They reside on a System within each level. A System is nothing more than another plan within the project that contains data about that particular system, such as electrical symbols. When a System is displayed (using **Utility > Display System**), only the walls, doors, windows and other layers from that Floor Level pertaining to that system are turned on. This means that you do not have to redraw, copy or WriteBlock the floor plan out to a separate file just to make an electrical plan. It all resides within the one drawing file.

So after you create a new floor level, you can add systems with thier own set of notes, dimensions and symbols. And if you add a door in the plan, it appears in each system. If you move a window in the plan, it moves in each system. Drafting time is greatly

Create a Foundation Plan

The first example of the MultiLevel concept will be adding a Foundation Plan. Pick **Construction > Build Wall > Foundation** then:

Enter total width of foundation wall <8">: Hit **Enter** to accept 8"
Enter width of brick ledge <0">: Hit **Enter** to accept 0"
Enter thickness of footer <2'-0">: Hit **Enter** to accept 24"
Select baseline: Pick the outline of the house (*Point 1*)
Pick inside: Pick on the inside of the house (*Point 2*)

Point 2

Point 1
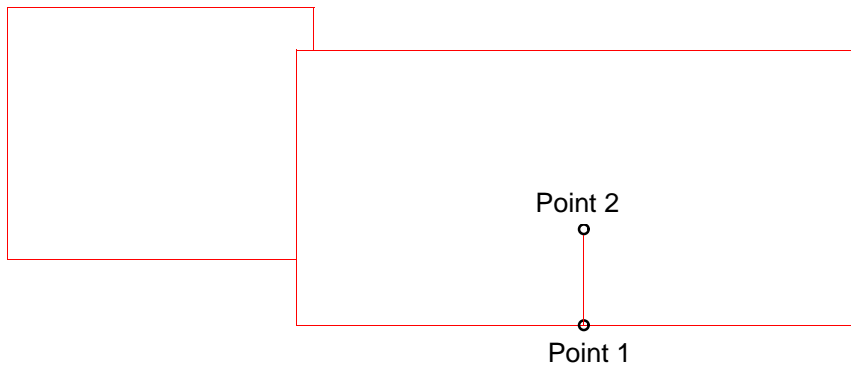
The Foundation for the house will be created. Now repeat the process and select the garage outline. After doing this, pick **Utility > Display Level** and type **F** for Foundation.
The Foundation Level is now displayed and should look like the one below.
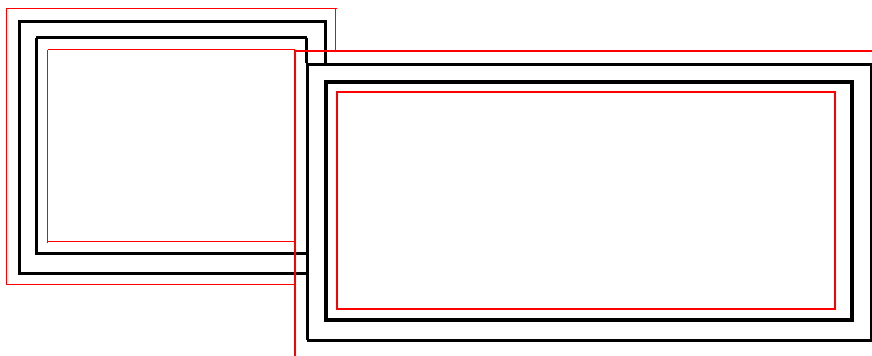
If you notice, the Per Level Title Block is gone. This is because one has not been created for the Foundation Level yet. **Display Level** 1. The block will appear again. If you type **List** and select the block, you will find that it resides on the **Titl-01** layer. The **-01** means that it is on Floor Level 1, and thus only displays with Level 1. To place one on the Foundation Level, pick **Utility > Level Utilities > Copy to Level ?** then select the per level title block, then type **F** for the Foundation Level. The block will be copied to that level. Now **Display Level** F. The block is now there. Using the AutoCAD attribute edit command DDATTE, lets edit the block to fill in the drawing information.

Type **S-1** for the DWG# field, **Foundation Plan** for the Title-2 field, then whatever you wish for the other fields. Return to level 1 and edit the title block to say **A-1** for the DWG# field, **Floor Plan** for the Title-2 field, then whatever you wish for the other fields. Now when you change the display from one level to another, the title block information changes also. So you have the advantage of separate drawing files but simplicity of only one to backup, copy or email!
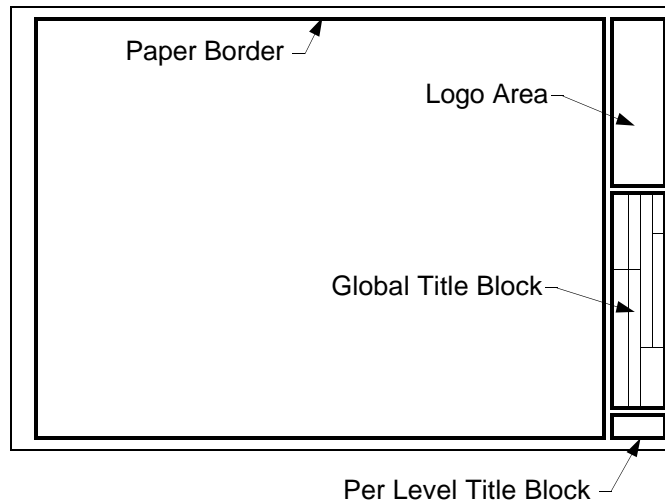
Should the occasion arise when you need to separate this file into individual files, you may do so by following the steps below:
- Display the Level to export
- Pick **Utility > Level Utilities > Export Sheets**
- Type the name of the new file to create and the sheet will be exported.

Now you can add beams and piers, dimension the plan and add any notes and details you desire. When finished **Display Level** 1. You now have two floor levels, 1 and F. You have probably noticed that the Foundation Level has a letter instead of a number. AutoPLAN has reserved several letters for specific levels that it handles a bit different than others. They are as follows:

- **C** for the Cover sheet
- **F** for the Foundation Plan
- **D** for a Details Sheet
- **S** for a Site Plan

Aside from these, you can create a new level with any combination of one or two letters or any number from 1 through 99. Do not mix numbers and letters as this will confuse the **Display System** command because systems are defined as a layer name followed by the Floor Level then the System designation, which is always a letter.

Example: Objects on the **Notate-01E** layer are the notations on the Level 1 Electrical System. Objects on the **Doors-02** layer are the doors on Floor Level 2. Notice that the System has a letter at the end after the two digit Floor Level designation. These layers are created and handled automatically by AutoPLAN. This information is for reference only.

Create a Dimensional Plan

We are now ready to proceed with the Dimensional (*or Framing*) Plan. This is the sheet where you will put all of the stud-to-stud dimensions, door and window schedules and any other details you feel are needed.

To start a Dimensional Plan, we must first display the Framing System. Pick **Utility > Display System**. Pick **Framing** on level **1**, then pick **OK**. You will now see the Walls, Doors and Windows from Floor Level 1 appear. Note there is no Per Level title block. Just **Display Level** 1, copy the title block using **Copy 2 Level ?**, and type **1F** for Framing on level one. Now display the Framing system for level one again and edit the title block. The drawing number is **S-2** and the name is **Dimensional Plan**.

You now have a blank sheet to begin placing dimensions on in the way that you like them. You may also draw any lines that are relevant to framing, such as floor joists, headers and beams. Note that anything drawn on the Framing System will not appear on the Floor Level. Therefore, be sure not to copy any of the existing walls, door or windows for use on a system, otherwise they will also appear on the Floor Plan.

If you do need to add another wall, door or window; display the Level, add the objects, then return to the System.

Due to the personal preferences in dimensioning we will not go into dimensioning the Framing Plan. However, refer to the **AutoDIM** command in Chapter 13. This will speed up the process of dimensioning a plan.

After placing the dimensions and desired notes, we will place a door tag. This tag is used in generating a door schedule. Pick **Notation > Labels > Door (tag)** then:

Center of lable:	Pick a point
Door Number:	Type **4**
Door Size:	Type **30" x 80"**
Door Type:	Type **SINGLE**
Description:	Type **LH, WOOD PASSAGE DOOR**
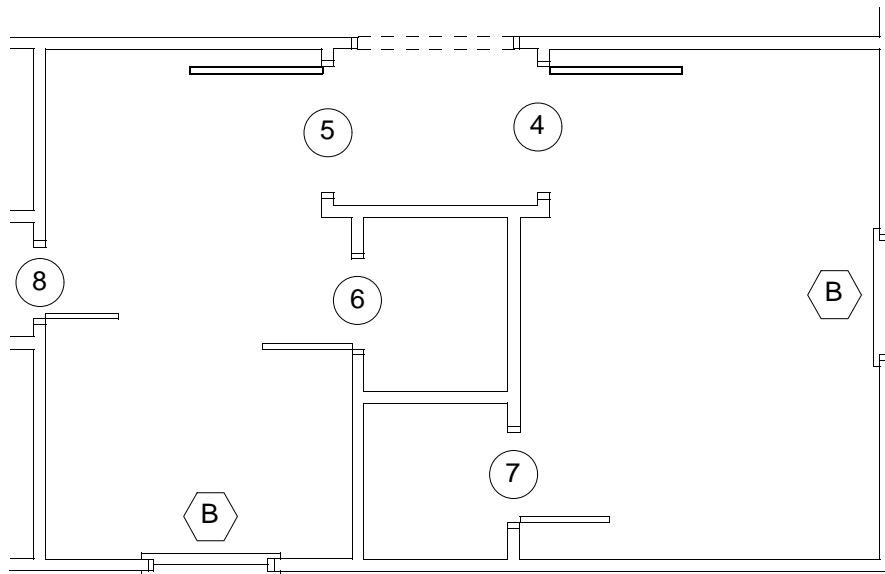
Repeat this process for each door and window in the plan. If you have any duplicate doors or windows, simply copy the existing label from one to another, like window **B** above. This way you cannot mistype any information, thus insuring accuracy.

After labeling all doors and windows we can add a Door and a Window Schedule. These schedules count the number of doors and windows and totals the quantity base upon the number or letter and then builds a chart. Pick **Notation > Schedules > Door** then pick a point in the upper right hand corner of the paper border. The Door Schedule will automatically be constructed. Now pick **Notation > Schedules > Window** then pick the lower right hand corner of the Door Schedule to attach the Window Schedule to the bottom of it, or pick any other point to locate it elsewhere.

Should you change, add or delete a door or a window tag, simply erase the appropriate schedule and rebuild it with the Schedule command. Though this step is not automatic, like in other programs, it also does not carry the program "overhead" that they do. Therefore the overall benefit to the user is greater.

Create an Electrical Plan

We are now ready to proceed with the Electrical Plan. This is the sheet where you will place all of the wall outlets, lights, switches, etc. and any other details you need.

To start a Electrical Plan, we must first display the Electrical System. Pick **Utility > Display System**. Pick **Electrical** on level **1**, then pick **OK**. You will now see the Walls, Doors, Windows, Appliances and Fixtures from Floor Level 1 appear. Note there is no Per Level title block. Just **Display Level** 1, copy the title block using **Copy 2 Level ?**, and type **1E** for Electrical on level one. Now display the Electrical system for level one again and edit the title block. The drawing number is **E-1** and the name is **Electrical Plan**.

You now have a blank sheet to begin placing Electrical symbols and notes. To begin, zoom in around the two bedrooms in the lower right hand corner of the house.

First we will place standard duplex wall outlets. Pick **Electrical > Outlets > Wall Mounted > Duplex > Duplex** then at the **Pick insertion point:** prompt pick a wall line to place the outlet on (*the OSNAP Nearest is active*). After placing the outlet, drag your cursor to set the rotation angle (*turn on ORTHO to make it easier*).
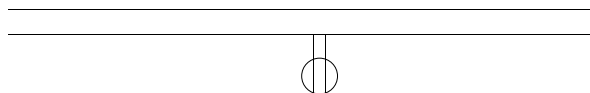
To continue placing outlets, just hit **Enter**. If you have done any other command and want to return to placing outlets, you can re-insert the last used block by picking **Symbols > Insert Previous Block**.

Now pick **Electrical > Lights > Ceiling Mounted > Low Voltage** and place the lights as shown below. Then pick **Electrical > Switches > Single** and place the light switches as shown below. Finally pick **Electrical > Electrical Line** to draw the wiring lines connecting the lights and the switches. Refer to *Chapter ??, Electrical* for more detailed instructions on the **Electrical Line** command.
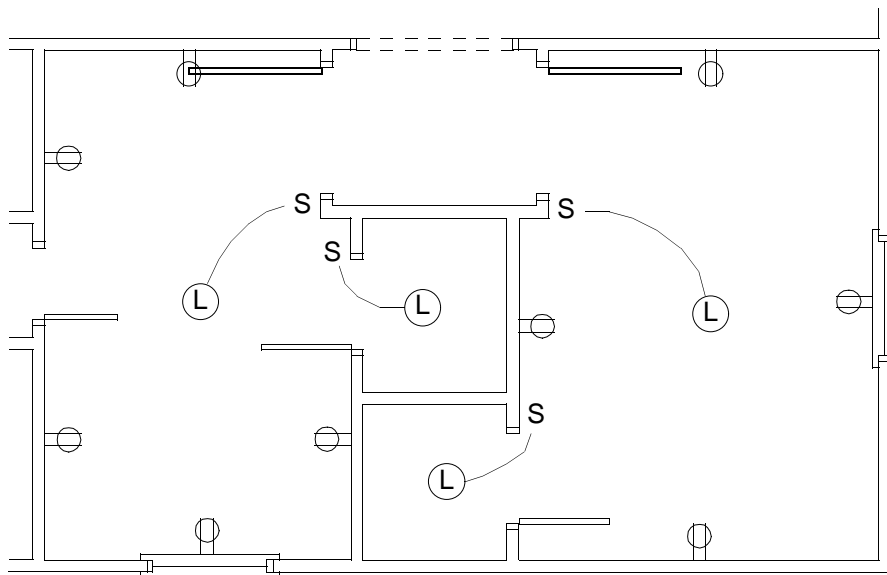
This concludes the Electrical Plan. Obviously this is not everything required for a complete electrical plan, but you can add any symbols, notes or details that you need to satisfy your local building codes.

Create a Cover Sheet

Now **Display Level** 1 again. At this point you have created a Floor Plan, a Foundation Plan, a Dimensional Plan and an Electrical Plan. Using the methods learned previously you can also create Plumbing and HVAC Plans. To finish the plans we now need a Cover Sheet.

This is a simple process. First we need to create the Level by copying the title block to Level **C** using **Utility > Level Utilities > Copy 2 Level ?**. Now **Display Level** C. You will now have a blank sheet for adding a main title, drawing index or general notes. You might also wish to add an elevation of the home for a dramatic appearance. You must also edit the new title block to reflect a drawing number of **C-1** and a title of **Cover Sheet**.
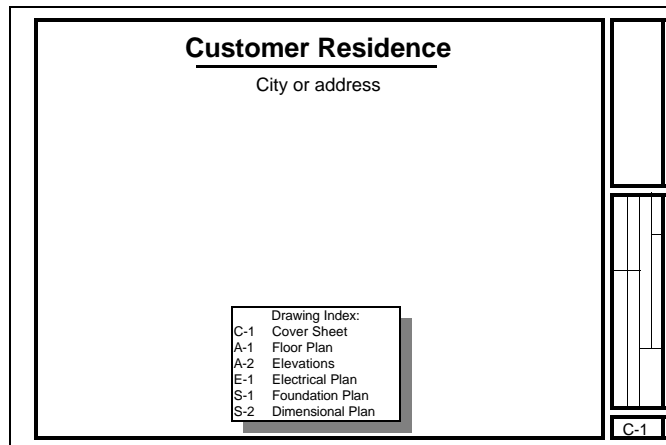
Sample Cover Sheet

Now that you have created a set of plans, pick **Utility > Layers > All ON** and you will see many objects appear, showing just how much work you have done. Then use the **Display Level** or **Display System** to see the plan you desire then just plot it out.

To see one plan superimposed over another like a transparency, pick **Utility > Level Utilities > Add Level** then type the name of the Level you wish displayed on top of the current Level. This allow you to see the alignment of wall, doors and other systems between Levels.

Plotting the drawing:

To plot a drawing in **AutoPLAN** simply:

- Display the desired Level or System
- Zoom Extents (*to check for objects outside of the paper border*)
- Then plot as you normally would in AutoCAD

Chapter 4 - Elevation Tutorial

Chapter 4 begins the **AutoPLAN** Elevation tutorial. This tutorial will demonstrate the steps to construct a 2-story building. Again, though the building is somewhat fictional, the methods are the same on a "real" elevation.

In this tutorial you will learn how to:
- Set up the drawing
- Layout the building
- Create doors and windows
- Notate the drawing
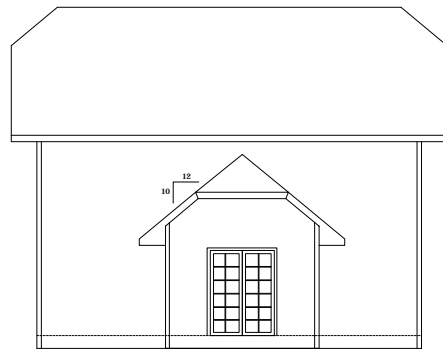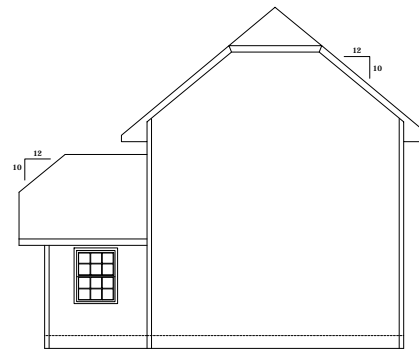
FRONT ELEVATION   LEFT ELEVATION

Beginning the drawing:

Start a new drawing. When the **AutoPLAN** Scale Setup appears, set the scale to 1/4"= 1'-0", the paper size to **D** and the Snap **ON** and set to **12"**. We are ready to begin drawing.

To construct an elevation pick **Elevations > Elevation views > Front view** and you will be prompted:
Locate from (<Pick point>/Reference point): Hit ENTER.
Pick start point of elevation @ bottom of wall: Pick a point at **80',40'**.
Enter width of structure: Type **20'**.
Enter depth of floor <12">: Accept the default.
Enter floor to top plate distance <8'-0">: Type **17'**.
Enter rise <6>: Type **10**.
Enter run <12>: Accept the default.
Enter width of overhang <1'-0">: Type **2'**.
Enter width of rafter <6">: Accept the default.
Width of fascia board <6">: Accept the default.
Enter thickness of exterior wall <3 1/2">: Type **5 1/2"**.
Style of roof (Gable/Hip/Modified hip): Type **M**.
Enter vertical drop of modified hip: Type **3'**.
Show overhang (Boxed/Open) <B>: Accept the default.
Show corner trim (Y/N) <Y>: Accept the default.
Width of trim <4">: Accept the default.
Show floor line (Y/N) <Y>: Accept the default.

Now we shall construct an addition. Pick **Elevations > Additions > Attached**, and you will prompted:

Pick lower corner of wall: Pick at **P1**.
Pick in direction of addition: Pick towards **PP**.
Enter depth of addition: Type **12'**.
Enter length of addition: Type **8'**.
Enter depth of floor <12">: Accept the default.
Enter floor to top plate distance <8'-0">: Type **8'**.
Enter rise <10>: Accept the default.
Enter run <12>: Accept the default.
Enter depth of overhang <2'-0">: Accept the default.
Enter width of rafter <6">: Accept the default.
Width of fascia board <6">: Accept the default.
Enter thickness of exterior wall <5 1/2">: Type **5 1/2"**.
At this point you will be prompted that the overhang hangs below to window header. CANCEL the command and repeat it as above except set the *Floor to top plate distance* to **8'-10"**. When you return to this point again you will now be prompted:
Show overhang (Boxed/Open) <B>: Accept the default.
Style of roof (Gable/Hip/Modified hip): Type **M**.
Enter vertical drop of modified hip: Type **3'**.
Enter rise of modified hip <10>: Accept the default.
Show corner trim (Y/N) <Y>: Accept the default.
Width of trim <4">: Accept the default.
Show floor line (Y/N) <Y>: Accept the default.
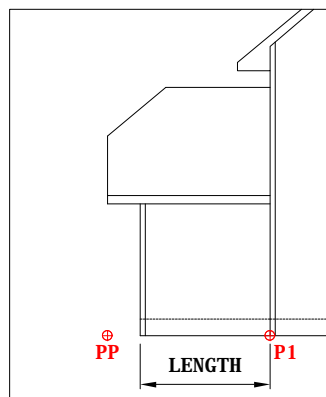
Zoom in on the addition. Pick **Elevations > Windows > Double hung** to place a
double hung window in the elevation. You will be prompted:
Pick center point of window (@ floor line): Using the OSNAP Midpoint pick at **PP**.
Floor to bottom of header <6'-8">: Accept the default.
Enter pane width: (*The width of the glass itself*) Type **33"**.
Enter pane height: (*The height of the glass itself*) Type **45"**.
Enter sash width <1.5>: (*The width of the sash frame*) Accept the default.
Enter molding width <2.25>: (*The width of the window trim*) Accept the default.
Show grilles? <Y>: Accept the default.
Enter number of panes horizontally <3>: Accept the default.
Enter number of panes vertically <3>: Type **2**.
Width of panes <1/2>: Accept the default.
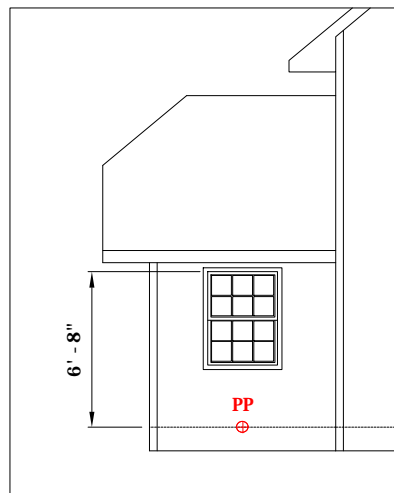
Type **ZX** (*this enhances the Zoom Extents by scaling down slightly*) to see the entire
elevation drawing.

Before constructing the other elevation be sure to **ZX** to get a better view. Pick
Elevations > Elevation views > Side view and follow these steps:

Pick lower corner of wall: Pick a point at **25',40'**.
Enter length of structure: Type **30'**.
Enter depth of structure: Type **20'**.
Enter depth of floor <12">: Accept the default.
Enter floor to top plate distance <8'-0">: Type **17'**.
Enter rise <6>: Type **10**.
Enter run <12>: Accept the default.
Enter depth of overhang <1'-0">: Type **2'**.
Enter eave overhang distance <1'-0">: Type **2'**.
Enter width of rafter <6">: Accept the default.
Width of fascia board <6">: Accept the default.
Enter thickness of exterior wall <3 1/2">: Type **5 1/2"**.
Show overhang (Boxed/Open) <B>: Accept the default.
Style of roof (Gable/Hip/Modified hip): Type **M**.
Enter vertical drop of modified hip: Type **3'**.
Show corner trim (Y/N) <Y>: Accept the default.
Width of trim <4">: Accept the default.
Show floor line (Y/N) <Y>: Accept the default.
The elevation is constructed.

Pick **Elevations > Elevation views
> Front view**. Type **R** and pick **REF
pt**, then **PP**. Enter **10'** for the
distance, **12'** for the width of the
structure. The roof will be Modified
hip, 10/12, default the remaining
prompts, except do not shown the
floor line (*because one already
exists*).

REF pt   PP
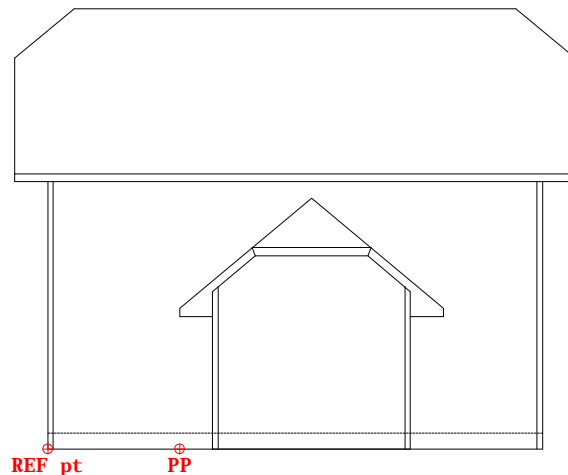
Zoom in on the vestibule area. Pick **Elevations > Doors > Insert**. Select **FDOR60** the answer the prompts as follows:
Locate door (<Pick point>/Reference point): Type **R** for reference point.
Pick reference point: Pick at **REF Point**.
Pick in direction of door: Pick at **PP**.
Enter distance to center of door: Type **8'**.
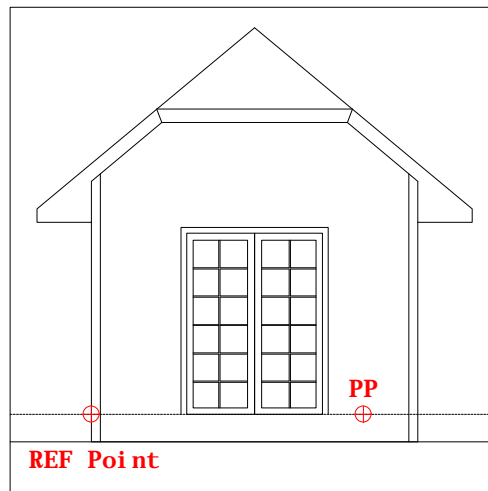
Now that the door is placed we will label the slope of the vestibule. Pick **Notation > Labels > Label Slope** then pick at **P1** followed by **P2**. The label will be constructed. (Note: *The points must be picked from the bottom to the top*).
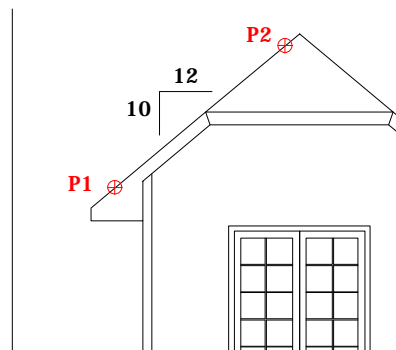
Now label the remaining slopes as shown below. Then pick **Notation > Labels > Title (Underlined)**. Locate a point centered below the elevation on the left and type **FRONT ELEVATION**. This will construct the text with a double underline. Repeat the steps for the left elevation. Save the drawing and start a new one.
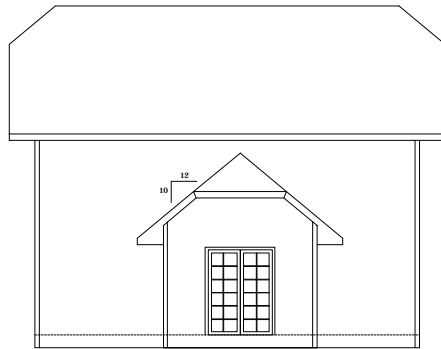
FRONT ELEVATION
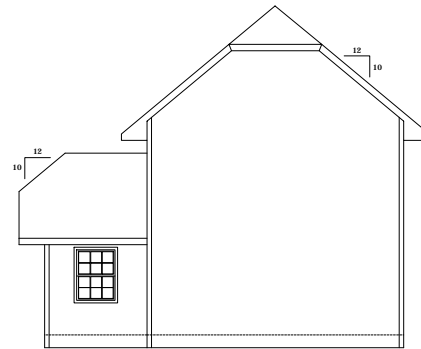
LEFT ELEVATION

Setup to **1/2"= 1'-0"** *or* **24** on **D** size paper. Construct a front view elevation that is 20' wide, 12" floor, 9' wall, 10/12 pitch, modified hip, boxed overhang of 18" wide, 6" rafter, and 6" fascia.
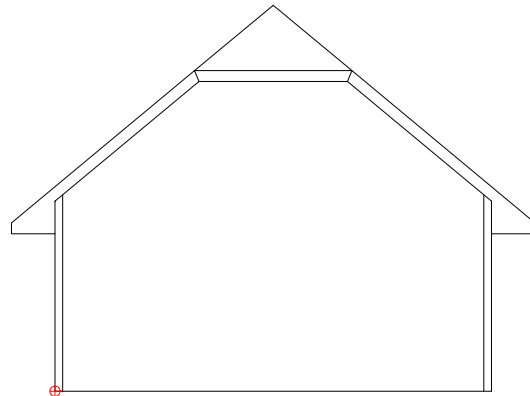
Pick **Elevations > Additions > Projected**. Pick the points in response to the prompts in order as shown at right. Make the addition 16' in depth (*in-and-out of the page*), 12' in length, accept the remaining defaults. This will construct an addition that matches the fascia line and is projected onto the existing roof.
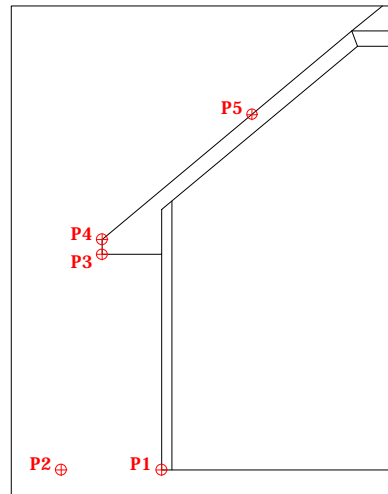
Pick **Elevations > Additions > Sheds > Projected**. Pick the points in response to the prompts in order as shown at right. Make the addition 8' in length, on a 12" floor with an 8' wall that is 3 1/2" thick, accept the remaining defaults.
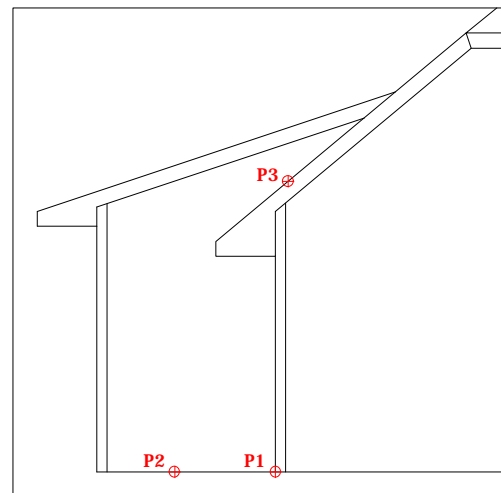
To place grilles (*divided lights*) in an open window pick **Elevations > Windows > Grilles**. First pick **P1** then **P2** (Note: *The points must be picked from the bottom left to the upper right*). Dividing the glass by **3** horizontally and **2** vertically at **1/2"** thick will result in the picture at the right.
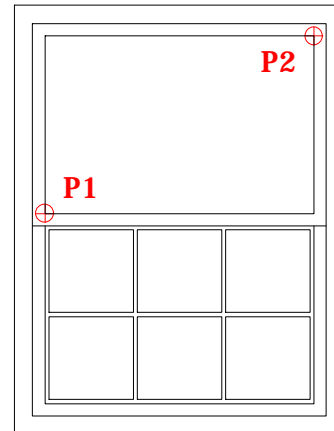
To place shutters in an elevation pick **Elevations > Windows > Shutters**. First pick **P1**, then **P2**, the **PP**. Answer the remaining prompts as required.
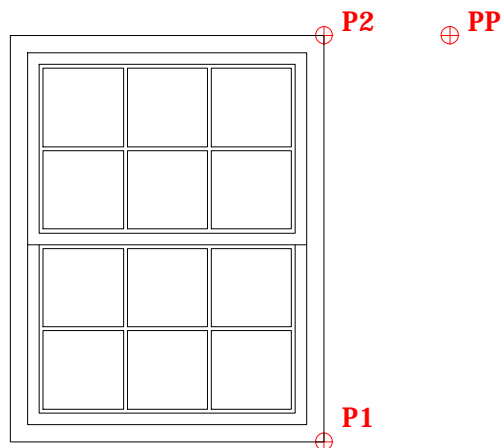
Chapter 5 - Commercial / Industrial Tutorial

This chapter will take you step-by-step through the process of creating a basic commercial Floor Plan in AutoPLAN. Though the basics, such as doors and windows, remain the same, commercial and industrial projects are usually more demanding. In this chapter you will learn to:

- Layout Exterior and Interior Walls
- Add Curtain Walls
- Layout a Column Grid
- Create Structural Columns
- Create a Second Floor Plan
- Copy objects from one Level to another

Getting Started

One way that most commercial and industrial buildings differ from a residential structure is the presence of structural columns. These columns usually lay on a grid. This grid will become the base for our building layout.

First start a new drawing and set the scale to **1/4" = 1'-0"** on a **D** sized paper and set the SNAP to **1'-0"**. Now pick **Construction > Columns > Column Grid** then:

Must start in upper left or upper right corner!	
Pick start for first column line:	Pick or type the coordinate **36'-0",79'-0"**
Pick in direction of next column line:	With ORTHO on, pick to the right.
Enter approximate width of building:	Type **46'**
Enter first column number <1>:	Hit **Enter** to accept
Will column numbers Increase or Decrease? <Increase>:	Hit **Enter** to accept
eXit/Enter width of next bay <20'-0">:	Type **12'-0"**
Enter column number <2>:	Hit **Enter** to accept
eXit/Enter width of next bay <12'-0">:	Hit **Enter** to accept
Enter column number <3>:	Hit **Enter** to accept
eXit/Enter width of next bay <12'-0">:	Hit **Enter** to accept
Enter column number <4>:	Hit **Enter** to accept
eXit/Enter width of next bay <12'-0">:	Hit **Enter** to accept
Enter column number <5>:	Hit **Enter** to accept
eXit/Enter width of next bay <12'-0">:	Type **X** to Exit
Enter first column letter <A>:	Hit **Enter** to accept
Will column letters Increase or Decrease? <Increase>:	Hit **Enter** to accept
eXit/Enter width of next bay <12'-0">:	Type **15'-0"**
Enter column number <B>:	Hit **Enter** to accept
eXit/Enter width of next bay <15'-0">:	Hit **Enter** to accept
Enter column number <C>:	Hit **Enter** to accept
eXit/Enter width of next bay <15'-0">:	Hit **Enter** to accept
Enter column number <D>:	Hit **Enter** to accept
eXit/Enter width of next bay <15'-0">:	Type **X** to Exit

Now type **ZX**. You should now see a column grid labeled A-1 thru D-5. Next we will place structural columns on the grid. Now type **ZC** (*shortcut for Zoom Center*) then pick or type the coordinate **42'-0",72'-0"** and set the magnification height to **24'**.
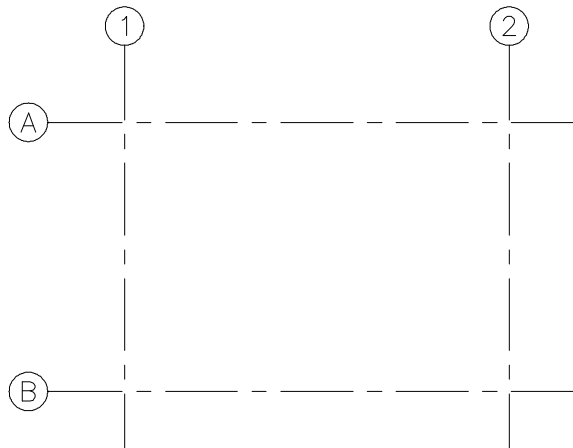
To create the columns, pick **Construction > Columns > Structural Shapes** then:
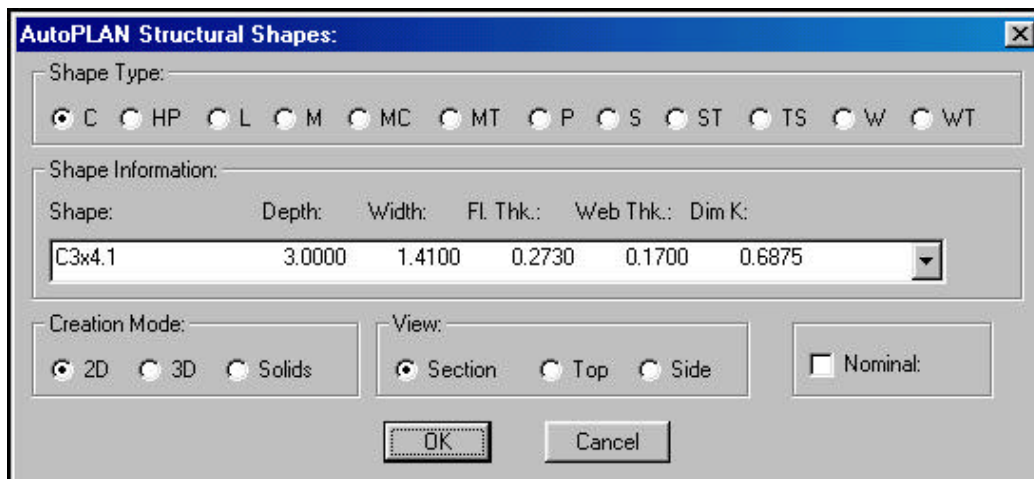
- Set the Shape Type to **W**
- Select a **W8x24** from the list
- Make sure **2D** and **Section** are checked
- Pick **OK**

Start point of beam: Pick the intersection of Columns A & 1

Location of start point: TL/TC/TR/ML/MC/MR/BL/BC/BR <TC>: Type **MC**

Rotate beam? Yes/<No>: Hit **Enter**

The W8x24 wide flange beam is drawn centered on Column A1.

The drawing should look like the one below at this point.
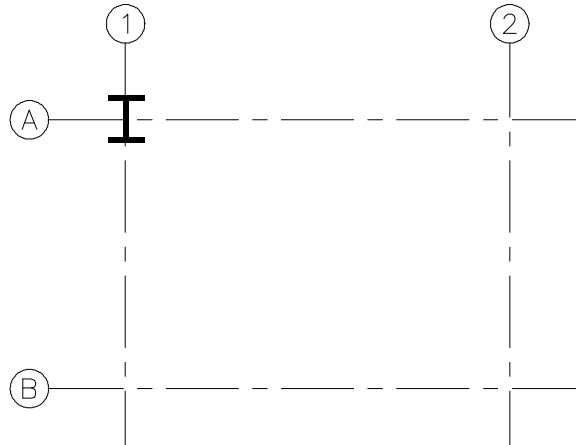
Now we need to place another W8x24 on Columns B3 & C3. Instead of drawing another, we will copy the existing beam to another Column Location. Pick **Construction > Columns > Copy Column** then:

Select column objects to copy: Select the last drawn W8x24
Base point: Pick the intersection of Column A1
PAn(Off)/ROtate(Off)/Enter first column number/letter: Type **PA**
  (*This will active the auto-panning feature to display the new column location*)
PAn(On)/ROtate(Off)/Enter first column number/letter: Type **B**
Enter second column number/letter: Type **3**
  (*Notice that the column was copied and the display changed to Column B3*)
PAn(On)/ROtate(Off)/Enter first column number/letter: Type **C**
Enter second column number/letter: Type **3**
  (*Notice that the column was copied and the display changed to Column C3*)
PAn(On)/ROtate(Off)/Enter first column number/letter: Hit **Enter** to exit.

This command is especially useful when you need to copy objects to another part of the drawing without displaying or even knowing where it is. If you should need to locate a specific Column, pick **Construction > Columns > Locate Column** and you will be zoomed in on the Column you designate (*ex. A3*).

Now type **ZP** (*short for Zoom Previous*), then repeat one more time. You should be back where you were before copying the column.
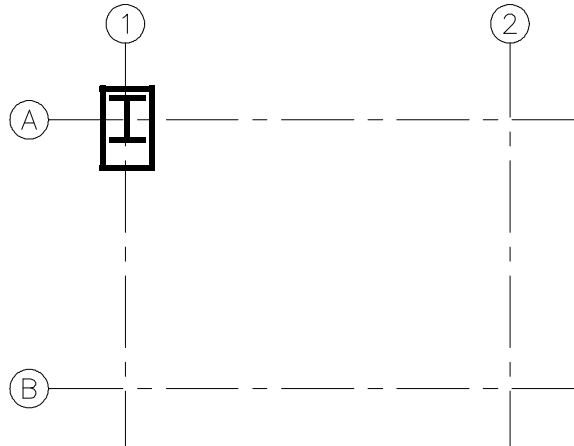
Now we will add a Column Box around Column A1. A Column Box can represent a concrete footing, a steel base plate, or even a plywood framing over the column. In our example it will represent a concrete pillar. To create the column box, pick **Construction > Columns > Column Box** then:

Pick center of column:	Pick the intersection of Columns A & 1
Enter width of box <1'-0">:	Hit **Enter** to accept
Enter offset from center line <6">:	Hit **Enter** to accept
Enter length of box <5">:	Type **18**
Enter offset from center line <9">:	Type **6**
<Rotation angle>/Reference:	Type **0**

The box is drawn around Column A1.

Now using the same method to copy Column A1 to B3 & C3, we will now copy both Column A1 and the column box to Column D1. The only variation is that we will turn on the Rotate option by typing **RO** at the first **PAn(Off)/ROtate(Off)/Enter first column number/letter:** prompt. After they are copied to Column D1, type a rotation angle of **180** degrees, then exit the command.

Now using the AutoCAD Array command, Array both Columns A1 & D1 (*including the column boxes*) in 5 columns spaced at 12'-0". Now place a 12" square column box around Columns B3 & C3, then copy both the column and the box from Column B3 to Columns B1, B5, C1 & C5 (*turning OFF Pan and Rotate this time*).

Type **ZX** to see the entire plan thus far.

Now we will add curtain walls between the column boxes. We will line the outside of the wall itself (*not the brick line*) along the column center lines (*Points 1 & 2*).
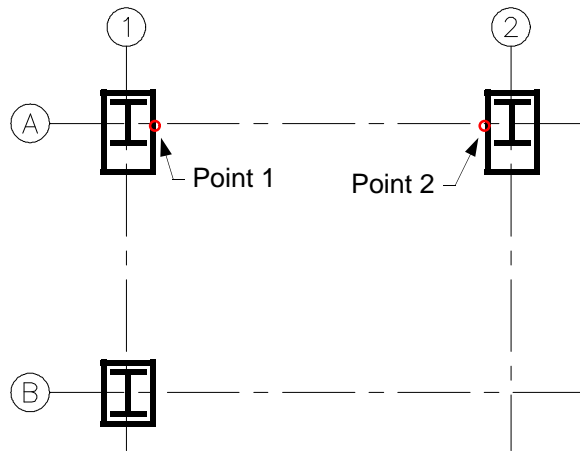
Pick **Construction > Walls > Curtain** then:

Enter wall thickness <3 1/2">:	Type **8"**
Thickness of exterior brick <0">:	Type **3 1/2"**
Distance from stud to exterior brick <1">:	Type **1"**
Center wall/Reference point/<Pick start of curtain wall>:	Pick **Point 1**
Pick opposite end of wall:	Pick **Point 2**
Pick inside of building:	Pick a point inside
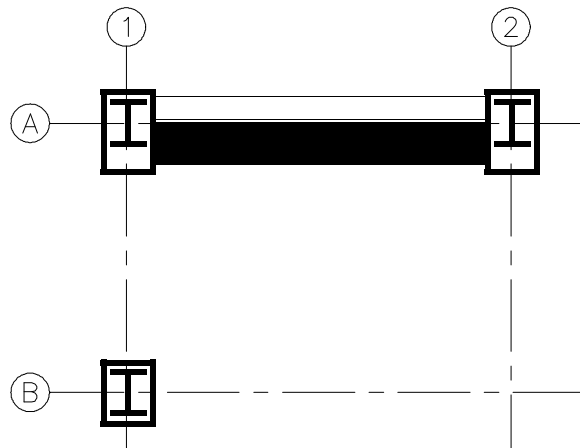
Now finish adding the remaining curtain walls along Column Row A & D. Now do the same for the left and right side walls, except make the walls **4"** thick instead of **8"**. Now type **ZX** to display entire drawing.

At this point, we are ready to create the Second Floor Plan. But before we do, we will place the windows in the First Floor Plan, because they are the same ones used on the Second Floor. By placing them now, the windows on the Second Floor will be finished when we copy the First Floor to the Second Floor.

Before placing the window, we will change a few of the AutoPLAN settings to make the Doors and Windows appear more like commercial ones. One way to achieve this is to change the jamb thickness and width. Pick **Utility > Set Up > Current** then pick the **Jamb...** button. Set the thickness to **2"** and uncheck the "**Full width of wall**" checkbox. Pick **OK** until you return to AutoCAD.
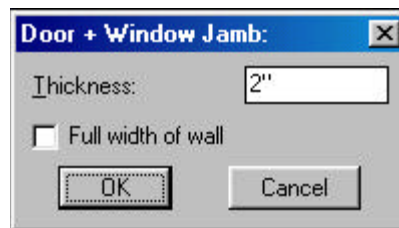
With the "**Full width of wall**" unchecked, whenever you place a door or window, you will now be asked for the **"Width of frame:"**.

Now pick **Windows > Multi: Connected** and place two **60"** wide windows with a **4"** wide frame, and a **2"** x **4"** mullion centered between Columns A1 & B1. Repeat this process to place the same window between Columns C1 & D1, A5 & B5, and C5 & D5. Now type **ZX** to display entire drawing.
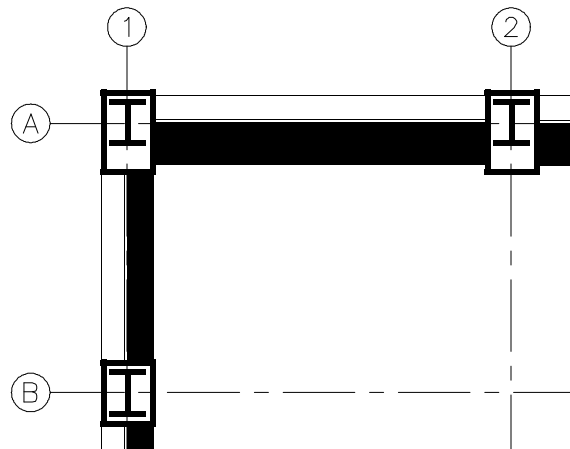
Now that we have added the windows on the First Floor, we are ready to make the Second Floor. Pick **Utility > Level Utilities > Copy 2 Level ?** then select all objects on the screen except for the any of the column lines or balloons. When prompted "**Which level to copy to:**" enter **2** for Floor Level 2.

Now **Display Level 2**. Notice that all layers are white. This happens if you copy to a layer that does not exist because there are no properties yet to match. If these layers had already existed, the colors and linetypes would match the existing. To correct this problem pick **Utility > Level Utilities > Refresh colors** and all colors will be updated.

Notice that the Column Grid did not transfer. It was not selected to copy because it was turned off. Now **Display Level 1**, then pick **Construction > Columns > Copy grid 2 Level ?** and enter **2** for Floor Level 2. Now **Display Level 2** and you will have a Column Grid on Level 2. Again you will need to **Refresh** the colors.

With Level 2 displayed, place another set of windows between Columns B1 & C1 and B5 & C5. Now **Display Level 1**. Using **Doors > Double > Double** place a set of doors on the outside wall between Columns B1 & C1 and B5 & C5.

Now when you switch from one level to another, you will see that they are different, but yet very similar. By allowing you to copy objects from Level to Level, productivity is again increased.

At this point you should be able to create any interior wall partitions, add notations, or add fixtures, appliances, etc. Before finishing the tutorial, we will create a staircase in the center of the building.

In order to locate the staircase properly, we will need to zoom in on the area to get a better view. Pick **Construction > Columns > Locate Column** then:

Searching for all column identifying text, please wait...
Enter first column number/letter: Type **B**
   (*Note that the Column letters ARE case sensitive*)
Enter second column number/letter: Type **3**
Magnification or Height <55'-3 3/8">:   Type **24'**

The display should now appear as in the following example.
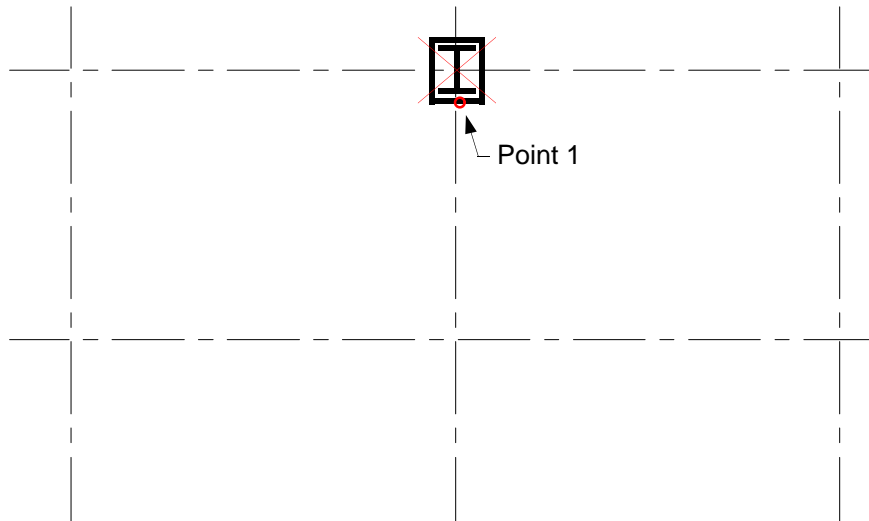
— Point 1

Now we can create the staircase. Pick **Construction > Stairs** then:

Stair type: Straight/L/U/Circular/sPiral <Straight>:	Type **U** for U-shaped.
Pick outside corner of landing:	Pick at **Point 1**
(*Turn ORTHO on for the following picks*)	
Pick in direction of stairs:	Pick to the left.
Pick in direction of landing:	Pick towards the bottom.
Enter length of landing:	Type **7'-6"**
Enter depth of landing:	Type **3'-6"**
Enter width of steps:	Type **3'-6"**
Enter Floor-to-floor height:	Type **11'**
Enter approximate rise desired <7.5>:	Hit **Enter** to accept
Enter desired run <10.5>:	Hit **Enter** to accept
Show handrail <Y>:	Hit **Enter** to accept

A U-shaped staircase is created. Using the **Copy 2 Level ?** command, copy the staircase to Floor Level 2.

This concludes the Commercial / Industrial Tutorial.

Chapter 6 - Construction Menu

This chapter details the utilities located in the construction menu. These utilities are the basic building blocks of a house or a building. Aside from the doors, windows and symbols, most every command for constructing a building resides in this menu.

Construction Pull-down Menu Layout

Below is a diagram of the **Construction** pull-down menu.

Construction

Build wall	▶
Ceilings	▶
Columns	▶
Millwork	▶
Misc.	▶
Shapes	▶
Stairs	

HVAC	▶
Roof	▶
Details	▶

Icons

Grid layout
Tray ceiling

| New |
| Existing |
| Layout |
| |
| Curtain |
| Stub |
| Partition |
| L-Shaped |
| U-Shaped |
| Freeform |
| |
| Foundation |

Cabinets
Vanities
Shelving

Column Box
Column Grid
Structural Shapes
Copy Column
Locate Column
Identify Column
Copy Grid to Level ?
Toolbar On

Deck
Fireplace
Partitions
Sloped Line

Rectangle
Slot
Square
Structural Shapes
Tables

Duct Layout
Diffusers
Dampers
Toolbar On

Main
Attached

Enlarge/Reduce
Batt Insulation
Rafter
Stud
Tile Levels
Wall Sections

To see a pictoral representation of each option pick **Icons** at the bottom of the menu.

The Construction menu is described on the next page.

Build Wall:

This section details the method of constructing walls using **AutoPLAN**.

New: Used to create the perimeter walls of a structure by creating a new baseline.

To create a perimeter wall line using **New**:

- Pick **Construction > Build Wall > New**. The prompts are as follows:
    Current Floor Level = 1   *Displays the current floor level.*
    New floor number <1>:   *Enter the desired level for the new walls.*
    Pick start point of wall: *Pick the starting point of the new wall.*

  You are now taken into the AutoCAD POLYLINE command and will see the
  following prompt after each point picked for the baseline:

    Arc/Close/Halfwidth/Length/Undo/Width/<Endpoint of line>:

  You can now draw the baseline as though you were drawing with a normal POLYLINE
  including arcs, however do not change the width of the line. If the new BASELINE is
  to represent an enclosed area you must "**C**" to close the POLYLINE, or else hit
  ENTER to finish.

    Width of wall <3 1/2">: 5 1/2"   *Enter the width of the wall.*
    Thickness of exterior brick <0">: 3 1/2"   *Enter the thickness of the exterior brick.*

  *If you hit Enter or type "0" for the brick, no brick will be drawn, and the next prompt
  will be bypassed.*

    Distance from stud to exterior brick <1 1/2">: 1" *Enter the desired distance.*
    Pick inside: *Pick a point within the closed baseline.*

The perimeter walls will now be constructed with or without brick.

4   3

1   2

Pick points in order,
"Close" the POLYLINE,
then pick inside.

Result
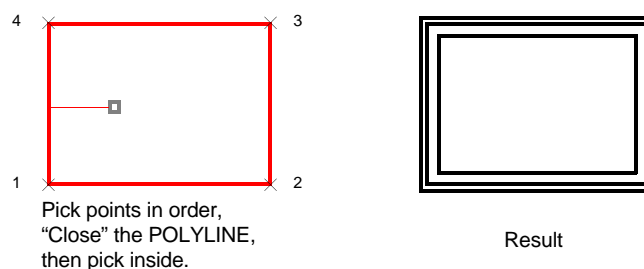
*Note: If the building is to have separate types of foundations (ex:. a crawlspace and
full basement) draw these areas separately when using the **New** option. This will
allow different parameters to be given for each baseline.*

Build Wall: *(Continued)*

Existing: Used to create the perimeter walls of a structure by using an existing baseline created prior to using this command.

To create a perimeter wall line using **Existing**:

- Pick **Construction > Build Wall > Existing**. The prompts are as follows:
  Current Floor Level = 1 *Displays the current floor level.*
  New floor number <1>: *Enter the desired level for the new walls.*
  Width of wall <3 1/2">: 5 1/2" *Enter the width of the wall.*
  Thickness of exterior brick <0">: 3 1/2" *Enter the thickness of the exterior brick.*

  If you hit Enter or type "0" for the brick, no brick will be drawn, and the next prompt will be bypassed.

  Distance from stud to exterior brick <1 1/2">: 1" *Enter the desired distance.*
  Pick inside: *Pick a point within the closed baseline.*

The perimeter walls will now be constructed with or without brick.
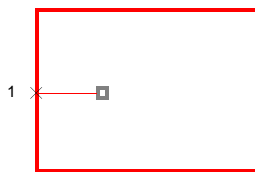
Pick the POLYLINE,
then pick inside.
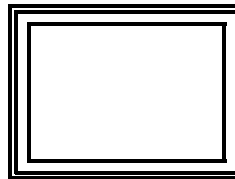
Result

Layout: Used to create a baseline without creating walls.

This command makes **Baseline** the active layer and then activates the AutoCAD POLYLINE command. You will see the following prompt after each point picked for the baseline:

    Arc/Close/Halfwidth/Length/Undo/Width/<Endpoint of line>:

You can now draw the baseline as though you were drawing with a normal POLYLINE including arcs, however do not change the width of the line. If the new BASELINE is to represent an enclosed area you must "**C**" to close the POLYLINE, or else hit **ENTER** to finish.

Build Wall: *(Continued)*

Curtain: Used to create a curtain wall.

A curtain wall is a non-supporting wall usually located between two columns. Much like the **Straight** wall command the **Curtain** wall only draws straight walls, but allows for exterior brick and does not trim the adjoining walls or columns.

- Pick **Construction > Build Wall > Curtain**. The prompts are as follows:

Enter wall thickness <3 1/2">: 4   *Enter a number or default.*
Thickness of exterior brick <0">: 3.5   *Enter a number or default.*
Distance from stud to exterior brick <1">:   *Enter a number or default.*
Center wall/Reference point/<Pick start of curtain wall>:

NOTE: The start point of the wall, regardless of the method used,
        locates the start point of the wall on the exterior of the
        wall (or stud line), not the brick line (if present).
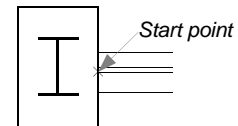
a. Pick start of curtain wall: *Specify a point (1)   (OSNAP End & Int implied)*
b. Center wall: *Specify a point (1)   (OSNAP End, Mid & Int implied)*
c. Reference point:
   Pick reference point: *Specify a point (Ref. point)*
   Pick in direction of wall: *Pick in direction of start point*
   Enter distance to wall <1'-0">:   *Enter a number or default.*
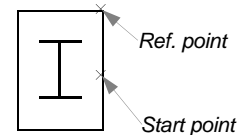
The remaining prompts are as follows:

Pick opposite end of wall: *Specify a point (2)*
Pick inside of building: *Specify a point (3)*

Result
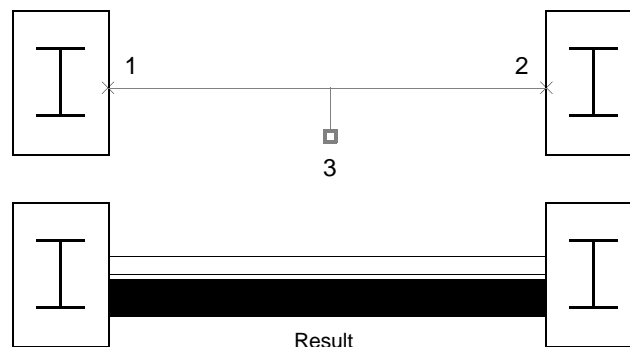
Build Wall: *(Continued)*

Stub: Used to create a stub, or partial wall.

A partial wall is one that does not cross an entire room, such as the **Straight** wall. It is capped off on the end and trims the adjoining wall.

- Pick **Construction > Build Wall > Stub**. The prompts are as follows:

Enter wall thickness <3 1/2">:	*Enter a number or default.*
Reference point/<Start point of wall>:	*See options below:*

  a. Start point of wall:

	Specify a point (1).
Pick in direction of wall:	*Pick in direction of next wall line (2).*
Pick opposite wall line <Perp>:	*Pick on opposite wall line (3).*
Length of wall <4'-0">:	*Enter a number or default.*
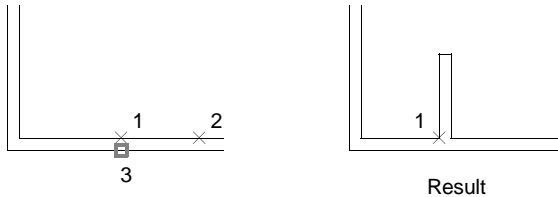
Result

  b. Reference point:

Pick reference point:	*Specify a reference point (1).*
Pick in direction of wall:	*Pick in direction of start point (2).*
Enter distance to wall <1'-0">:	*Enter a number or default.*
Is this the inside or outside wall? <Inside>:	*Type **I** for inside or **O** for outside.*
Pick opposite wall line <Perp>:	*Pick on opposite wall line (3).*

Result - *If Outside*   Result - *If Inside*
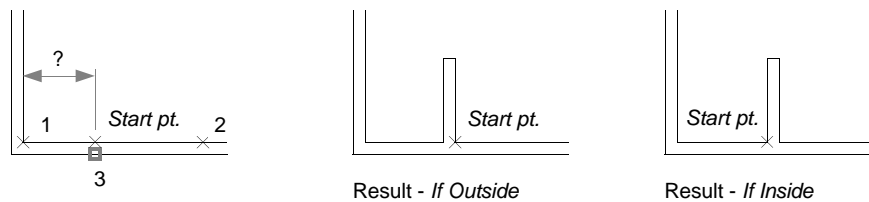
Build Wall: *(Continued)*

Partition: Used to create a straight partition wall.

A partition wall is one that crosses an entire room. It trims both adjoining walls.

- Pick **Construction > Build Wall > Straight**. The prompts are as follows:

Enter wall thickness <3 1/2">: *Enter a number or default.*
Middle of wall/<Pick inside corner of existing wall>: *See options below:*

a. Pick inside corner of existing wall: *Specify a point (1)*
   Pick opposite corner of existing wall: *Specify a point (2).*
   Pick side of existing wall to place new wall: *Pick in direction of next wall line (3).*
   Distance to new wall <6'-0">: *Enter a number or default.*
   Is this the inside or outside wall? <Inside>: *Type **I** for inside or **O** for outside.*
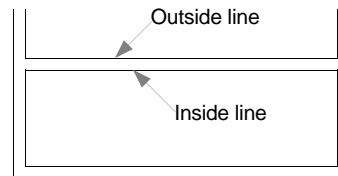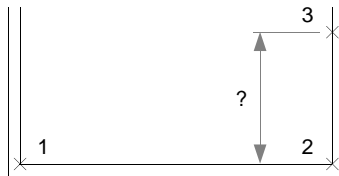
b. Middle of wall: *Type **M** for middle of wall.*
   Pick first wall: *Select a line (1).*
   Pick opposite wall: *Select opposite wall line (2).*
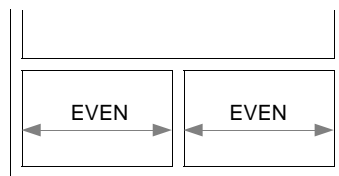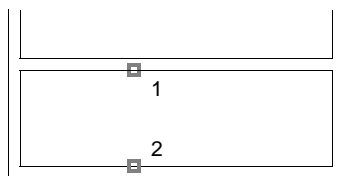
Build Wall: *(Continued)*

L-Shaped: Used to create an L-shaped wall.

An L-Shaped wall is one that creates a room relative to an existing corner. It trims both adjoining walls.

- Pick **Construction > Build Wall > L-Shaped**. The prompts are as follows:

Enter wall thickness <3 1/2">:	*Enter a number or default.*
Pick inside corner of existing wall:	*Specify a point (1).*
Horizontal distance to opposite corner:	*Specify a (- or +) distance.*
To which corner? Outside/<Inside>:	*Type **I** for inside or **O** for outside.*
Vertical distance to opposite corner:	*Specify a (- or +) distance.*
To which corner? Outside/<Inside>:	*Type **I** for inside or **O** for outside.*

Outside corner

Inside corner

Result
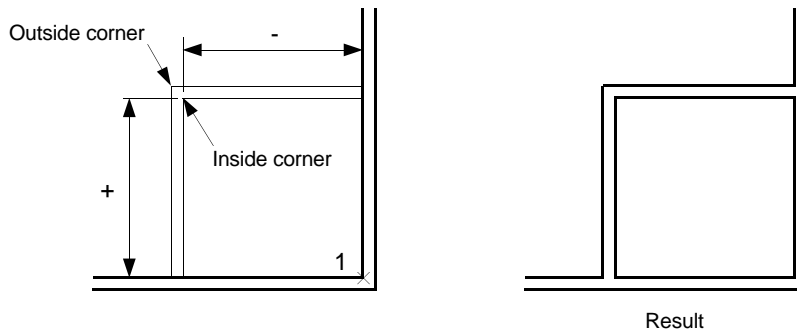
U-Shaped: Used to create a U-shaped wall.

A U-Shaped wall is one that creates a room attached to an existing wall. It trims the adjoining walls at both ends of the U-shaped wall.

- Pick **Construction > Build Wall > U-Shaped**. The prompts are as follows:

Enter wall thickness <3 1/2">:	*Enter a number or default.*
Reference point/<Start point of wall>:	*See options below:*

a. Start point of wall: *Specify a point (1).*
   Pick in direction of wall: *Pick in direction of next wall line (2).*
   Pick opposite wall line <Perp>: *Pick on opposite wall line (3).*
   Outside length of wall <10'-0">: *Enter a number or default.*
   Outside width of wall <4'-0">: *Enter a number or default.*

Build Wall: *(Continued)*

U-Shaped: *(Continued)*
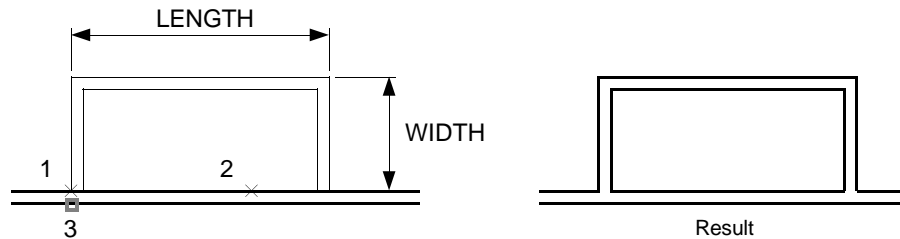
Result

b. Reference point:

Pick reference point:	*Specify a reference point (1).*
Pick in direction of wall:	*Pick in direction of start point (2).*
Enter distance to wall <1'-0">:	*Enter a number or default.*
Pick opposite wall line <Perp>:	*Pick on opposite wall line (3).*
Outside length of wall <8'-0">:	*Enter a number or default.*
Outside width of wall <4'-0">:	*Enter a number or default.*

Result
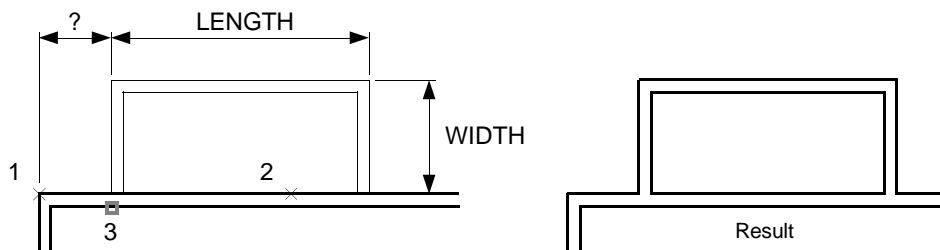
Freeform: Used to create a wall of irregular shape.

The **Freeform** command creates walls that follow the path of a new or existing polyline, similar to the **New & Existing wall** command. **Freeform**, however does not trim the adjoining walls. (*Use **Utility > Walls > Clean-up > Tee** to trim adjoining walls).*

• Pick **Construction > Build Wall > Freeform**. The prompts are as follows:

Enter wall thickness <3 1/2">:	*Enter a number or default.*
Reference point/<Start point of wall>:	*See options below:*

Build Wall: *(Continued)*

Freeform: *(Continued)*

a. New: *Accept by hitting ENTER.*
    Pick start point of wall: *Specify a point (1).*
    Current line-width is 0'-0"   *Displays current line width.*
    Arc/Close/Halfwidth/Length/Undo/Width/<Endpoint of line>: *Draw POLYLINE.*
    Width of wall <3 1/2">:   *Enter a number or default.*
    Select baseline to offset: *Pick baseline (2).*
    Pick side for opposite wall line: *Pick opposite side (3).*

Result

b. Existing: *Type **E** to activate.*

*NOTE: To use **Existing** a POLYLINE must be created and reside on the WALL-* layer prior to use.*

    Width of wall <3 1/2">:   *Enter a number or default.*
    Select baseline to offset: *Pick baseline (1).*
    Pick side for opposite wall line: *Pick opposite side (2).*

Result

Build Wall: *(Continued)*

Foundation: Creates the foundation wall and footer of a structure.

The **Foundation** command creates a foundation wall and footer of a structure base on an existing **Baseline** of the perimeter of the structure which is created during the **New wall** command defined earlier in this chapter.

- Pick **Construction > Build Wall > Foundation**. The prompts are as follows:

Enter total width of foundation wall <8">:	*Enter a number or default.*
Enter width of brick ledge <0>:	*Enter a number or default.*
Enter thickness of footer <2'-0">:	*Enter a number or default.*
Select baseline:	*Select the BASELINE to use (1).*
Pick inside:	*Pick a point within the baseline (2).*

Select the POLYLINE,
then pick inside.

Result

Brick ledge
(if applicable)

Foundation line

Footer line
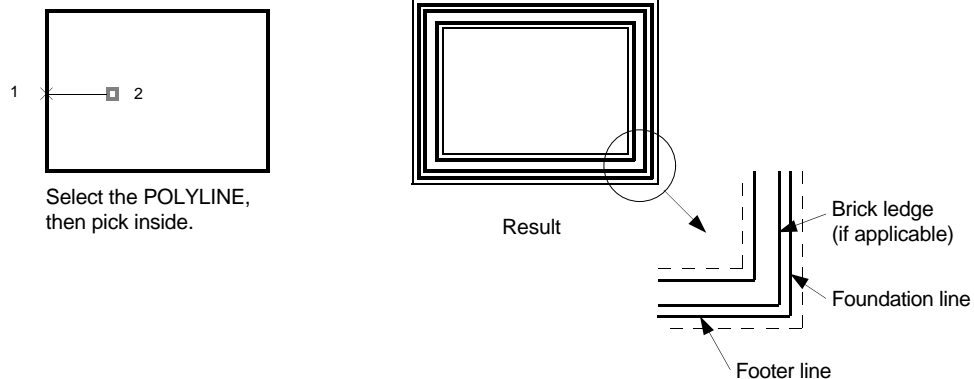
NOTE:
- *The footer is centered on the foundation wall, which includes the brick ledge width.*
- *If a value of **0** is entered in response to* Enter width of brick ledge <0>: *then a brick ledge will not be shown.*
- *The foundation wall does not display a poche line regardless of the poche settings.*

Ceilings:

This section details the method of constructing tray ceilings and reflected ceiling plans using **AutoPLAN**.

Grid Layout: Constructs a reflected ceiling plan. The panels can be either 1x1, 1x2, 1x3, or 1x4 in proportions. The grid can be dynamically moved or rotated to meet your specific requirements. After placement you are given the option to create as a hatch pattern or as individual lines. The advantage to a hatch is that it is one object, thus easier to move, copy, erase, etc. But if you explode the hatch, it drops to individual lines that are all on layer **0** and must be manually placed back on the **Ceiling-*** layer. If you chose to create the grid as lines, this is done for you.

- Pick **Construction > Ceilings > Grid Layout**. The prompts are as follows:

    Width of panel <1'-0">:   *Enter a number or default.*
    Length of panel <1'-0">:   *Enter a number or default.*
    Horizontal or Vertical <H>:   *Enter **H** for Horizontal or **V** for Vertical.*
    Pick inside of room: *Specify a point (1).*
    Accept/Move/Rotate <Accept>:   *See next page for options.*
    Create as Hatch/Lines <Hatch>:   *Enter **H** for Hatch or **L** for Lines.*
    Accept/Move/Rotate <Accept>:   **ACCEPT** or *ENTER*

To **ACCEPT** all defaults will place the grid in the exact center of the room regardless of the shape of the room.
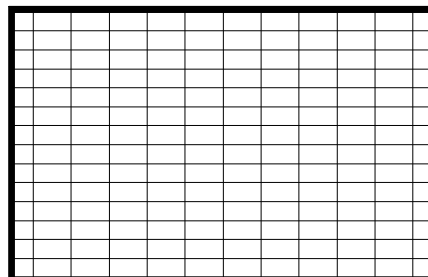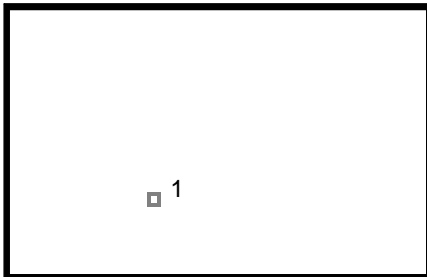
Result

Accept/Move/Rotate <Accept>: **MOVE**
The **MOVE** option allows the grid to be dynamically positioned as desired.

Base point: *Specify a point (2).*
New point: *Specify a point (3).*
Accept/Move <Accept>:   *You are given the option to Accept or Move again.*

Ceilings: *(Continued)*

2

3 - pick inside corner
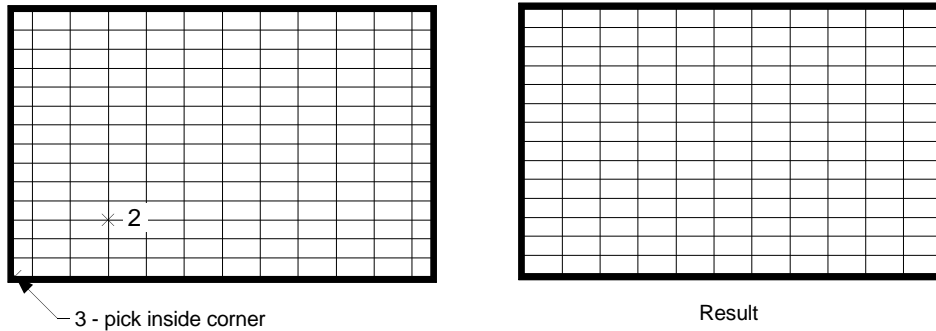
Result

Accept/Move/Rotate <Accept>: **ROTATE**
The **ROTATE** option allows the grid to be dynamically rotated as desired.

Enter new angle <0d0'>:   *Specify a new angle for the grid.*
Accept/Rotate <Accept>:   *You are given the option to Accept or Rotate again.*
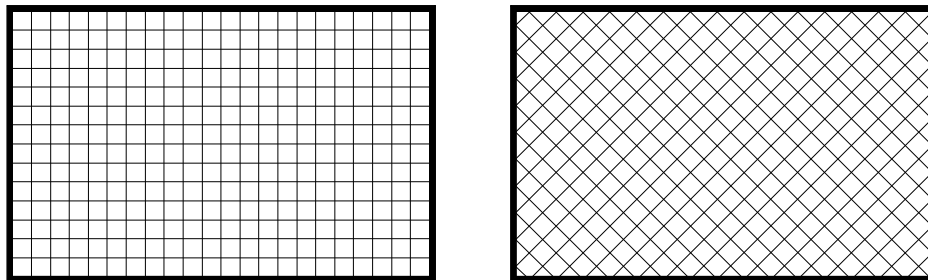
Result (*Rotated 45 degrees)*

Tray Ceiling: Constructs a representation of a try ceiling. The options are *COFFERED* and *FLAT.*

- Pick **Construction > Ceilings > Tray Ceiling**. The prompts are as follows:

  Pick lower left corner of room: *Specify a point (1).*
  Pick upper right corner of room: *Specify a point (2).*
  Enter tray offset distance from wall: *Enter a number.*
  Type of tray? Coffered/<Flat>:   *See next page for options.*

Ceilings: *(Continued)*
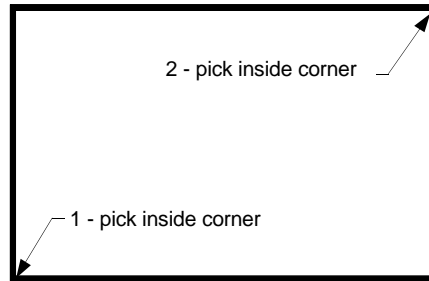
Type of tray? Coffered/<Flat>: **FLAT** or *ENTER*
The **FLAT** option creates a flat recessed or extended tray and prompts for an optional description.

Enter description: *Type a description or ENTER for none.*
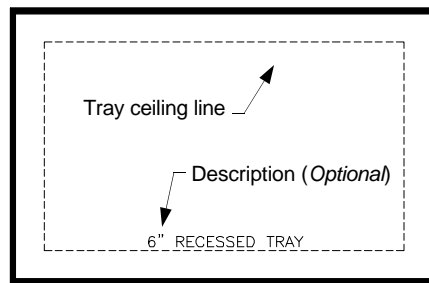
Result

Columns:

Column Box: Constructs a box representing furring, a pier, etc.around a column.

- Pick **Construction > Columns > Column Box**. The prompts are as follows:

Pick center of column: *Specify a point (1).*
Enter width of box <1'-0">:   *Enter a number or default.*
Enter offset from center line <6">: *Enter a number or default.*
Enter length of box <1'-0">:   *Enter a number or default.*
Enter offset from center line <6">: *Enter a number or default.*
<Rotation angle>/Reference: *Enter an angle or pick.*
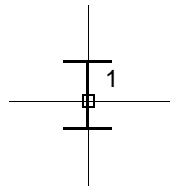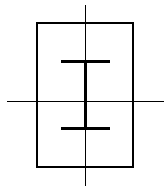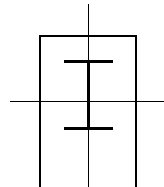
Pick point   Result   Result - Uneven   Result - Rotated
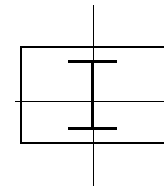
Columns: *(Continued)*

Column Grid: Constructs a column grid consisting of column center lines and sequentially numbered and/or lettered balloons. The balloons running horizontally are numbered while the balloons running vertically are lettered. The numbering and/or lettering can be either increasing in value or decreasing in value.

*NOTE: The column lines are placed on a locked layer so that they cannot be trimmed when a door or a window command is issued. Therfore, should you need to edit the objects on this layer, you must unlock the **Column-*** layer first, edit the objects, then lock the layer again.*

- Pick **Construction > Columns > Column Grid**. The prompts are as follows:

    Must start in upper left or upper right corner! *Reminder!*
The following prompt is looking for a point which will become the intersection of the horizontal and vertical column lines (not the center of the balloon):
    Pick start for first column line: *Specify a point (1).*
The following prompt is looking for a point in the direction of the next vertical column line:
    Pick in direction of next column line: *Specify a point (2).*
The following prompt is looking for a point or a distance defining the approximate width of the structure (used to determine the length of the vertical column lines):
    Enter approximate width of building: *Enter a distance or pick (3).*
    Enter first column number <1>:   *Enter a number or default.*
    Will column numbers Increase or Decrease? <Increase>: *Enter choice.*
*The following prompts will repeat and sequentially increase or decrease until **X** is entered at the prompt:*
    eXit/Enter width of next bay <20'-0">:   *Enter a number, default or pick.*
*After entering **X** at the above prompt you will next be prompted:*
    Enter first column letter <A>:   *Enter a letter or default.*
    Will column letters Increase or Decrease? <Increase>: *Enter choice.*
*Repeat as above, **X** to exit:*
    eXit/Enter width of next bay <6'-0">:

Columns: *(Continued)*
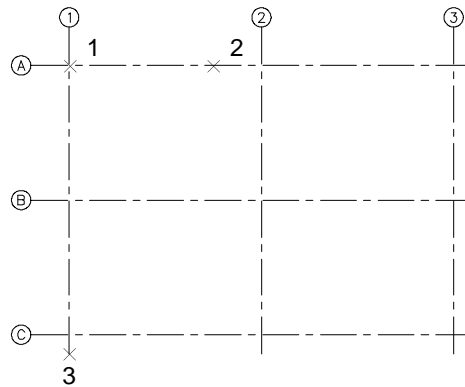
Structural Shapes: Parametrically constructs structural shapes such as C channels, wide flange beams, tee sections, etc.

- Pick **Construction > Columns > Structural Shapes**. A dialog box appears.

Shape Type:　　　　　Pick the desired shape.
Shape Information:　Select the size from the pull-down list.
Creation Mode:　　　Select whether the shape is to be 2D, 3D or a solid.
View:　　　　　　　　Select the section, top or side view (for 2D only).
Nominal:　　　　　　Draws the shapes rounded to the nearest 1/16" if checked,
　　　　　　　　　　　　otherwise the design dimensions are used.

The following prompts change depending on the selected shape.
　　Start point of shape:　　　*Pick a point on the screen.*
　　Justification: T/M/<B>:　　*Select the justification of the point on the shape.*
　　　　TL = Top Left　　　T = Top Middle　　　TR = Top Right
　　　　ML = Middle Left　M = Middle　　　　　MR = Middle Right
　　　　BL = Bottom Left　B = Bottom Middle　BR = Bottom Right
　　Rotate shape? Yes/<No>: *Allows rotation of the shape about the start point.*

Columns: *(Continued)*

Copy Column: Copies selected objects from one column location to another within the current floor level. A Column Grid must exist for this command to work.

- Pick **Construction > Columns > Copy Column**. The prompts are as follows:

  Select column objects to copy: *Select objects.*
  Base point: *Pick a base point.*
  PAn(Off)/ROtate(Off)/Enter first column number/letter: *Ex.: A*
  Enter second column number/letter: *Ex.: 4*
  PAn(Off)/ROtate(Off)/Enter first column number/letter: Continue or *Enter to exit.*

Typing **PA** toggles panning on and off. Panning will zoom to the new column if on. Typing **RO** toggles rotation on and off. Rotation allows the copied objects to be rotated after being copied to the new location.

Locate Column: Finds and zooms to any column location on the current floor level. A Column Grid must exist for this command to work.

- Pick **Construction > Columns > Locate Column**. The prompts are as follows:

  Searching for all column identifying text, please wait... *Please wait...*
  Enter first column number/letter: *Ex.: A*
  Enter second column number/letter: *Ex.: 4*
  Magnification or Height <171'-10">:   *Enter a zoom distance.*

Identify Column: Identifies a selected column's size.

- Pick **Construction > Columns > Identify Column**. The prompts are as follows:

  Select structural shape to identify: *Select a Column.*
  Column size = W12x40   *Sample result.*

Copy Grid to Level ?: Constructs a column grid on another level consisting of the column grid that exists on the current level.

- Pick **Construction > Columns > Copy Grid to ?**. The prompts are as follows:

  Copy column grid to which level?   *Enter the desired level number or letter.*

Toolbar On: This option displays the Columns toolbar.
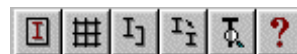
Millwork:

This section details the method of constructing cabinets and vanities using **AutoPLAN**.

Cabinets: Constructs a plan view of cabinets.

- Pick **Construction > Millwork > Cabinets**. The prompts are as follows:

Pick start point of cabinets: *Specify a point (1).*
Current line-width is 0'-0": *Displays current line width.*
Arc/Close/Halfwidth/Length/Undo/Width/<Endpoint of line>: *Specify a point (2).*
Arc/Close/Halfwidth/Length/Undo/Width/<Endpoint of line>: *Specify a point (3).*
     Hit ENTER to finish.
Select baseline to offset: *Pick last line drawn (4).*
Pick in direction of cabinets: *Pick towards inside of room (5).*
Enter counter top width <25>: *Enter a number or default.*
Show base cabinet line? <Y>: *Enter **Y** for Yes or **N** for No.*
Show wall cabinet line? <Y>: *Enter **Y** for Yes or **N** for No.*
Show back splash? <Y>: *Enter **Y** for Yes or **N** for No.*

End cap must be
manually drawn.

3

4

5

1   2
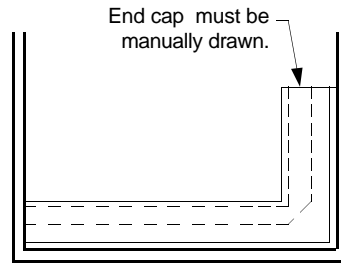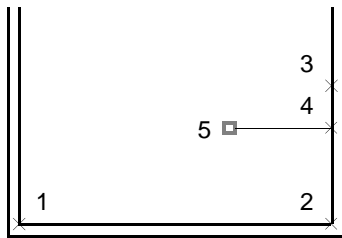
Result

NOTE:

- *End caps to the counter top must be created manually with the LINE command and must reside on the **Cabinet-*** layer.*
- *It is recommended that a construction line be drawn first at the end of the cabinets that do not meet a wall (point 3 above) to give a firm location for the end of the cabinet. This line also doubles as the end cap.*

Millwork: *(Continued)*

Vanities: Constructs a plan view of a vanity.

- Pick **Construction > Millwork > Vanities**. The prompts are as follows:

Pick start point of vanity:	*Specify a point (1).*
Pick end point of vanity:	*Specify a point (2).*
Pick in direction of vanity:	*Specify a point (3).*
Enter vanity depth <20>:	*Enter a number or default.*
Show base cabinet line? <Y>:	*Enter **Y** for Yes or **N** for No.*

Result

Shelving: Parametrically constructs shelving with or without clothes rod. The shelf is placed on the **SHELF-*** layer.

- Pick **Construction > Millwork > Shelving**. The prompts are as follows:

Pick start point of shelf: *Specify a point (1).*
The following prompt is that of the POLYLINE command. Simply draw the desired outline of the shelf (along the wall) and ENTER to finish:
Arc/Close/Halfwidth/Length/Undo/Width/<Endpoint of line>:
Pick in direction of shelf: *Specify a point (2).*
Enter shelf width <1'-3">:   *Enter a number or default.*
Draw clothes rod? <Y>:   *Type **Y** for Yes or **N** for No.*

Shelf line

Clothes rod
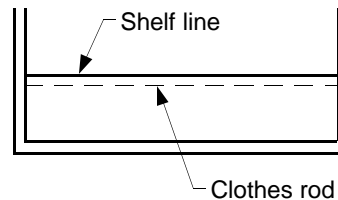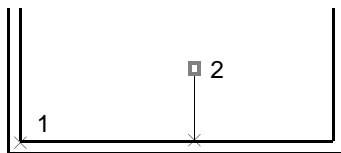
Result

Misc.:

This section contains routines for decks, fireplaces, partitions and sloped lines.

Deck: Constructs a representation of a deck complete with railing.

- Pick **Construction > Misc. > Deck**. The prompts are as follows:

Pick start point of deck: *Specify a point (1).*
The following prompt is that of the POLYLINE command. Simply draw the desired shape of the deck and ENTER to finish:
Arc/Close/Halfwidth/Length/Undo/Width/<Endpoint of line>:
Width of rail <3 1/2">:   *Enter a number or default.*
Pick inside: *Pick inside deck (2).*
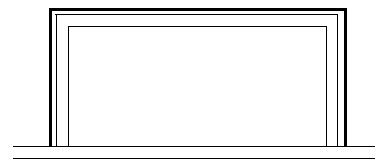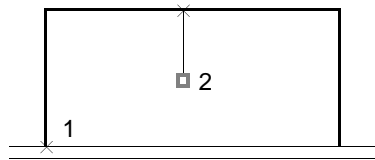
Result

Fireplace: Parametrically constructs a fireplace.

- Pick **Construction > Misc. > Fireplace**. The prompts are as follows:

Reference point/<Mid point of wall>:   *Specify a point (1).*
Pick opposite wall line <Perp>:   *Pick opposite wall line (2).*
Enter width of fireplace <8'-0">:   *Enter a number or default (A).*
Enter depth of fireplace <2'-6">:   *Enter a number or default (B).*
Distance from face of fireplace to wall <6">: *Enter a number or default (C).*
Enter width of firebox @ front <3'-0">:   *Enter a number or default (D).*
Enter width of firebox @ rear <2'-6">:   *Enter a number or default (E).*
Enter depth of firebox <1'-6">:   *Enter a number or default (F).*
Enter width of hearth <9'-0">:   *Enter a number or default (G).*
Enter depth of hearth <1'-6">:   *Enter a number or default (H).*
Show hatching? <Y>:   *Type **Y** for Yes or **N** for No.*

Misc.: *(Continued)*

To create the fireplace, enter the desired distance in place of the following letters:

Result - w/ Hatching
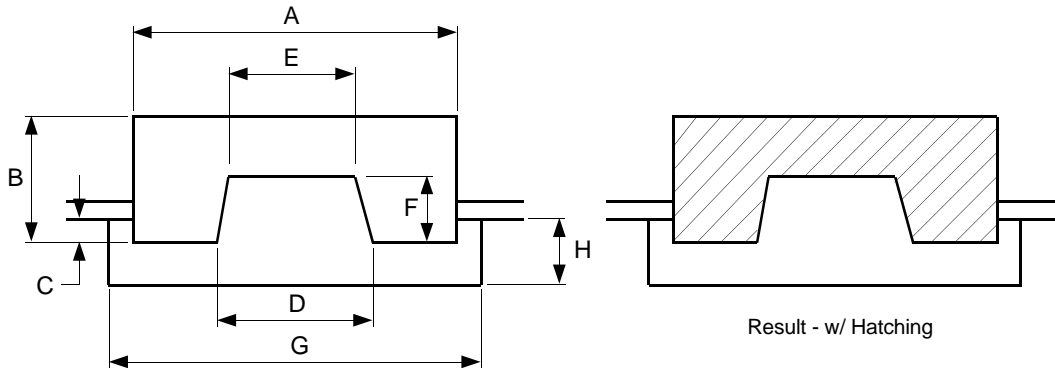
Partitions: Parametrically constructs office dividers or partitions. The partitions are placed on the **FURNISH-*** layer.

- Pick **Construction > Misc. > Partitions**. The prompts are as follows:

Width of partition <2">:   *Enter a number or default.*
Pick start of partition: *Specify a point.*
*The following prompt will repeat until cancelled by an **ENTER**. Simply pick the points or type in coordinates until finished, then press **ENTER**.*
Next point: *Pick or type a coordinate.*
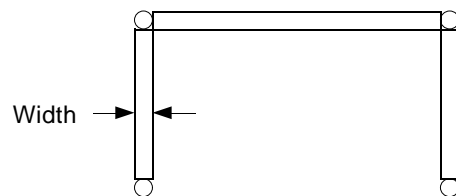
Sloped line: Constructs a line that slopes per the given rise and run.

- Pick **Construction > Misc. > Sloped line**. The prompts are as follows:

Enter rise <6">:	*Enter a number or default.*
Enter run <1'-0">:	*Enter a number or default.*
Pick start point of construction line:	*Specify a point (1).*
Pick end point in horizontal plane:	*Specify a point (2).*

1 ⌧ ——————————— □ 2

Result
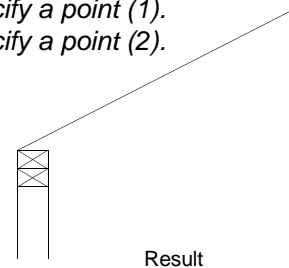
Shapes:

This section contains many routines to quickly create common shapes.

Rectangle: Constructs a rectangle given the length and width plus allows you to dynamically rotate the rectangle after creation.

- Pick **Construction > Shapes > Rectangle**. The prompts are as follows:

First corner of box:	*Specify a point.*
Length:	*Enter a number or pick.*
Width:	*Enter a number or pick.*
<Rotation angle>/Reference:	*Enter an angle or pick.*

Slot: Constructs a slot given the center point and width.

- Pick **Construction > Shapes > Slot**. The prompts are as follows:

Pick center point of slot:	*Specify a point.*
Enter diameter of slot:	*Enter a number.*
Enter length of slot:	*Enter a number.*
Is length center to center or overall: <Overall>:	*Type C or Enter*
Angle of rotation <0>:	*Enter a number.*

OVERALL

C

DIA

CP
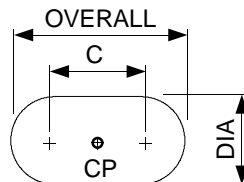
Shapes: *(Continued)*

Square: Constructs a square centered on the center point.

- Pick **Construction > Shapes > Square**. The prompts are as follows:

Locate center of the square: *Specify a point.*
Width of the square: *Enter a number.*

Structural Shapes: Parametrically constructs structural shapes such as C channels, wide flange beams, tee sections, etc. Same as the one under **Columns** except that this one is placed on the current layer.

- Pick **Construction > Shapes > Structural Shapes**.

Tables: Constructs a table of various shapes on the **FURNISH-*** layer.

- Pick **Construction > Shapes > Tables**. The prompts are as follows:

Pick insertion point of table: *Specify a point (1).*
Round, Oval, oCtagonal, or recTangular: *See options below:*

Round, Oval, oCtagonal, or recTangular: **R**
    Enter diameter of table: *Enter a number.*
    Show trim? <N>:   *Type **Y** for Yes or **N** for No.*
*The following is prompted only if the above prompt is **Y**.*
    Width of trim <1.5>:   *Enter a number or default.*
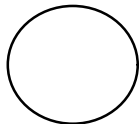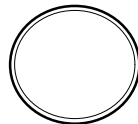
        Result - w/o Trim   Result - w/ Trim

Round, Oval, oCtagonal, or recTangular: **O**
    Enter width of table: *Enter a number.*
    Enter length of table: *Enter a number.*
    Show trim? <N>:   *Type **Y** for Yes or **N** for No.*
*The following is prompted only if the above prompt is **Y**.*
    Width of trim <1.5>:   *Enter a number or default.*
    <Rotation angle>/Refernce: *Enter an angle or pick.*

Shapes: *(Continued)*

Result - w/o Trim   Result - w/ Trim
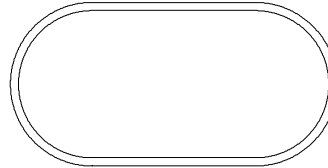
Round, Oval, oCtagonal, or recTangular: **C**
 Enter width of table: *Enter a number.*
 Show trim? <N>:   *Type **Y** for Yes or **N** for No.*
*The following is prompted only if the above prompt is **Y**.*
 Width of trim <1.5>:   *Enter a number or default.*
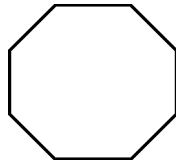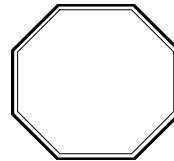
Result - w/o Trim   Result - w/ Trim

Round, Oval, oCtagonal, or recTangular: **T**
 Width of table: *Enter a number.*
 Length of table: *Enter a number.*
 Round the corners? <N>:   *Type **Y** for Yes or **N** for No.*
 Enter radius of corners <3>:   *Enter a number or default.*
 Show trim? <N>:   *Type **Y** for Yes or **N** for No.*
*The following is prompted only if the above prompt is **Y**.*
 Width of trim <1.5>:   *Enter a number or default.*
 <Rotation angle>/Refernce: *Enter an angle or pick.*
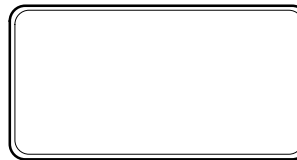
Result - w/o Trim   Result - w/ Trim

Stairs:

This section details how to create stairs in plan view.

Stairs: Constructs the plan view of stairs configured as either straight, L-shaped, U-shaped, circular or spiral.

- Pick **Construction > Stairs**. The prompts are as follows:

    Stair type: Straight/L/U/Circular/sPiral <Straight>: *See following options.*

Straight Stairs:

Stair type: Straight/L/U/Circular/sPiral <Straight>: **S** (Straight)	
Start point of stairs:	*Specify a point (1).*
Pick towards opposite edge of step:	*Specify a point (2).*
Pick in direction of stairs:	*Specify a point (3).*
Enter width of steps:	*Enter distance or pick.*
Enter Floor-to-floor height:	*Enter a number.*
Enter approximate rise desired <7.5>:	*Enter a number or default.*
Enter desired run <10.5>:	*Enter a number or default.*
Show handrail <Y>:	*Type **Y** for Yes or **N** for No.*

Result
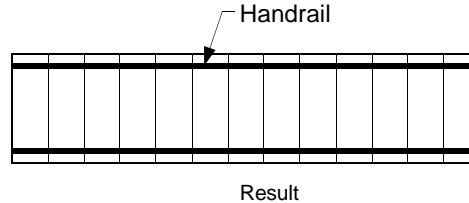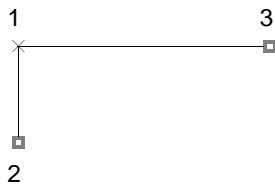
L-Shaped Stairs:

Stair type: Straight/L/U/Circular/sPiral <Straight>: **L** (L-shaped)	
Pick outside corner of landing:	*Specify a point (1).*
Pick in direction of bottom of stairs:	*Specify a point (2).*
Pick in direction of top of stairs:	*Specify a point (3).*
Enter width of steps:	*Enter distance or pick.*
Enter Floor-to-floor height:	*Enter a number.*
Enter approximate rise desired <7.5>:	*Enter a number or default.*
Enter desired run <10.5>:	*Enter a number or default.*
Show handrail <Y>:	*Type **Y** for Yes or **N** for No.*

Stairs: *(Continued)*

1   3

2

Handrail

Top   Result
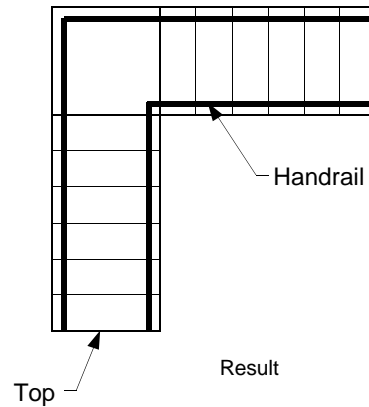
U-Shaped Stairs:
Stair type: Straight/L/U/Circular/sPiral <Straight>: **U** (U-shaped)
Pick outside corner of landing: *Specify a point (1).*
Pick in direction of stairs: *Specify a point (2).*
Pick in direction of landing: *Specify a point (3).*
Enter length of landing: *Enter distance or pick.*
Enter depth of landing: *Enter distance or pick.*
Enter width of steps: *Enter distance or pick.*
Enter Floor-to-floor height: *Enter a number.*
Enter approximate rise desired <7.5>:   *Enter a number or default.*
Enter desired run <10.5>:   *Enter a number or default.*
Show handrail <Y>:   *Type **Y** for Yes or **N** for No.*

Depth   Handrail

1   2

3

Length

Result
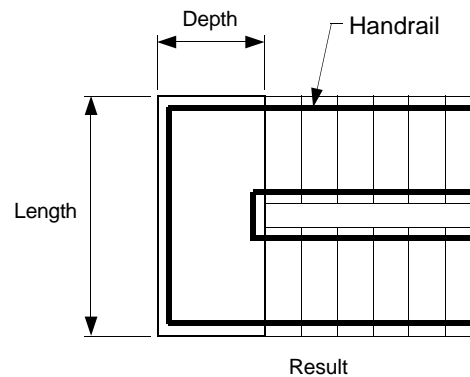
Stairs: *(Continued)*

Circular Stairs:

Stair type: Straight/L/U/Circular/sPiral <Straight>: **C** (Circular)

Pick start of stairs:	*Specify a point (1).*
Pick opposite edge of stairs:	*Specify a point (2).*
Stair direction: Clockwise/counter clockWise <Clockwise>:	*Type C or W*
Enter inside radius of steps:	*Enter distance or pick.*
Enter Floor-to-floor height:	*Enter distance or pick.*
Enter approximate rise desired <7.5>:	*Enter distance or pick.*
Enter included angle of step <6>:	*Enter distance or pick.*
Show handrail <Y>:	*Type Y or N.*
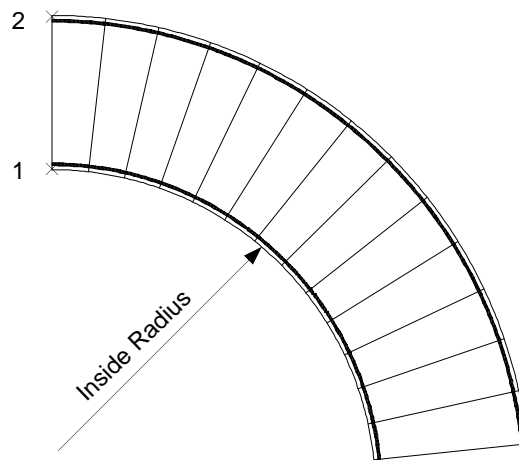
Result

Stairs: *(Continued)*

Spiral Stairs:

Stair type: Straight/L/U/Circular/sPiral <Straight>: **P** (Spiral)
Pick center of stairs: *Specify a point (1).*
Pick towards start of stairs: *Specify a point (2).*
Stair direction: Clockwise/counter clockWise <Clockwise>: *Type C or W*
Enter outside diameter of steps: *Enter distance or pick.*
Enter degree of steps: *Enter distance or pick.*
Show handrail <Y>: *Type Y or N.*

Outside Diameter

Result
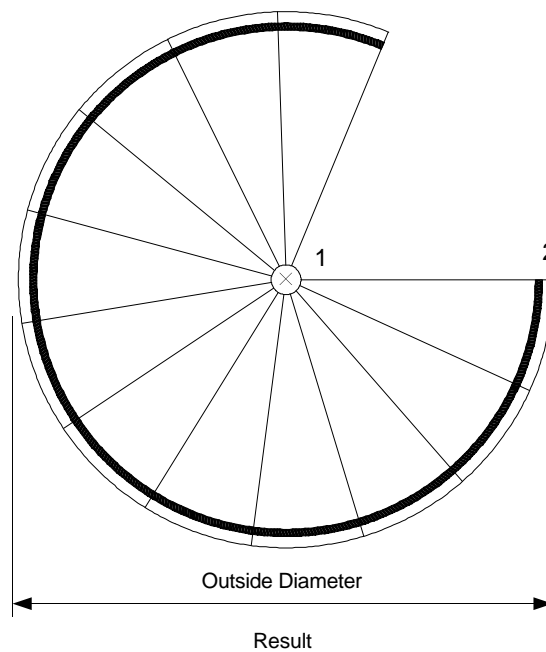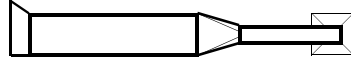
HVAC:

This sections details the routines used to create ductwork layouts in AutoPLAN.

Duct Layout: Constructs the plan view of ductwork.

- Pick **Construction > HVAC > Duct Layout**. The prompts are as follows:

The first prompt is to determine whether this is a new duct layout, or if you are continuing from an existing line.

Continue/<Pick start point>:	*Pick a point (1).*
Perpendicular/<Pick in direction of air flow>:	*Pick a point (2).*

1   2

Shape of duct (Round/<recTangular>):   *Type* R *or* T.

The next prompt allows the user to select the type of duct desired.
Duct/Elbow/Radius/Tee/TRansition/TAke-Off/DRop/RIse/Box/Options/Undo/eXit:

After completion of each option, you are returned to the options menu to continue or exit. Each option is detailed below:

Duct: This option creates a straight section of duct.
For Rectangular:

Width of duct <1'-0">:	*Enter distance or pick.*
Depth of duct <8">:	*Enter distance or pick.*

For Round:

Diameter of duct <1'-0">:	*Enter distance or pick.*
Length of duct <4'-0">:	*Enter distance or pick.*

Width   1   2   Length
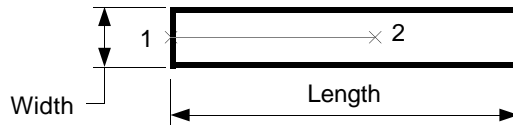
HVAC: *(Continued)*

Elbow: This option creates an elbow section of duct.
  For Rectangular:
    Width of duct <1'-0">:   *Enter distance or pick.*
    Depth of duct <8">:   *Enter distance or pick.*
  For Round:
    Diameter of duct <1'-0">:   *Enter distance or pick.*
    Offset of joints <3">:   *Enter distance or pick.*
    Right/Left? <Right>:   *Type* R *or* L

WIDTH   Offset
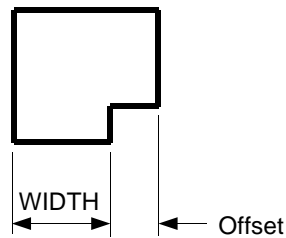
Radius: This option creates a curved elbow section of duct.
  For Rectangular:
    Width of duct <1'-0">:   *Enter distance or pick.*
    Depth of duct <8">:   *Enter distance or pick.*
  For Round:
    Diameter of duct <1'-0">:   *Enter distance or pick.*
    Inside radius <3">:   *Enter distance or pick.*
    Angle of radius (90/45/22.5) <90>:   *Enter an angle.*
    Right/Left? <Right>:   *Type* R *or* L
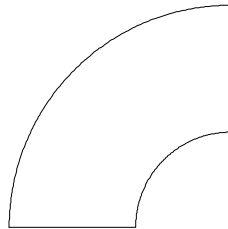
HVAC: *(Continued)*

Tee: This option creates a tee section of duct.

For Rectangular:
Width of duct <1'-0">:   *Enter distance or pick.*
Depth of duct <8">:   *Enter distance or pick.*
For Round:
Diameter of duct <1'-0">:   *Enter distance or pick.*
Inside radius <6">:   *Enter distance or pick.*

The following prompt has two choices. They are as shown below.
Does tee reduce in size? Yes/<No>:   *If you type* N.

Inside Radius
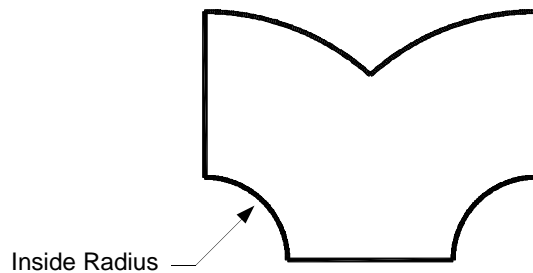
Does tee reduce in size? Yes/<No>:   *If you type* Y
Width of next duct <1'-0">:   *Enter distance or pick.*
Depth of next duct <1'-0">:   *Enter distance or pick.*

Inside Radius
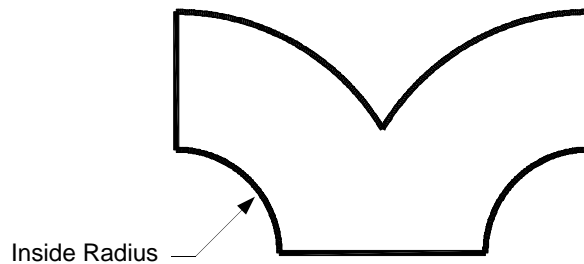
The last prompt is to determine which way you wish to continue with the duct line.
Proceed to the Right or Left? <Right>:   *Type* R *or* L.

HVAC: *(Continued)*

Transition: This option creates a transition between two sections of duct. A transition can only continue from an existing duct.

Shape of next duct (Round/<recTangular>):   *Type* R *or* T
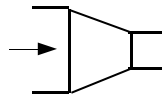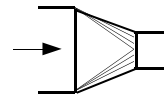
Rectangular   Round

For Rectangular:
Width of next duct <1'-0">:	*Enter distance or pick.*
Depth of next duct <8">:	*Enter distance or pick.*

For Round:
Diameter of next duct <1'-0">:	*Enter distance or pick.*
Length of transition <6">:	*Enter distance or pick.*

The last prompt is to position the next duct.

Alignment of transition (Left/Right/<Center>):   *Type* L, R *or* C

Left   Center   Right

Take-Off: This option creates a take-off connected to a section of duct.

For Rectangular:
Width of duct <1'-0">:	*Enter distance or pick.*
Depth of duct <8">:	*Enter distance or pick.*

For Round:
Diameter of duct <1'-0">:	*Enter distance or pick.*
Length of take-off <6">:	*Enter distance or pick.*
Right/Left? <Right>:	*Type* R *or* L
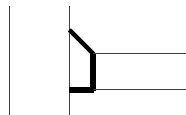
HVAC: *(Continued)*

Drop: This option creates a dropped section in a run of duct.

    Length of drop <2'-0">:   *Enter distance or pick.*

Rise: This option creates a rising section in a run of duct.

    Length of rise <2'-0">:   *Enter distance or pick.*

```
┌─┬─┬───────────┬─┬─┐        ┌─┬─┬───────────┬─┬─┐
│ │ │   RISE     │ │ │        │ │ │   DROP     │ │ │
└─┴─┴───────────┴─┴─┘        └─┴─┴───────────┴─┴─┘
```

Box: This option creates a rectangular "box" section to represent equipment or a plenum and then continues the duct line..

    Width of box: *Enter distance or pick.*
    Length of box: *Enter distance or pick.*

Options: This option returns a menu of toggles to enhance the look of duct creation.

    Lining/lAbels/Flow arrow/turning Vanes/eXit: **L**
       Show lining? (Yes/No) <No>:   *Toggles duct lining on and off.*
    Lining/lAbels/Flow arrow/turning Vanes/eXit: **A**
       Show labels? (Yes/No) <No>:   *Toggles duct size labels on and off.*
    Lining/lAbels/Flow arrow/turning Vanes/eXit: **F**
       Show flow arrow? (Yes/No) <No>:   *Toggles display of the flow arrow.*
    Lining/lAbels/Flow arrow/turning Vanes/eXit: **V**
       Show turning vanes? (Yes/No) <No>: *Toggles display of turning vanes.*
    Lining/lAbels/Flow arrow/turning Vanes/eXit: **X** (*Exits the Options menu*)

Undo: This option undoes the last duct section created and lets the user continue.

Exit: This option EXITS the HVAC routine.

HVAC: *(Continued)*

Diffuser: This command creates an air diffuser on the end of a duct.

Pick one end of duct:	*Pick a point (1).*
Pick other end of duct:	*Pick a point (2).*
Enter size of diffuser <3'-0">:	*Enter a Distance.*
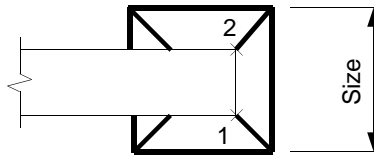
Damper: This command creates an air damper through a section of duct.

Pick one side of duct:	*Pick a point (1).*
Pick other side of duct:	*Pick a point (2).*
Enter description of damper <BD>:	*Enter a Description.*
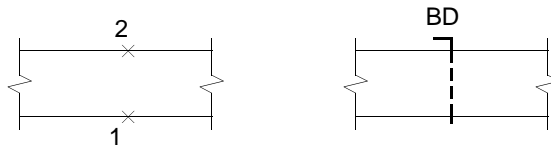
Result

Toolbar On: This command displays the HVAC toolbar.

Roof:

This section contains routines to simplify the task of creating roof plans.

Main: This command creates a plan view of the main body of a roof.

- Pick **Construction > Roof > Main**. The prompts are as follows:

Pick first corner of wall: *Pick a point (1).*
Pick second corner of wall: *Pick a point (2).*
Pick third corner of wall: *Pick a point (3).*
Enter overhang distance <2'-0">:   *Enter a distance or pick.*
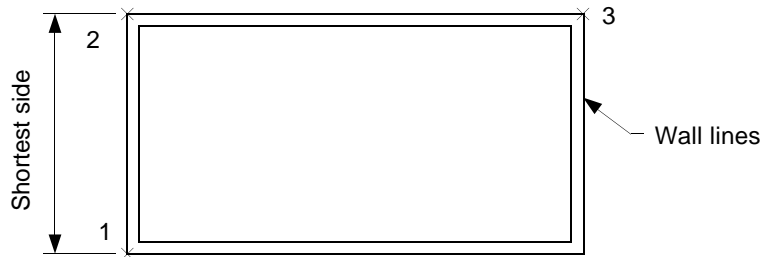
The following prompt allows the user to select the style of roof desired.
Style of roof (Gable/Hip/Modified hip):   *Type G, H or M.*
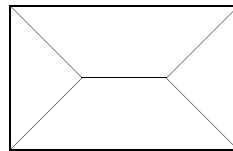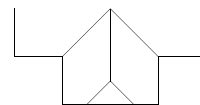
Gable   Hip   Modified Hip

The last prompt allows the user to recreate the outside wall line on the Roof layer.
Show wall line? <Y>:   *Type Y or N*
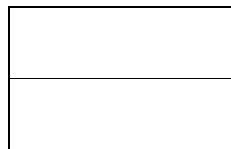
No wall Line   With wall Line

Roof: *(Continued)*

Attached: This command creates a plan view of the attached bodies of a roof.

- Pick **Construction > Roof > Attached**. The prompts are as follows:

Pick first corner of wall:	*Pick a point (1).*
Pick second corner of wall:	*Pick a point (2).*
Pick third corner @ intersecting walls:	*Pick a point (3).*
Enter overhang distance <2'-0">:	*Enter a distance or pick.*

The following prompt allows the user to select the style of roof desired.
Style of roof (Gable/Hip/Modified hip):   *Type* G, H *or* M.

The last prompt allows the user to recreate the outside wall line on the Roof layer.
Show wall line? <Y>:   *Type* Y *or* N

Details:

This section contains routines to simplify the task of creating common details.

Enlarge/Reduce: This command creates a plan view of the main body of a roof.

- Pick **Construction > Details > Enlarge/Reduce**. The prompts are as follows:

Pick center of detail:	*Pick a point (1).*
Radius of circle:	*Enter a distance or pick.*
Pick center point for new detail:	*Pick a point (3).*
Amount to scale:	*Enter a distance or pick.*
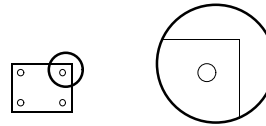
Result

The following prompt, if answered *Yes*, will adjust the *DIMLFAC* to make dimensioning of the enlarged or reduced detail accurate. This can be reset by typing **DF1** when finished dimensioning the detail.

Set the scale factor for dimensioning? No/<Yes>:   *Type* Y *or* N
Type DF1 to reset scale when finished dimensioning!

Batt Insulation: This command creates a section view of batt insulation.

- Pick **Construction > Details > Batt Insulation**. The prompts are as follows:

Pick first corner of wall:	*Pick a point (1).*
Pick opposite corner of wall:	*Pick a point (2).*
Pick other end of wall:	*Pick a point (3).*
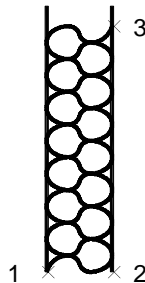
Details: *(Continued)*

Rafter: This command creates a rafter layout complete with bird's mouth.

- Pick **Construction > Details > Rafter**. The prompts are as follows:

Pick start point of rafter @ top of wall: *Pick a point (1).*
Enter horizontal distance to peak: *Enter a distance or pick.*
Enter rise: *Enter a distance or pick.*
Enter run <12>: *Enter a distance or pick.*
Amount of overhang <12>: *Enter a distance or pick.*
Enter width of rafter <5 1/2>: *Enter a distance or pick.*
Enter thickness of wall <3 1/2>: *Enter a distance or pick.*
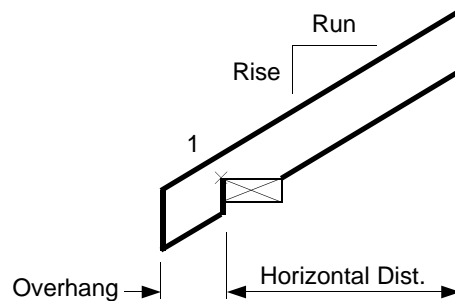
Stud: This command creates a sectional view of dimensional lumber.

- Pick **Construction > Details > Stud**. The prompts are as follows:

Pick start point of board: *Pick a point.*
Enter thickness & width as full units, ex: 2 & 4 for a 2x4. The program will
automatically convert these to the actual sizes of the board, ex: 2x4= 1.5 x 3.5
Enter thickness of board <2>: *Enter a distance.*
Enter width of board <4>: *Enter a distance.*
Rotation angle: *Enter an angle.*
Mirror about the X-axis <N>: *Type* Y *or* N
Mirror about the Y-axis <N>: *Type* Y *or* N

Result

Details: *(Continued)*

Tile Levels: This command separates the first floor plan, second floor plan, foundation plan and roof plan and tiles them one one sheet. This is useful for doing a check plot or to show a customer the plans. This command only applies to residential and commercial buildings two stories and under.

- Pick **Construction > Details > Tile Levels**. There is only one prompt

Spacing between views <10'-0">:   *Enter a distance or pick.*
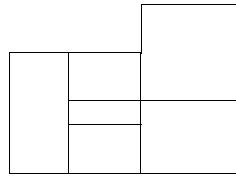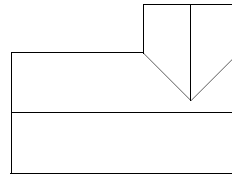
Second Floor Plan   Roof Plan
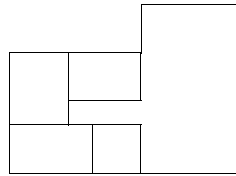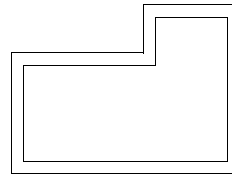
First Floor Plan   Foundation Plan

Tiled floor levels

Wall Sections: This command parametrically creates wall sectional views complete with dimensions.

- Pick **Construction > Details > Wall Sections**. The prompts are as follows:

Prior to using this command, it is recommended that you adjust the scale of the drawing to at least 3/4" = 1'-0" if you are going to allow automatic dimensioning of the wall section. This will allow for a better overall look of the detail.

Show dimensions? <Y>:	*Type* Y *or* N.
Pick start point of footer:	*Pick a point.*
Enter width of footer:	*Enter a distance.*
Enter thickness of footer:	*Enter a distance.*
Enter thickness of foundation wall:	*Enter a distance.*

Show brick ledge? Yes/No <N>:	*Type* Y *or* N.
Enter width of ledge <4>:	*Enter a distance.*
Enter depth of ledge <16>:	*Enter a distance.*
Distance from grade to top of foundation wall <12>:	*Enter a distance.*
Enter thickness of sill plate <2>:	*Enter a distance.*
Enter width of sill plate <8>:	*Enter a distance.*
Enter number of floors <1>:	*Enter a number.*

The following section will repeat per the number of floors. As it repeats the user has the option of changing the values to create different floor levels. For instance, the first floor may be 2x6 walls, 9' ceilings and 2x12 floor joists, while the second floor may be 2x4 walls, 8' ceilings and 2x10 floor joists.

Type of floor? Lumber/Other <Lumber>:	*Type* L *or* O.
Enter thickness of floor joist <2>:	*Enter a distance.*
Enter depth of floor joist <10>:	*Enter a distance.*
Enter thickness of sub-floor <3/4>:	*Enter a distance.*
Type of wall? Studs/Other <Studs>:	*Type* S *or* O.
Enter thickness of stud <2>:	*Enter a distance.*
Enter width of stud <4>:	*Enter a distance.*
Enter thickness of interior wall board <1/2>:	*Enter a distance.*
Enter height of wall:	*Enter a distance.*
Top plate: Double/Single <Double>:	*Type* D *or* S.

This ends the floor levels section.

Type of roof? Rafters/Truss <Rafters>:	*Type* R *or* T.
Enter rise:	*Enter a distance.*
Enter run <12>:	*Enter a distance.*
Enter width of overhang <12>:	*Enter a distance.*
Enter width of rafter <5 1/2>:	*Enter a distance.*
Enter width of fascia <5 1/2>:	*Enter a distance.*
Enter width of ceiling joist <5 1/2>:	*Enter a distance.*
Enter thickness of ceiling finish <5/8>:	*Enter a distance.*
Enter thickness of exterior sheathing <1/2>:	*Enter a distance.*
Enter width of brick <3 1/2>:	*Enter a distance.*
Enter air space <1>:	*Enter a distance.*
Height of brick? Full/Partial <Full>:	*Type* F *or* P.

The following prompts only appear when you enter Partial to the above prompt.

Enter height of brick (from brick ledge):	*Enter a distance.*
Show sill? Yes/No <Y>:	*Type* Y *or* N.
Enter width of sill <5>:	*Enter a distance.*
Enter thickness of sill <3>:	*Enter a distance.*

Details: *(Continued)*

Below is a sample of what the Wall Sections command can do. Due to the hundreds
of possible combinations of the options it would be very difficult to depict every
possibility.

Brick or Stone Sill

Brick Veneer

Grade Line

Foundation

Footer
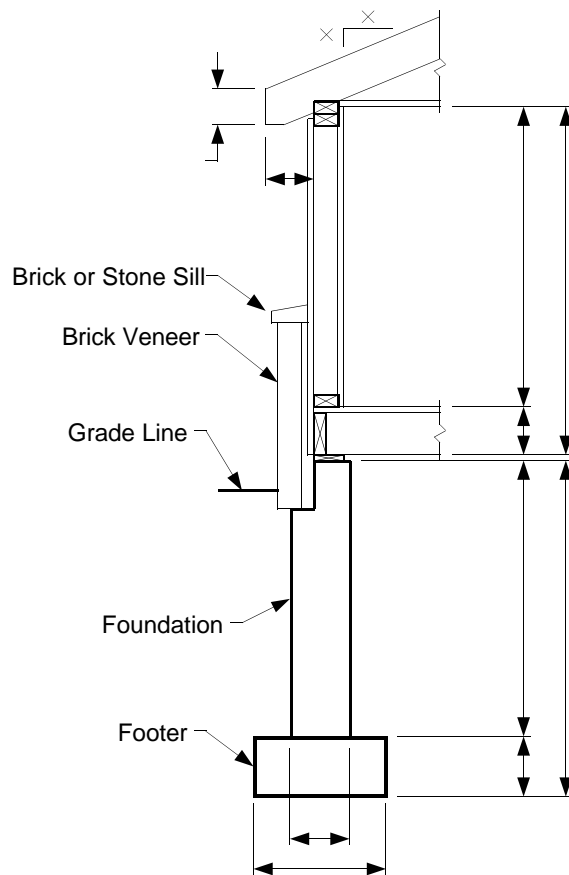
Chapter 7 - Doors Menu

This chapter details the methods to create and modify doors in AutoPLAN.

Doors Pull-down Menu Layout

Below is a diagram of the **Doors** pull-down menu.

```
┌──────────────┐
│    Doors     │
└──────┬───────┘
       │
       ▼
┌──────────────────┐                                          ┌──────────────────┐
│ Single        ▶──┼──────────────────────────────────────────┤ Single           │
│ Double        ▶──┼──────────────────────────┐               │ w/Side Lites     │
│ Accordion     ▶──┼────────────────┐         │  ┌──────────┐ │ Double Hung      │
│ Bi-Fold       ▶──┼──────┐         │         └──┤ Atrium   │ └──────────────────┘
│ By-Pass          │      │      ┌──┴──────┐     │ Double   │
│ Overhead         │      │      │ Single  │     │ Double Hung │
│ Pocket        ▶──┼───┐  │      │ Double  │     │ Opposing │
│ Revolving        │   │  │      └─────────┘     └──────────┘
│ Sliding       ▶──┼─┐ │  └──┤ 2 Doors │
│ Uneven        ▶──┼┐│ │     │ 4 Doors │
│                  ││││     └─────────┘
├──────────────────┤│││                            ┌──────────┐
│ Opening          ││││                            │ Single   │
│ Door Sill        ││││                            │ Double   │
│                  ││││                            └──────────┘
├──────────────────┤│││            ┌──────────┐
│ Utilities     ▶──┼┼┼┼───┐        │ Single   │
│                  │││└───┼────────┤ Double   │
├──────────────────┤││    │        └──────────┘
│ Icons            ││└────┼──┐  ┌──────────────┐
└──────────────────┘│     │  └──┤ Uneven       │
                    │     │     │ Double Hung  │
                    │     │     │ Opposing     │
                    │     │     └──────────────┘
                    │     │
                    └─────┴──┤ Copy Door
                               │ Mirror Door
                               │ Move Door
                               │ Remove Door
                               │
                               │ Replace Door
                               │ Change Style
                               │ Change Wall Thickness
                               │ Opposite Side
                               │ Reverse Hinge
                               │ Update Door
```

ℹ To see a pictorial representation of each option pick **Icons** at the bottom of the menu.

The Doors menu is described on the next page.

Creating Doors

AutoPLAN creates doors parametrically through AutoLISP routines, not limited block insertions. To construct a door using **AutoPLAN**, go to the **DOOR** pull-down menu or the **DOOR** icon menu and pick the style of door desired.

NOTE: The methods and options for creating doors in AutoPLAN 2.0 has changed from AutoPLAN 1.0, so existing users should read this section carefully.

The first prompt regardless of the style of door is:
  Reference point/Opposite wall/Between two points/<Mid point of wall>:

To center the door on the midpoint of a wall, simply pick the wall on the side you wish for the door to be placed on *(the OSNAP Midpoint is activated)*. The center of the door will be located at the midpoint of the line you pick.

  Pick opposite wall line: Pick the opposite wall line.
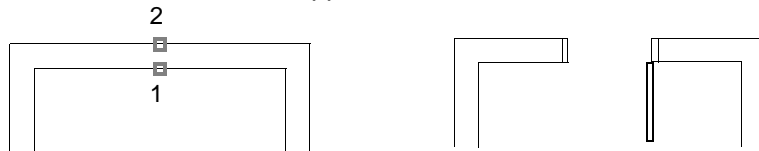
If the door is not to be centered in the wall, you have several options to choose from to accurately locate the door. These options are described below:

Reference point (*Type* **R**): To locate a door relative to a corner.
  Pick reference point: *(the OSNAPs Endpoint & Intersection are activated)*
    Pick a point on the door side wall line that the door is to be located from.
  Pick in direction of door: *(the OSNAP Near is activated)*
    Pull the cursor in the direction of the door from the reference point with the ORTHO
    ON or pick on the same line away from the reference point.
  Enter distance to center of door: Enter the distance from the reference point to
    the center of the door.
  Pick opposite wall   line: Pick the opposite wall line.
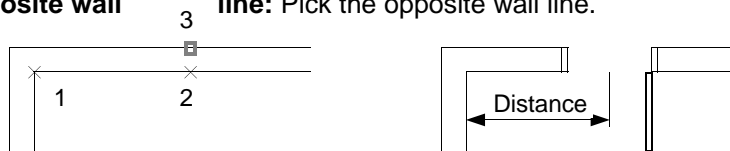
Creating Doors: *(Continued)*

Opposite wall (*Type* **O**): To locate a door centered on the opposite wall line.
   Pick opposite wall line: Pick the wall line opposite of the door side.
   Pick door side of wall: Pick the door side of the wall.
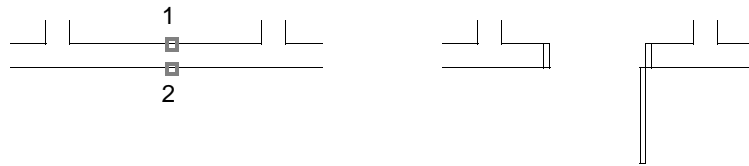
Between two points (*Type* **B**): Locates a door centered between two opposite walls.
   Pick first point: Pick the first wall line intersection.
   Pick second point: Pick the second wall line intersection
   Pick door side of wall: Pick the door side of the wall.
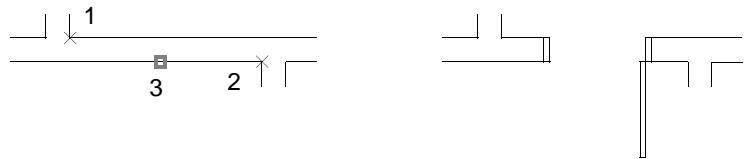
Once the location of the door is established you will be prompted:
Enter width of door <30">: Enter the width of the door (*or* the opening width).
Degree of door swing <90>: Enter the degree you wish the door to be open.
Door swing (Right/Left) <L>: The door is shown as left handed, **ENTER** accepts
   this. To make the door right handed type **R** followed by **ENTER**.

AutoPLAN will now construct the door and return to the **Command:** prompt. All data
entered in response to the prompts become defaults for the next door.

To customize the settings of the door such as thickness, jamb thickness, linetype of
the door swing and color, go to the **Utility > Setup > Current** or **Global** to set them to
suit your needs. Remember, **Current** is only for the current drawing session, and
Global sets the parameters permanently.

Door Utilities

AutoPLAN provides several utilities for editing doors. These commands are all located on the **Doors > Utilities** pull-down menu.

Copy Door: Copies a selected door.

- Pick **Doors > Utilities > Copy Door**. The prompts are as follows:

Select door: Select the door to be copied (*Point 1*)
Base point or displacement: Pick a point (*Point 2*) or type a coordinate.
Second point of displacement: Pick a point (*Point 3*) or type a coordinate.
The door will be copied and the wall will automatically trim out.

Before   After
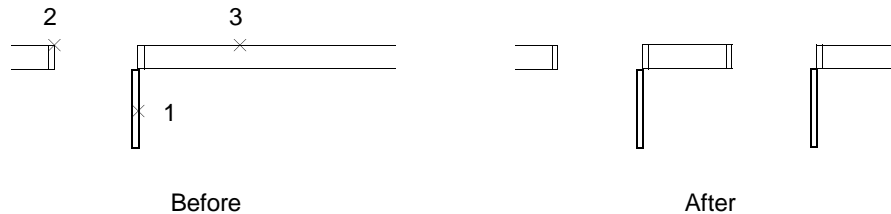
Mirror Door: Mirrors a selected door.

- Pick **Doors > Utilities > Mirror Door**. The prompts are as follows:

Select door: Select the door to be copied (*Point 1*)
First point of mirror line: Pick a point (*Point 2*) or type a coordinate.
Second point: Pick a point (*Point 3*) or type a coordinate.
The door will be mirrored about the two points and the wall will automatically trim out.
Delete old door? <N>: Type **Y** for Yes or **N** for No to delete the original door.
If you type **N** or hit Enter, the door will be mirrored and the original door will remain
(*Figure A*). If you type **Y**, the door will be mirrored and the original door will be deleted
from the drawing (*Figure B*).

Before   Figure A   Figure B
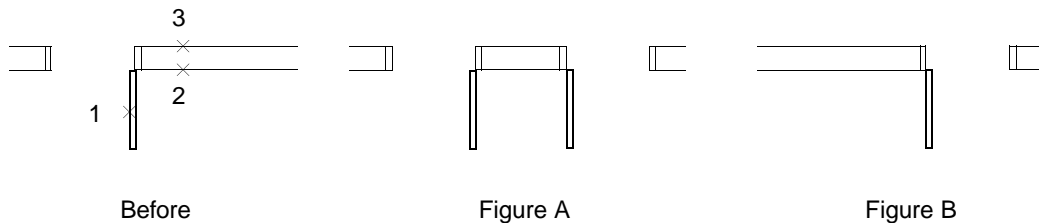
Door Utilities: *(Continued)*

Move Door: Moves a selected door.

- Pick **Doors > Utilities > Move Door**. The prompts are as follows:

Select door: Select the door to be moved (*Point 1*)
Base point: Hinge/Latch/<Center>:   Type **H**, **L** or **C**
This establishes which part of the door will become the Base Point for the move.
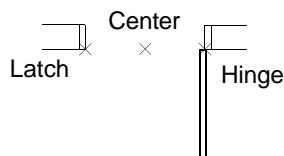
Center

Latch   Hinge

Between two points/Reference/<Direction>: Pick a point or type **B** or **R**.
The default is Direction. In this case you simply drag the cursor in the direction you
want the door to move in and pick a point. If you typed **B** or **R** you will be asked to
pick the **R**eference point or two points to locate **B**etween, and then asked for the
direction to move the door.

After establishing the direction to move the door, you will be prompted:
Distance to new point: Enter the distance to move the door's base point.

Base point   Direction

1

Before   After
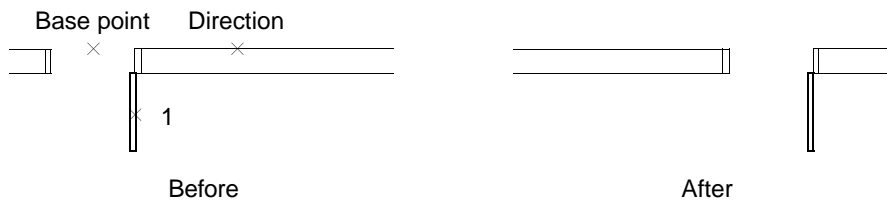
Below is an example of moving a door to a point a given distance from another point.
In this case the base point is the **Hinge**, and a **Reference** point was selected and the
Distance is 6". Now the door is moved from the hinge point to 6" from the corner.

Ref. point

Hinge

1

6"

Before   After
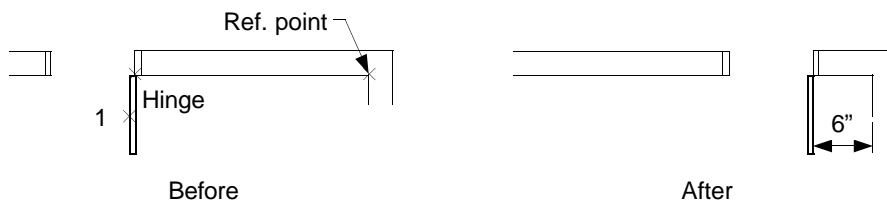
Door Utilities: *(Continued)*

Remove Door: Deletes a selected door.

- Pick **Doors > Utilities > Remove Door**. The prompts are as follows:

Select door: Select the door to be Removed (*Point 1*)
The door will be removed and the wall will automatically be repaired.

Before   After

Replace Door: Replaces a selected door with another type or size of door.

- Pick **Doors > Utilities > Replace Door**. The prompts are as follows:

Select door: Select the door to be Replaced (*Point 1*)
The door will then be removed and the wall will automatically be repaired. At this point
the Doors Icon Menu will appear allowing you to select a new door (*If you are only
wanting to change the size or open degree, select the same style as before*). Now you
will be prompted for the new doors size and degree of door swing. Notice that you will
not be prompted for the location of the door, as the location of the original door is
automatically assumed.

Below is an example of replacing a single door with a double door.

Before   After
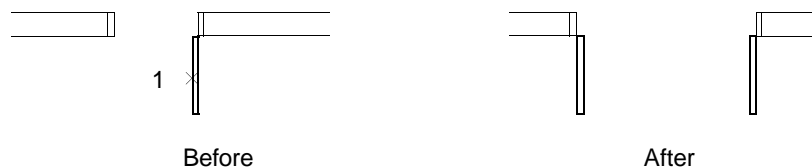
Door Utilities: *(Continued)*

Change Style: Replaces a selected door with another type of door. This command is similar to the **Replace Door** command previously described except it does not allow for a change in size, rather only allows for degree of swing and door hand changes. This is useful to change a door from 90 a degree door swing to 45 degrees or a single door to a Bi-Fold door.

• Pick **Doors > Utilities > Change Style**. The prompts are as follows:

Select door: Select the door to be Changed
The door will then be removed and the Doors Icon Menu will appear allowing you to select a new door (*If you are only wanting to change the style or open degree, select the same style as before*). Now you will be prompted for the new doors degree of door swing (*where applicable*). Notice that you will not be prompted for the size or location of the door, as the size and location of the original door is automatically assumed.

Change Wall Thickness: Replaces a selected door with another type of door.

• Pick **Doors > Utilities > Change Wall Thickness**. The prompts are as follows:

Select door: Select the door to be Changed (*Point 1*)
Pick new opposite wall line: Pick the opposite wall (*Point 2*)
The door will then be rebuilt for the new wall thickness.

Before   After

Door Utilities: *(Continued)*

Opposite Side: Places the selected door on the opposite side of the wall.

- Pick **Doors > Utilities > Opposite Side**. The prompts are as follows:

Select door: Select the door to be Changed.
The door will then be placed on the opposite side of the wall.

Before   After
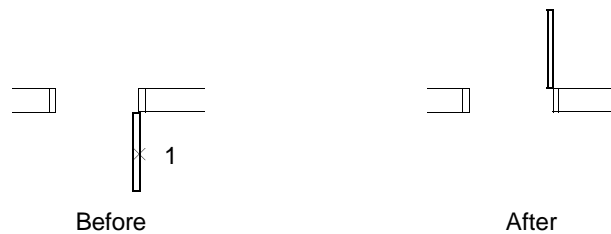
Reverse Hinge: Changes the hand of the selected door.

- Pick **Doors > Utilities > Reverse Hinge**. The prompts are as follows:

Select door: Select the door to be Reversed.
The door's hand will then be reversed.

Before   After

Update Door: Updates the selected door to the current settings such as thickness, jamb thickness, linetype of the door swing and color, defined in **Utility > Setup > Current** or **Global**.

- Pick **Doors > Utilities > Update Door**. The prompts are as follows:

Select door: Select the door to be Updated.
The door will then be Updated to the current settings.

Chapter 8 - Windows Menu

This chapter details the methods to create and modify windows in AutoPLAN.
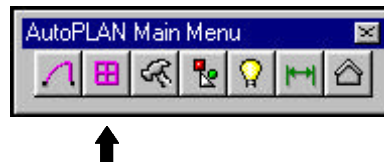
Windows Pull-down Menu Layout

Below is a diagram of the Window**s** pull-down menu.

```
          ┌──────────────────┐
          │     Windows      │
          └──────────────────┘
                   │
                   ▼
   ┌──────────────────────┐
   │ Single               │
   │ Multi: Connected     │
   │ Multi: Separated     │
   │ Bay                  │
   ├──────────────────────┤              ┌────────────────────────┐
   │ Utilities        ▶   │─────────────▶│ Copy Window            │
   ├──────────────────────┤              │ Mirror Window          │
   │ Icons                │              │ Move Window            │
   └──────────────────────┘              │ Remove Window          │
                                         ├────────────────────────┤
                                         │ Replace Window         │
                                         │ Change Wall Thickness  │
                                         │ Update Window          │
                                         └────────────────────────┘
```
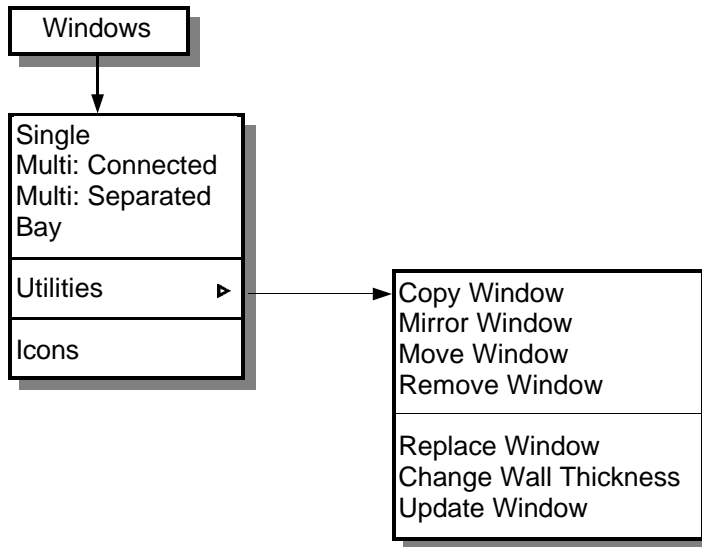
To see a pictoral representation of each option pick **Icons** at the bottom of the menu.

The Windows menu is described on the next page.

Creating Windows

AutoPLAN creates windows parametrically through AutoLISP routines, not limited block insertions. To construct a door using **AutoPLAN**, go to the **WINDOW** pull-down menu or the **WINDOW** icon menu and pick the style of window desired.

NOTE: The methods and options for creating windows in AutoPLAN 2.0 has changed from AutoPLAN 1.0, so existing users should read this section carefully.

The first prompt regardless of the style of window is:
   Reference point/Opposite wall/Between two points/<Mid point of wall>:

To center the window on the midpoint of a wall, simply pick the wall on the side you wish for the window to be placed on *(the OSNAP Midpoint is activated).* The center of the window will be located at the midpoint of the line you pick.

   Pick opposite wall line: Pick the opposite wall line.

If the window is not to be centered in the wall, you have several options to choose from to accurately locate the window. These options are described below:

Reference point (*Type* **R**): To locate a window relative to a corner.
Pick reference point: *(the OSNAPs Endpoint & Intersection are activated)*
   Pick a point on the window side wall line that the window is to be located from.
Pick in direction of window: *(the OSNAP Near is activated)*
   Pull the cursor in the direction of the window from the reference point with the ORTHO ON or pick on the same line away from the reference point.
Enter distance to center of window: Enter the distance from the reference point to the center of the window.
Pick opposite wall line: Pick the opposite wall line.

Creating Windows: *(Continued)*

Opposite wall (*Type* **O**): To locate a window centered on the opposite wall line.
  Pick opposite wall line: Pick the wall line opposite of the window side.
  Pick window side of wall: Pick the window side of the wall.
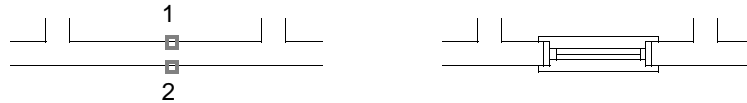
Between two points (*Type* **B**): Locates a window centered between two opposite
walls.
  Pick first point: Pick the first wall line intersection.
  Pick second point: Pick the second wall line intersection
  Pick window side of wall: Pick the window side of the wall.

Once the location of the window is established you will be prompted:
Enter width of window <30">: Enter the width of the window (*or* the opening width).

AutoPLAN will now construct the window and return to the **Command:** prompt. All
data entered in response to the prompts become defaults for the next window.

To customize the settings of the window such as thickness, jamb thickness, linetype of
the window swing and color, got to the **Utility > Setup > Current** or **Global** to set them
to suit your needs. Remember, **Current** is only for the current drawing session, and
Global sets the parameters permanently.

Multi: Connected: Constructs a plan view of multiple connected windows.

- Pick **Windows > Multi: Connected**. The prompts are as follows:

Reference point/Opposite wall/Between two points/<Mid point of wall>:
  Pick location for window as described earlier in this chapter.
Enter width of individual window <2'-6">:   Enter the desired width of each window.
Number of windows <2>:   Enter number of windows desired.
Enter width of mullion(s) <2">:   Enter the mullion (divider) width.
Enter depth of mullion(s) <6">:   Enter the mullion (divider) depth.

Mullion
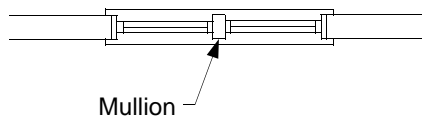
Multi: Separated: Constructs a plan view of multiple separated windows.

- Pick **Windows > Multi: Separated**. The prompts are as follows:

Select wall line to place windows in: Select Interior Wall line (*Point 1*)
Pick opposite wall line: Select Opposite Wall line (*Point 2*)
Number of windows <2>:   Enter number of windows desired.
Enter width of window <2'-6">:   Enter the desired width of each window.
Center-center/<Evenly spaced>:   Enter **E** for Even, or **C** to specify Centers.

If you select **Evenly spaced** then AutoPLAN will subtract the number of windows from the length of the wall line and divide the remaining length evenly. If you select **Centers** AutoPLAN will place the windows spaced ate the given distance centered on the wall. In this case you will aslo be prompted:

Enter window center to center distance <6'-0">:   Enter the desired center distance.
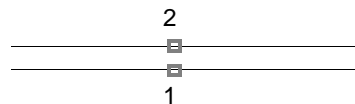
Before   After
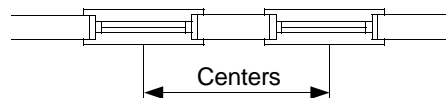
Window Utilities

AutoPLAN provides several utilities for editing windows. These commands are all located on the **Windows > Utilities** pull-down menu.

Copy Window: Copies a selected window.

- Pick **Windows > Utilities > Copy Window**. The prompts are as follows:

Select window: Select the window to be copied (*Point 1*)
Base point or displacement: Pick a point (*Point 2*) or type a coordinate.
Second point of displacement: Pick a point (*Point 3*) or type a coordinate.
The window will be copied and the wall will automatically trim out.

Before   After
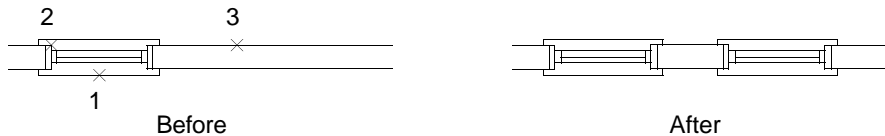
Mirror Window: Mirrors a selected window.

- Pick **Windows > Utilities > Mirror Window**. The prompts are as follows:

Select window: Select the window to be copied (*Point 1*)
First point of mirror line: Pick a point (*Point 2*) or type a coordinate.
Second point: Pick a point (*Point 3*) or type a coordinate.
The window will be mirrored about the two points and the wall will automatically trim out.
Delete old window? <N>:   Type **Y** for Yes or **N** for No to delete the original window.
If you type **N** or hit Enter, the window will be mirrored and the original window will remain (*Figure A*). If you type **Y**, the window will be mirrored and the original window will be deleted from the drawing (*Figure B*).

Before   Figure A   Figure B

Window Utilities: *(Continued)*

Move Window: Moves a selected window.

- Pick **Windows > Utilities > Move Window**. The prompts are as follows:

Select window: Select the window to be moved (*Point 1*)
Base point: Left/Right/<Center>:   Type **L**, **R** or **C**
This establishes which part of the window will become the Base Point for the move.
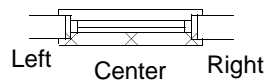
Left   Center   Right

Between two points/Reference/<Direction>:   Pick a point or type **B** or **R**.
The default is Direction. In this case you simply drag the cursor in the direction you
want the window to move and pick a point. If you typed **B** or **R** you will be asked to
pick the **R**eference point or two pionts to locate **B**etween, and then asked for the
direction to move the window.

After establishing the direction to move the window, you will be prompted:
Distance to new point: Enter the distance to move the window's base point.

Base point   Direction

1

Before   After
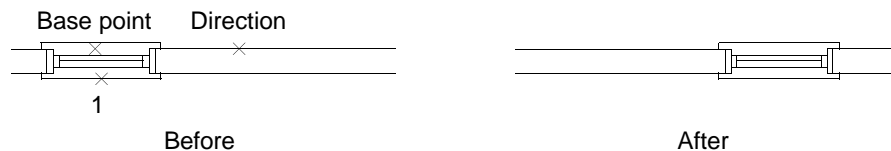
Below is an example of moving a window to a point a given distance from another
point. In this case the base point is the **Right**, and a **Reference** point was selected
and the **Distance** is 6". Now the window is moved from the right side to 6" from the
corner.

Ref. point

Right

1

6"

Before   After

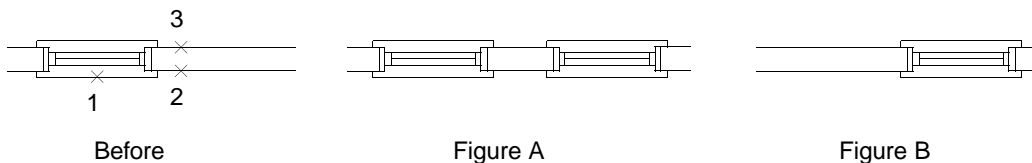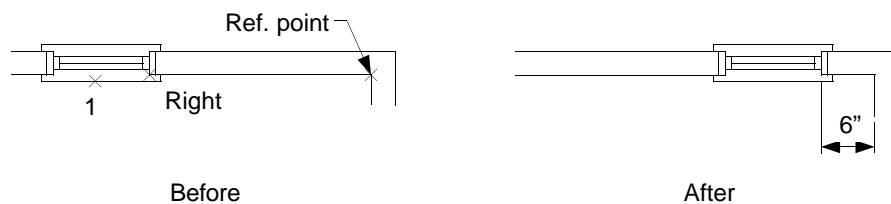## Window Utilities: *(Continued)*

Remove Window: Deletes a selected window.

- Pick **Windows > Utilities > Remove Window**. The prompts are as follows:

Select window: Select the window to be Removed (*Point 1*)
The window will be removed and the wall will automatically be repaired.

Before   After

Replace Window: Replaces a selected window with another type or size of window.

- Pick **Windows > Utilities > Replace Window**. The prompts are as follows:

Select window: Select the window to be Replaced (*Point 1*)
The window will then be removed and the wall will automatically be repaired. At this
point the Windows Icon Menu will appear allowing you to select a new window (*If you
are only wanting to change the size, select the same style as before*). Now you will be
prompted for the new windows size. Notice that you will not be prompted for the
location of the window, as the location of the original window is automatically assumed.

Below is an example of replacing a single window with a double window.

Before   After
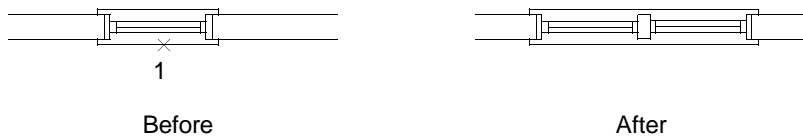
Window Utilities: *(Continued)*

Change Wall Thickness: Replaces a selected window with another type of window.

• Pick **Windows > Utilities > Change Wall Thickness**. The prompts are as follows:

Select window: Select the window to be Changed (*Point 1*)
Pick new opposite wall line: Pick the opposite wall (*Point 2*)
The window will then be rebuilt for the new wall thickness.

Before   After

Update Window: Updates the selected window to the current settings such as thickness, jamb thickness and color, defined in **Utility > Setup > Current** or **Global**.

• Pick **Windows > Utilities > Update Window**. The prompts are as follows:

Select window: Select the window to be Updated.
The window will then be Updated to the current settings.

Chapter 9 - Symbols Menu

This chapter details how to insert Symbols (*better known as BLOCKS*) in AutoPLAN.
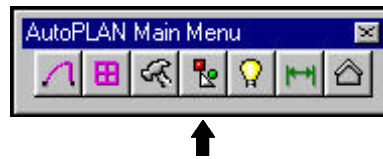
Symbols Pull-Down Menu

Below is a diagram of the **Symbols** pull-down menu.
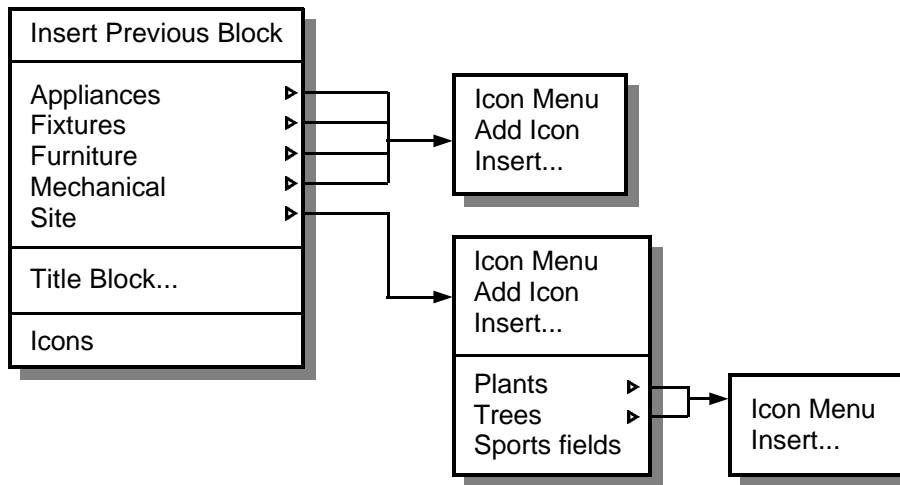
The **Symbols** pull-down menu is the central location for all symbols (*blocks*) that can be inserted into the drawing. Under each heading are the options:
- **Icon Menu**: This will activate the icon menu for that particular heading.
- **Add Icon**: Allows the user to add his own block into the User Menu for that particular heading, which can be inserted from the User Icon Menu.
- **Insert...**: This will activate a list of blocks for that heading (*mainly for user blocks*).

Appliances: Contains blocks such as refrigerators, stoves, etc.
Fixtures: Contains blocks such as sinks, toilets, tubs, etc.
Furniture: Contains blocks such as beds, chairs, tables, etc.
Mechanical: Not currently used.
Site: Contains blocks for site work such as plants, trees, sports fields, etc.

All symbols within the **Symbols** menu use AutoLAYERING, which means that an appliance is automatically placed on the Appliance layer, thus reducing errors and drafting time.

Insert Previous Block: Repeats the insertion of the previously inserted block using the same layer, scale factor and options as the previously inserted block.

- Pick **Symbols > Insert Previous Block**. The block is then inserted.

Title Block...: Inserts the selected block and sets the drawing's scale and sheet size.

- Pick **Symbols > Title Block...**. The dialog box appears:

Simply type the desired scale, select a paper size from the list, choose whether or not to turn on the snap (then set the snap size if turned on) and choose **OK**. The title block will be inserted and the drawing scale and sheet size will be set to the desired parameters. The options are as follows:
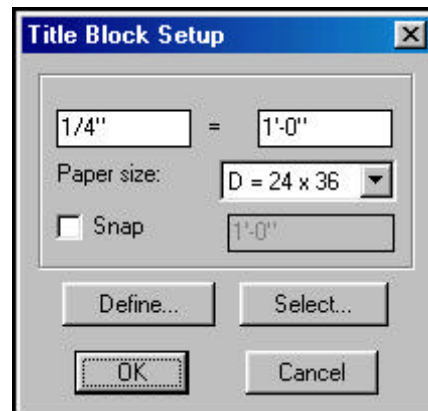
> Select: Allows the user to select a title block to insert that is not predefined, for instance, an outside vendors title block.

> Define: Allows the user to define the blocks to use for each sheet size.

Currently defined title blocks

Pick a button to redefine a title block file name
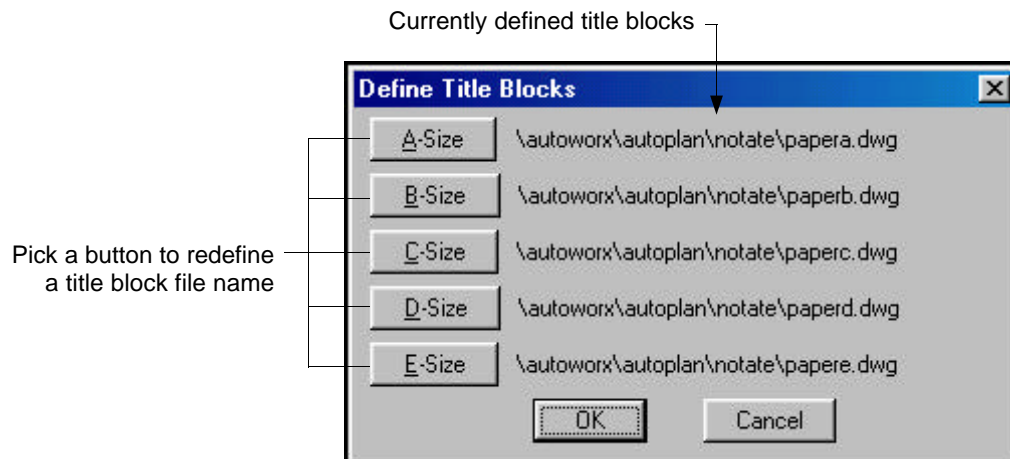
Chapter 10 - Electrical Menu

This chapter details how to insert Electrical symbols in AutoPLAN.

Electrical Pull-Down Menu

Below is a diagram of the Electrical pull-down menu.

Electrical

Lights ▶		Ceiling Mounted ▶
Outlets ▶		Wall Mounted ▶
Signals ▶		Misc. ▶
Switches ▶		
Equipment ▶		Floor/Ceiling Mounted ▶
Electrical Line		Wall Mounted ▶
Icons		

Single
2-Way
3-Way
4-Way
Automatic Door
Ceiling Pull
w/Circuit Breaker
w/Weatherproof Breaker
Dimmer
Fused
Weatherproof Fused
Keyed
Low Voltage
Low Voltage Master
w/Pilot Light
Remote Control
Special
Thermostat
Timer
Weatherproof

Push Button
Buzzer
Bell
Bell & Buzzer
Annunciator
Bell Transformer
Chime
Electric Door Opener

Ceiling fans ▶
Door opener
Door opener w/light
Electrical meter
Panels ▶

Due to the large number of symbols within the Electrical Menu, the above layout only shows the menu one level deep. To see a pictoral representation of each option pick **Icons** at the bottom of the menu.

The items in the Electrical menu are described on the next page.

Description of the Electrical Menu

Lights: Light Fixture Symbols
⇒ **Ceiling Mounted**: Ceiling mounted light fixtures.
⇒ **Wall Mounted**: Wall mounted light fixtures.
⇒ **Misc.**: Lighting Fixtures that are not Ceiling or Wall mounted.

Outlets: Electrical Outlet Symbols
⇒ **Floor/Ceiling Mounted**: Outlets mounted in floor or ceiling.
⇒ **Wall Mounted**: Outlets mounted on or in the wall.

Signals: Electrical Signals Symbols

Switches: Electrical Switches Symbols

Equipment:
⇒ **Ceiling Fans**: Several Symbols of Ceiling Fan.
　 Door opener: Symbol of garage door opener.
　 Door opener w/ light: Symbol of garage door opener with built-in light.
　 Electrical meter: Symbol of electrical service meter.
⇒ **Panels**: Several Electrical Circuit Breaker Panel Boxes.

Electrical Lines: Creates Arced Electrical Circuit Lines.

- Pick **Electrical > Electrical Lines**. The prompts are as follows:

Pick start point of electrical line:　　Pick start point of Line (*Point 1*)
Second point:　　　　　　　　　This point establishes the arc's radius (*Point 2*)
End point:　　　　　　　　　　This point establishes the arc's length (*Point 3*)
<Endpoint of arc>:　　　　　This point establishes the next arc's length (*Point 4*)
Continue picking or hit ENTER when finished to end the command.
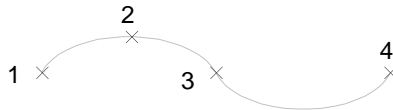
Icons: Displays the Electrical Icon Menu.

Chapter 11 - Elevations Menu

This chapter details Elevation commands in AutoPLAN.

Elevation Pull-Down Menu

Below is a diagram of the Elevation pull-down menu.

Elevation views ▸
Additions ▸
Doors ▸
Windows ▸
Railing
CDM...
Hatch ▸
Labels ▸
Icons

Front view
Side view

Insert...

Attached
Projected
Sheds ▸

Attached
Projected

Glass
Siding

Arched
Casement
Double Hung
Fixed
Quarter
Grilles
Shutters
Window sill
Insert...

Label Elevation
Set Base Elevation
Reset Base Elevation
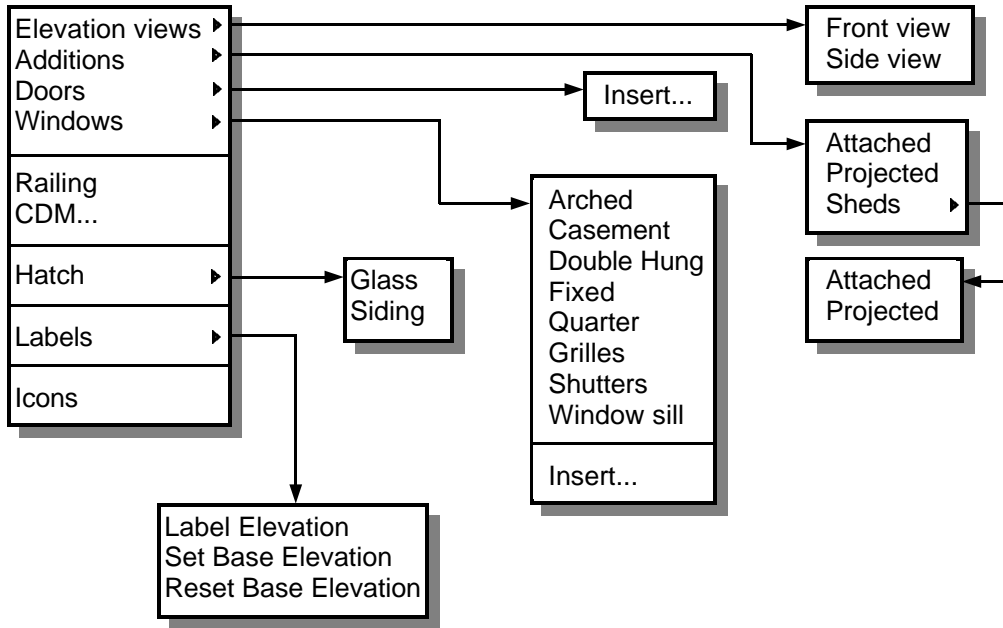
The items in the Elevation menu are described on the next page.

Description of the Elevation Menu

At this time the Elevations section is still under construction. Please refer to Chapter 4, Elevations for a tutorial on drawing Elevations. Most of your questions will be answered there.

Also check our web site www.bosedesigns.com periodically to check for updates to the manual.

We regret any inconvenience this may cause you.

Chapter 12 - Notation Menu

This chapter details how to create Notations in AutoPLAN.

Notation Pull-Down Menu

Below is a diagram of the Notation pull-down menu.

| AutoDIM |
| AutoDIST |

| Details ▸ |
| Labels ▸ |
| Leaders ▸ |
| Misc ▸ |
| North Arrows ▸ |

| Text ▸ |
| Notes |
| Schedules ▸ |

| Icons |

| Detail Balloon |
| Wall Elevation |
| Wall Section (sgl) |
| Wall Section (dbl) |
| Building Section (sgl) |
| Building Section (dbl) |

| Multiline |
| Balloon |
| Balloon w/ Leader |
| Leader to Ballon |
| Toolbar ON |

| Door (Tag) |
| Door (Text) |
| Window (Tag) |
| Window (Text) |
| Finish Label |
| Title (Underlined) |
| Title (w/ Scale) |
| Title (w/ Balloon) |
| Room Label |
| Room Label w/ Size |
| Room Size |
| Label w/ Text |
| Label a Line |
| Label Joists |
| Label Slope |
| Equipment Label |
| Revision Label |

| Center Line |
| Shadowed Box |
| Work Point |

| Door |
| Window |
| Finish |

| Append Text |
| Insert Text |
| Dynamic |
| Centered |
| Left |
| Middle |
Right
Edit Text
Edit Multiple Lines
Change Text
Replace Text
Import Text
Set Style...

| 1 |
| 2 |
| 3 |
| 4 |

To see a pictoral representation of each option pick **Icons** at the bottom of the menu. The Notation menu is described on the next page.

Description of the Notation Menu

AutoDIM: This command simplifies the process of creating dimensions in AutoCAD. It automatically sets the Endpoint, Midpoint, Intersection and Center OSNAPs.

- Pick **Notation > AutoDIM**. The prompts are as follows:

First extension line origin: Pick the first start point (*Point 1*).
Second extension line origin: Pick the second start point (*Point 2*).
**Aligned/Inside/Outside/<Pick location of dimension line>:**
  This prompt has 4 options and is defaulted to the dimension line location. If you are ready to place the dimension line, simply pick a point (*Point 3*). To Place the new dimension inside of an existing dimension using the distance established by the **DIMDLI** system variable, pick the existing dimension's dimension line. Likewise you can place the new dimension outside of an existing dimension in the same manner. Using the **Inside** and the **Outside** options insures consistent spacing of all of your dimensions. To create an Aligned dimension, pick the **Aligned** option and pick the desired location of the dimension line. *Note: The Inside and Outside options do not work on Aligned dimensions.*

| Default | Inside | Outside | Aligned |
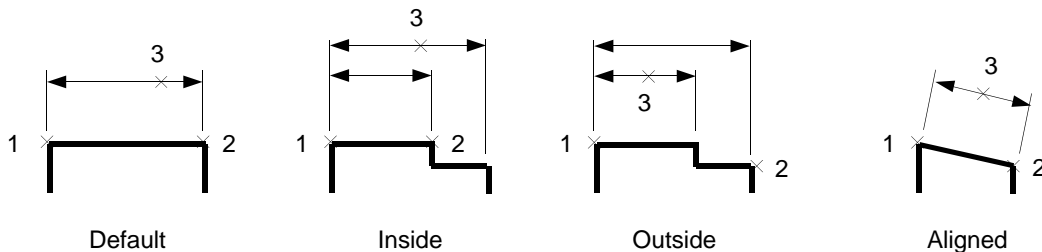
After locating the first dimension you will be prompted to Continue or Baseline the dimension. Below is the Continue option:
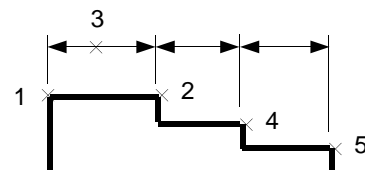
Create a dimension as described above (*Points 1-3*).
Baseline/<Continue>: Type **C** or hit ENTER
Second extension line origin: Pick next (*Point 4*)
**Second extension line origin:** Pick next (*Point 5*)
  Hit ENTER to end the command when finished.

The BASELINE option is detailed on the next page.

AutoDIM: (*Continued*)

Create a dimension as described above (*Points 1-3*).
Baseline/<Continue>: Type **B** or hit ENTER
Continue/<Second extension line origin>: Pick next (*Point 4*)
Continue/<Second extension line origin>: Pick next (*Point 5*)
  Hit ENTER to end the command when finished, or you can Continue.
Continue/<Second extension line origin>: Type **C** for Continue
  This allows you to switch from BASELINE to CONTINUE mode. You will be prompted:
Second extension line origin: Pick next (*Point 6*)
Hit ENTER to end the command when finished.
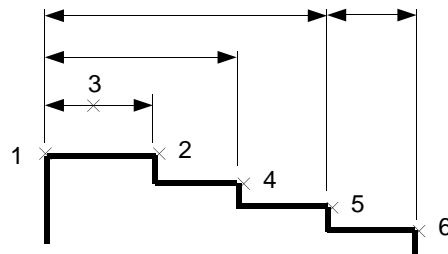
AutoDIST: This command is a simplified version of the AutoCAD Distance command.
It automatically sets the Endpoint, Midpoint, Intersection and Center OSNAPs.

- Pick **Notation > AutoDIST**. The prompts are as follows:

First point: Pick the first point to measure (*Point 1*).
Second point: Pick the second point to measure (*Point 2*).
After picking the second point, AutoDIST will return the distance between the points, the
X (horizontal) distance, the Y (vertical) distance and the angle between the two points.

Example: **Distance: 11'-7 15/16" (139.94284548), X: 10'-0", Y: 6'-0", Angle: 31.**
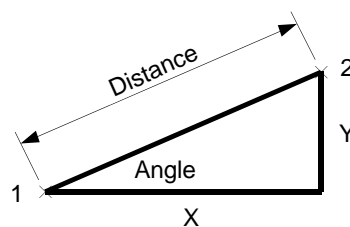
Notation - Details

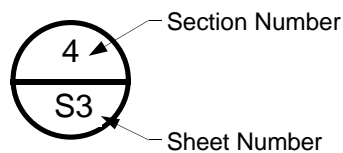**Detail Balloon**: This command creates a Detail Balloon.

- Pick **Notation > Details > Detail Balloon**. The prompts are as follows:

Insertion point: Pick the center point of the balloon.
Section Number: Type the desired number.
Sheet Number: Type the desired number.

Wall Elevation: This command creates a Detail Balloon.

- Pick **Notation > Details > Wall Elevation**. The prompts are as follows:

Center of bubble: Pick the center point of the balloon.
Pick in direction of view: Pick in the direction of the wall to view.
Section Number/Letter: Type the desired number.
Sheet Number: Type the desired number.
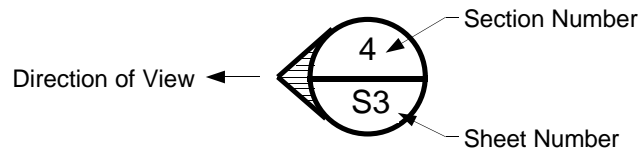
Wall Section (sgl): This command creates a Single Wall Section Balloon.

- Pick **Notation > Details > Wall Section (sgl)**. The prompts are as follows:

Center of bubble: Pick the center point of the balloon (*Point 1*).
Pick in direction of view: Pick in the direction of the view of the wall (*Point 2*).
End of section line: Pick the end of the section line itself (*Point 3*)
Section Number/Letter: Type the desired number.
Sheet Number: Type the desired number.

Wall Section (sgl): (*Continued*)

2 ⊢————————⊣ 1

Section Number

4 ▲

S3

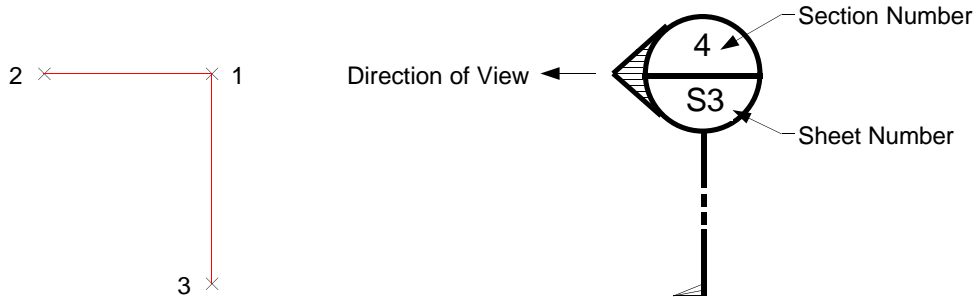Direction of View ◄——

Sheet Number

3 ⊢

Wall Section (dbl): This command creates a Double Wall Section Balloon.

- Pick **Notation > Details > Wall Section (dbl)**. The prompts are as follows:

Center of first bubble:	Pick the center point of the first balloon (*Point 1*).
Center of second bubble:	Pick the center point of the second balloon (*Point 2*).
Pick in direction of view:	Pick in the direction of the view of the wall (*Point 3*).
Section Number/Letter:	Type the desired number.
Sheet Number:	Type the desired number.

3 ⊢————————⊣ 2

Section Number

4 ▲

S3

Direction of View ◄——

Sheet Number

1 ⊢

4

S3

Building Section (sgl): This command creates a Single Building Section Balloon.

• Pick **Notation > Details > Building Section (sgl)**. The prompts are as follows:

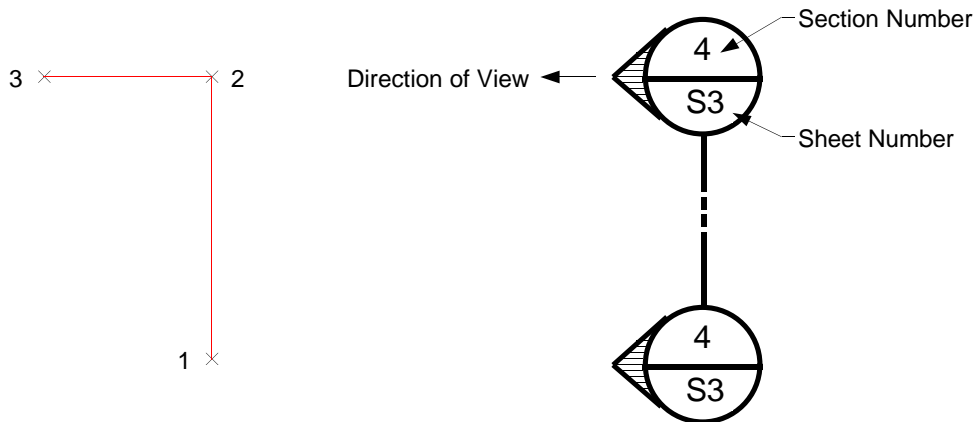|	
Center of bubble:	Pick the center point of the balloon (*Point 1*).
Pick in direction of view:	Pick in the direction of the view of the wall (*Point 2*).
End of section line:	Pick the end of the section line itself (*Point 3*)
Section Number/Letter:	Type the desired number.
Sheet Number:	Type the desired number.

Building Section (dbl): This command creates a Double Building Section Balloon.

• Pick **Notation > Details >BuildingSection (dbl)**. The prompts are as follows:
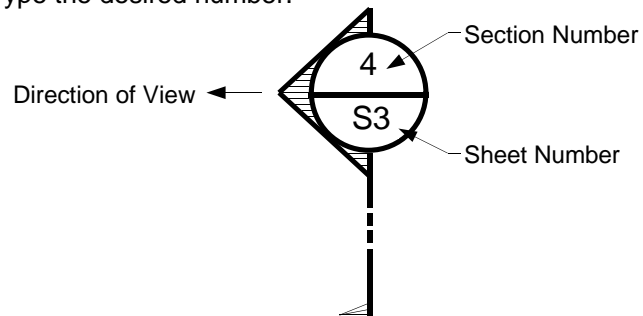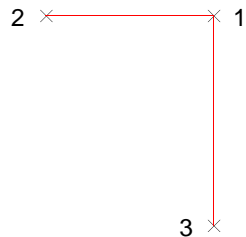
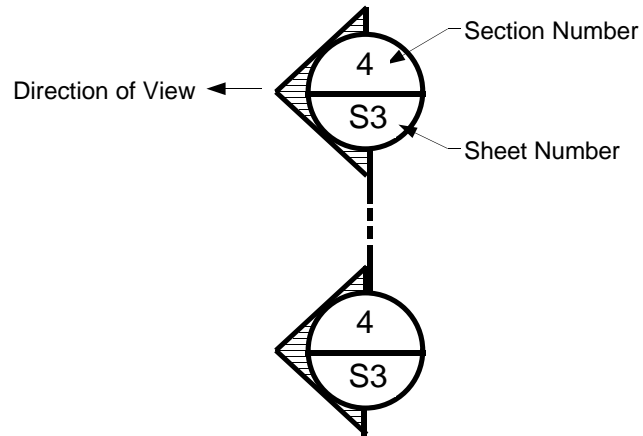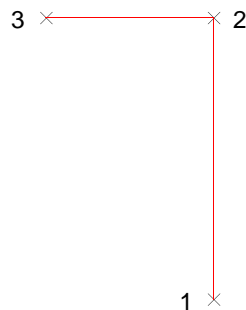|	
Center of first bubble:	Pick the center point of the first balloon (*Point 1*).
Center of second bubble:	Pick the center point of the second balloon (*Point 2*).
Pick in direction of view:	Pick in the direction of the view of the wall (*Point 3*).
Section Number/Letter:	Type the desired number.
Sheet Number:	Type the desired number.

Notation - Labels

Door (Tag): This command creates a Door Label Balloon complete with attributes.

- Pick **Notation > Labels > Door (Tag)**. The prompts are as follows:

Center of lable:	Pick the center point of the Tag.
Door Number:	Enter the Door's Number.
Door Size:	Enter the size, *ex.*: 30" x 80"
Door Type:	Enter the Type, *ex.*: Single
Description:	Enter a description, *ex.*: LH, Wood Passage Door
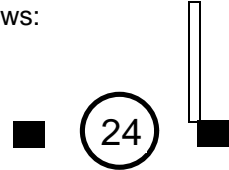
Door (Text): This command creates a Door Text Label. This label displays in a feet and inches format. Thus 3'-0" x 6'-8" would appear as 3068.

- Pick **Notation > Labels > Door (Text)**. The prompts are as follows:

Pick latch side of door:	Pick the latch point of the door (*Point 1*).
Pick hinge side of door:	Pick the hinge point of the door (*Point 2*).
Enter door height <6'-8">:	Enter the height of the door.

Window (Tag): This command creates a Window Label Balloon complete with attributes.

- Pick **Notation > Labels > Window (Tag)**. The prompts are as follows:

Center of lable:	Pick the center point of the Tag.
Window Letter:	Enter the Window's Letter.
Window Size:	Enter the size, *ex.*: 30" x 48"
Window Type:	Enter the Type, *ex.*: Double Hung
Description:	Enter a description, *ex.*: Vinyl Clad Window Unit

Window (Text): This command creates a Window Text Label. This label displays in an inches format. Thus 3'-0" x 4'-0" would appear as 3648.

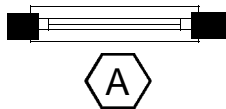- Pick **Notation > Labels > Window (Text)**. The prompts are as follows:

Pick one edge of window: Pick the left side of the Window (*Point 1*).
Pick one edge of window: Pick the right side of the Window (*Point 2*).
Enter window height <5'-0">:   Enter the height of the Window.

Finish Label: This command creates a Room Finish Balloon. This is used to specify the materials used to finish a room.

- Pick **Notation > Labels > Finish Label**. The prompts are as follows:

Center of lable: Locate the center of the balloon (*Point 1*).
Finish Letter: Type the letter of the balloon.
Floor finish: Enter the floor finish, *ex. CERAMIC*
Wall finish: Enter the wall finish, *ex. PAINT*
Ceiling finish: Enter the ceiling finish, *ex. TEXTURED PLASTER*
Enter number of walls to specify <4>:
The above prompt wants to know how many walls these properties apply to. In most rooms, all 4 walls are identical, so the response would be **4**. But if one wall is to be different than the other 3, then the response would be **3**. After responding, you will then be prompted for each wall to pick in the direction of the wall you want to apply these properties to.
Pick in direction of wall: Pick in direction (*Point 2*)
Pick in direction of wall: Pick in direction (*Point 3*)
Pick in direction of wall: Pick in direction (*Point 4*)
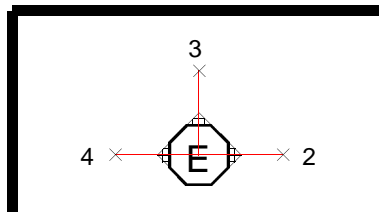
Title (Underlined): Creates an Underlined Text Label.

• Pick **Notation > Labels > Title (Underlined)**. The prompts are as follows:

Pick start point: Pick the center point of the Text Label.
Enter text: Enter the Label's Description.

<div align="center">

Detail "A"

</div>

Title (w/Scale): Creates an Underlined Text Label with the Detail's scale below it.

• Pick **Notation > Labels > Title (w/Scale)**. The prompts are as follows:

Pick location of title: Pick the center point of the Text Label.
Enter title for detail: Enter the Label's Description.
Enter scale (?/foot): Enter the Detail's scale, *ex. 1/4"*

<div align="center">

Foundation Plan
Scale: 1/4"=1'-0"

</div>

Title (w/Balloon): Creates an Underlined Text Label with the Detail's scale below it and a section detail balloon.

• Pick **Notation > Labels > Title (w/Balloon)**. The prompts are as follows:

Pick location of title: Pick the center point of the Text Label.
Section Number/Letter: Enter the Cross-section Number or Letter
Sheet Number: Enter the Sheet Number
Enter title for detail: Enter the Label's Description.
Enter scale (?/foot): Enter the Detail's scale, *ex. 1/4"*

<div align="center">

C
S4   Typical Building
Scale: 1"=1'-0"

</div>

Room Label: This command creates a Room Label with attributes for the room title, room number, area and usage of the room.

- Pick **Notation > Labels > Room Label**. The prompts are as follows:

Center of lable:	Pick the location of the Label.
Room Name:	Enter the Room Name
Room Number:	Enter the Room Number
Area:	Enter the area of the room (*Optional*)
Usage:	Enter the use of the room (*Optional*)

<div align="center">

Mechanical Room

204

</div>

Room Label (w/Size): This command creates a Room Label with the room dimensions listed below the label.

- Pick **Notation > Labels > Room Label (w/Size)**. The prompts are as follows:

Rotated room/<First corner>:	Pick any corner of the room (*Point 1*)
Second corner:	Pick the opposite corner of the room (*Point 2*)
Room Name:	Enter the Room Name
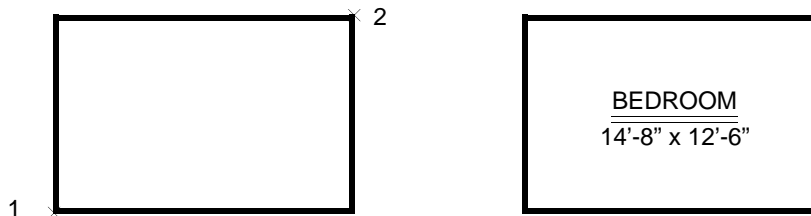
If the room is rotated, then Type **R** at the **Rotated room/<First corner>:** prompt.
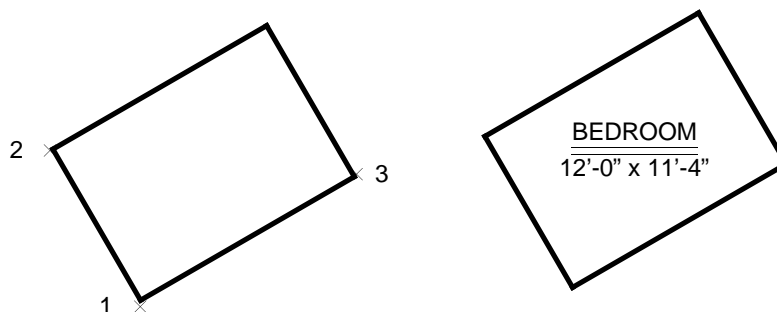
Room Size: This command creates a Room Size Label of the room dimensions.

- Pick **Notation > Labels > Room Size**. The prompts are as follows:

Rotated room/<First corner>:   Pick any corner of the room (*Point 1*)
Second corner: Pick the opposite corner of the room (*Point 2*)
Room Name: Enter the Room Name

2

14'-8" x 12'-6"

1

If the room is rotated, then Type **R** at the **Rotated room/<First corner>:** prompt.

2

3

12'-0" x 11'-4"

1
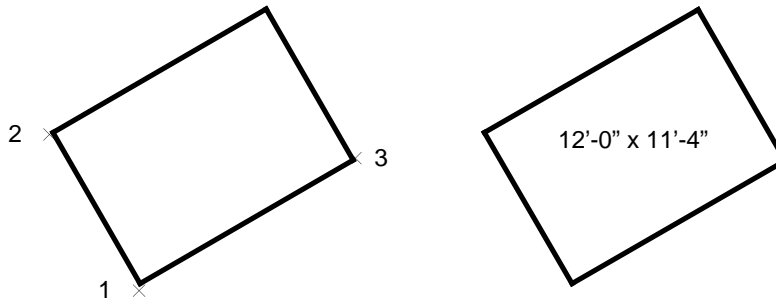
Label w/Text: This command creates a Text Label centered between two points. This is also useful to label the center of any area.

- Pick **Notation > Labels > Label w/Text**. The prompts are as follows:

First corner: Pick any corner of the room (*Point 1*)
Second corner: Pick the opposite corner of the room (*Point 2*)
Room name <CLOSET>:   Enter the Room name
Rotation angle: Enter and angle or drag to pick.

2

Closet

1
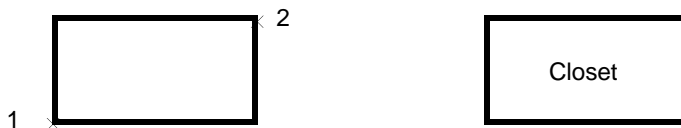
Label a Line: This command creates a Text Label centered on a line along the angle of the line. The Endpoint OSNAP becomes active.

- Pick **Notation > Labels > Label a Line**. The prompts are as follows:

Pick one end of line: Pick one end of the line.
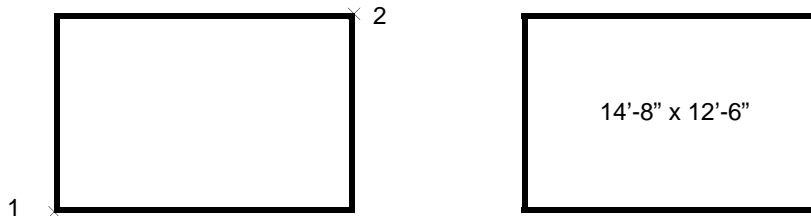**Pick other end of line:**   Pick the other end of the line.
Enter label <Label>:   Enter the text label.
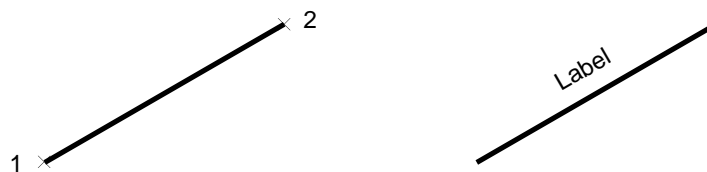
Label Joists: This command creates a Joist Label with directional arrows and size.

- Pick **Notation > Labels > Label Joists**. The prompts are as follows:

Locate center of text: Locate the center of the label.
Joist size <2 x 10>:   Enter the Joist size.
Rotation angle: Enter and angle or drag to pick.

Joist direction
2 x 12 @ 16" O.C.
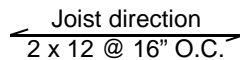
Label Slope: This command creates a Line Slope Label.

- Pick **Notation > Labels > Label Slope**. The prompts are as follows:

Pick roof line @ fascia: Pick roof line where it meets the fascia (*Point 1*).
Pick roof line @ peak: Pick roof line where it meets the peak (*Point 2*).
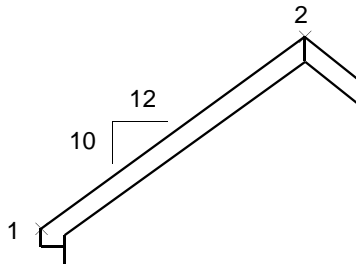
Equipment Label: This command creates an Equipment Label.

- Pick **Notation > Labels > Equipment Label**. The prompts are as follows:

Center of equipment label: Locate the center of the Equipment Label.
Equipment Number: Enter the Equipment Number.

$$\boxed{\text{DB-123}}$$
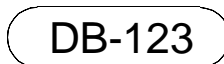
Revision Label: This command creates an Revision Label.

- Pick **Notation > Labels > Revision Label**. The prompts are as follows:

Locate center of revision label: Locate the center of the Revision Label.
Revision Number <1>:   Enter the Revision Number or Enter to accept.

Notation - Leaders

Multi Line Leader: This command creates a Leader with multiple lines of text.

- Pick **Notation > Leaders > Multi Line Leader**. The prompts are as follows:

Pick start point of leader: Pick the start (arrow) point of the Leader (*Point 1*).
End of leader: Pick the end of the Leader line (*Point 2*).
Text: Type the desired text. Hit ENTER for a new line of text.
Text: Continue typing text or hit ENTER to exit the command.
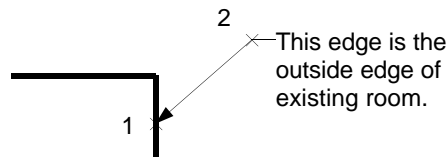
Balloon: This command inserts a Balloon Label.

- Pick **Notation > Leaders > Balloon**. The prompts are as follows:

Center of Item Ball: Pick the center of the balloon.
Enter text: Enter the balloon text.

Balloon w/Leader: This command inserts a Balloon Label with an attached leader.

- Pick **Notation > Leaders > Balloon w/Leader**. The prompts are as follows:

Start point of leader: Pick the start of the leader (*Point 1*).
Center of Item Ball: Pick the center of the balloon.
Enter text: Enter the balloon text.
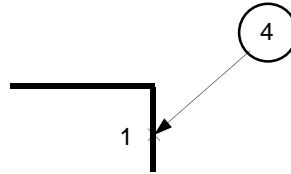
Leader to Balloon: This command attaches a leader to an existing balloon.

- Pick **Notation > Leaders > Leader to Balloon**. The prompts are as follows:

Start point of leader: Pick the start of the leader (*Point 1*).
Center of Item Ball: Pick the existing balloon.
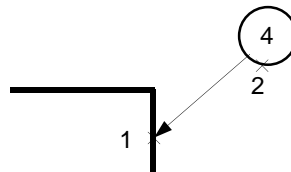
Toolbar ON: Activates the Leaders Toolbar.

- Pick **Notation > Leaders > Toolbar ON**.

Notation - Misc.

**Center Line**: This command inserts a Center Line symbol.

- Pick **Notation > Leaders > Center Line**. The prompts are as follows:

Insertion point: Pick the location of the symbol.

Shadowed Box: This command creates a rectangle with a shadow.

- Pick **Notation > Leaders > Shadowed Box**. The prompts are as follows:

Pick lower left corner: Pick a point (*Point 1*).
Pick upper right corner: Pick a point (*Point 2*).
Width of shadow <1/32">: Enter a distance.
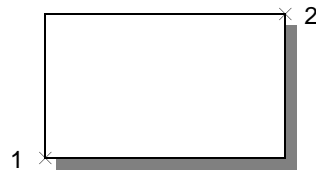
Work Point: This command inserts a Work Point symbol.

- Pick **Notation > Leaders > Work Point**. The prompts are as follows:

Locate center of work point: Pick a point (*the center of the work point*).
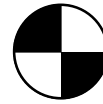
Notation - North Arrow

North Arrow: This command inserts one of several North Arrow symbols.

- Pick **Notation > Leaders > North Arrow**. The prompts are as follows:

Notation - Text

Append Text: This command appends new line(s) of text to an existing text object.

- Pick **Notation > Text > Append Text**. The prompts are as follows:

Select text to append: Select any existing text object (*does not support MTEXT*)
Text: Begin typing the new text, hit ENTER for new lines.
When finished adding new lines of text, hit ENTER again to exit the command.

Insert Text: This command inserts new line(s) of text between existing lines of text.

- Pick **Notation > Text > Insert Text**. The prompts are as follows:

Select text to insert below: Select the text object (*does not support MTEXT*)
Select last line of text: Select last line in paragraph you want to move.
Number of lines to insert <1>:   Enter number of lines to insert.

Selected text ➤ 1. All state and local codes ...   1. All state and local codes ...
                      2. Room sizes are listed as ...   This is a sample of inserting 2
   Last text ➤ 3. The square footage of the ...   lines of text between line 1 & 2
                                                                      2. Room sizes are listed as ...
                                                                      3. The square footage of the ...

Text: Begin typing the new text, hit ENTER for new lines.
When finished adding new lines of text, hit ENTER again to exit the command.

AutoText Commands: This group of commands creates text on the Notate layer, and asks for a text height and rotation angle. The height you enter is what you want it to be when plotted, and AutoText calculates the appropriate height based upon the DIMSCALE variable. The available AutoText commands are:

- Pick **Notation > Text > Dynamic Text**   (Or type **DT** at the command prompt)
- Pick **Notation > Text > Centered Text**   (Or type **CT** at the command prompt)
- Pick **Notation > Text > Left Text**   (Or type **LT** at the command prompt)
- Pick **Notation > Text > Middle Text**   (Or type **MT** at the command prompt)
- Pick **Notation > Text > Right Text**   (Or type **RT** at the command prompt)

Notation - Text

Edit Text: This command edits text, dimension text or attributes via a dialog box.

- Pick **Notation > Text > Edit Text**. The prompts are as follows:

Select text, dimension, or attribute: Select the text object.
If the selected entity is TEXT, then a dialog box will appear with the text ready to edit.
If the selected entity is a DIMENSION, then the Multiline Text Editor will appear,
allowing the text to be edited. If the selected entity is an ATTRIBUTE, then the Edit
Attributes Editor will appear, allowing the attribute to be edited.

Edit Multiple Lines: This command allows you to select multiple text entities and then
edits them in the order they were selected.

- Pick **Notation > Text > Edit Multiple Lines**. The prompts are as follows:

Select objects: Select the text objects in the order you wish to edit them.

Change Text: This is the old AutoCAD command which allows you to edit several
properties of a text entity such as height, justification, location, rotation, style, text and
width. This command is provided "as-is" and is not supported by AutoPLAN.

- Pick **Notation > Text > Change Text**. The prompts are as follows:

Select objects: Select the text objects in the order you wish to edit them.
Height/Justification/Location/Rotation/Style/Text/Undo/Width:
Each option will prompt you for the appropriate data.

Replace Text: This command allows you to replace specific characters within a text
entity with different characters.

- Pick **Notation > Text > Replace Text**. The prompts are as follows:

Select objects: Select the text objects you wish to edit.
Match string: Type the characters you wish to replace (*Case sensitive*)
New string: Type the new characters to replace them with.
Ex.: To change the word **iron** in the below example to **steel**, select both text entities,
then the match string would be **iron**, and the new string would be **steel**.

        1. The flange is iron.   1. The flange is steel.
        2. The bushing is iron.   2. The bushing is steel.

Notation - Notes

Notes: This multi-function command allows you to View, Create, Import or Export text. This is great for importing commonly used notes without retyping.

- Pick **Notation > Notes**. The following dialog box appears:
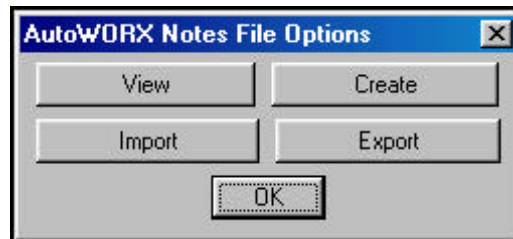
Notes > View: Opens a selected text file in a window so it can be read. Once open, you have the option of editing the file, importing the file or exiting the command.
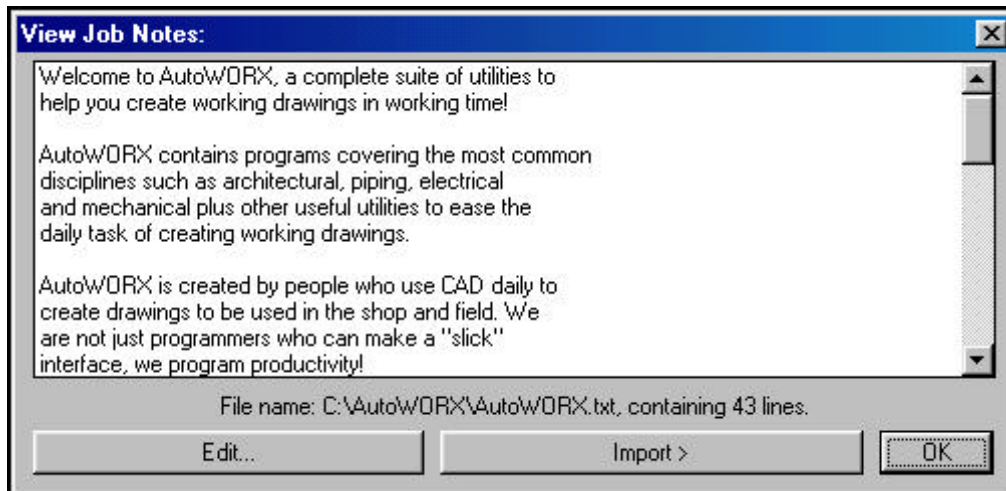
If you select **Edit** the file will be opened in Notepad. If you chose **Import** the file will then be imported into the current drawing as text. Chosing **OK** returns to Notes.

Notes > Create: This option asks for the name of a text file to create, using the current drawing's name as a default. You will be prompted "Do you want to create a

Notes > Import: Prompts for the name of a text file to import into the drawing as text. Once the name is selected, the following prompts are given:

Start point or Center/Middle/Right/?:   Locate the start of the text.
The justification is set to Left. If you want to change it, type the letter of the desired justification, afterwhich you will be prompted for the **Start point:** again.
Height <3/32">:   Enter the desired height.
Rotation angle <0>:   Enter the rotation angle.
Change text options? <N>:   Type **Y** for Yes, or **N** for No.
The options that can be changed are:
    Distance between lines/<Auto>:   Enter a distance or ENTER for Auto.
    First line to read/<1>:   Enter the line number to start importing.
    Number of lines to read/<All>:   Enter number of lines to import from the first.
    Underscore each line? <N>:   Type **Y** for Yes, or **N** for No.
    Overscore each line? <N>:   Type **Y** for Yes, or **N** for No.
    Change text case?   Upper/Lower/<N>: Type **Y**, **N**, **U** or **L**.
    Set up columns? <N>:   Type **Y** for Yes, or **N** for No.

After defining your parameters, the text file will be imported into the drawing as text.

Notes > Export: Exports selected AutoCAD text to an external text file as ASCII text.

First you will be asked for a name for the new file to create. Then you will be prompted:
Select text in the order to export:
Select objects: Select text entities in the order you want them in the new file.
When finished selecting text, hit ENTER to exit the command. A new file has been created on your hard drive in the folder you selected. This file can then be imported into other drawings using Notes.

Notation - Schedules

Door: This command creates a schedule of all of the doors currently defined in the drawing with a Door Tag Symbol.

- Pick **Schedules > Door**. The prompts are as follows:

Locate upper right of door schedule: Locate a point on the screen.
A door schedule will now be created. The schedule will count the number of doors and place them in order in the schedule. If a door is changed, added or deleted, simply erase the schedule and run the command again.

Window: This command creates a schedule of all of the windows currently defined in the drawing with a Window Tag Symbol.

- Pick **Schedules > Window**. The prompts are as follows:

Locate upper right of window schedule: Locate a point on the screen.
A window schedule will now be created. The schedule will count the number of windows and place them in order in the schedule. If a window is changed, added or deleted, simply erase the schedule and run the command again.

Finish: This command creates a schedule of all of the finish symbols currently defined in the drawing with a Finish Label Symbol.

- Pick **Schedules > Finish**. The prompts are as follows:

Locate upper right of finish schedule: Locate a point on the screen.
A finish schedule will now be created. The schedule will group the finishes and place them in order in the schedule. If a finish is changed, added or deleted, simply erase the schedule and run the command again.

Notation - Icons

Icons: Displays the Notation Icon Menu.

Chapter 13 - Utility Menu

This chapter details the programs located under the Utility menu.

Utility Pull-Down Menu

Below is a diagram of the **Utility** pull-down menu.

Main Menu			Copy to Level ?		Cleanup ▷		Automatic

Main Menu
Last Menu

Display Level
Display System
Level utilities ▷

Walls ▷
Layers ▷
Lines ▷
Attributes ▷

Applications ▷
Drawing Status ▷
Purge Drawing ▷
Setup ▷
View ▷

Copy to Level ?
Move to Level ?
Add Level
Set Level
? Level
Export Sheets

Cleanup ▷
Move Wall

Poche ▷

Automatic
Close wall
Corner
Intersection
Tee

ON
OFF
Enable
Disable
Repair
Hatch

Layer Dialogue...
All ON
All OFF

Change to ??? layer
Change to current layer
Isolate layer
Set layer to
Layer OFF
Layer Lock
Layer Unlock
Freeze Layer
DELETE

Edit
Dynamic
Move
Resize
Rotate
Global Update

Scale Setup...
Rescale...

Current
Global
Save to Disk

Utilities to purge
the drawing

Displays Status
of the drawing

Loads external
programs

Break Line ▷
Join lines
Lines to Polyline
Weld
Compare length
ID Length
ID Slope
Change Linetype
Change Linetype to... ▷
Change Pline Width

Break
Boxed
Curved
Straight

A list of standard
Linetypes ...

The **Symbols** pull-down menu is described on the following pages.

Description of Utility Menu Items

Main Menu: Displays the Main AutoPLAN Icon Menu. This menu allows the user to navigate to the individual icon menus.

- Pick **Utility > Main Menu**. The menu is then displayed.

Last Menu: Displays the last menu that was activated in AutoPLAN. This saves the user several steps when needing to return to a menu again.

- Pick **Utility > Last Menu**. The menu is then displayed.

Display Level: Displays all entities on the specified floor level.

- Pick **Utility > Display Level** or press **F11**. The prompts are as follows:

Display which level: Type the desired floor level to display.
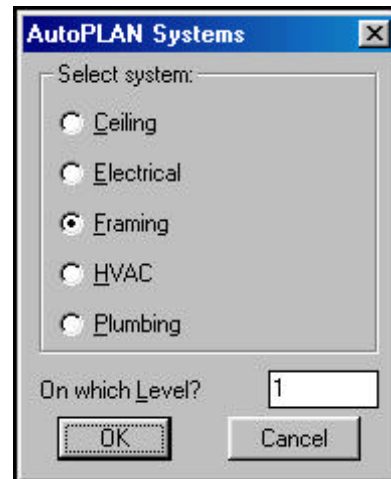AutoPLAN will then return "***** Current Floor Level = # *****"

Display System: Displays all entities on the specified floor level system.

- Pick **Utility > Display System** or press **F12**. A dialog box will then appear:

Choose the desired System to display, then type the floor level which contains the system. AutoPLAN supports 99 numbered and any number of 1 or 2 letter floor levels. Lettered levels are ones that the user may define for more specific levels (or sheets) such as **D** for details.

AutoPLAN has several reserved lettered levels.
- **C** for the Cover Sheet
- **F** for the Foundation
- **R** for the Roof Plan
- **S** for the Site Plan

AutoPLAN Systems ☒

Select system:
- ○ Ceiling
- ○ Electrical
- ⦿ Framing
- ○ HVAC
- ○ Plumbing

On which Level?   [1]

[OK]   [Cancel]

Level Utilities: The Level Utilities are to make working with levels easier.

Copy to Level ?: Copies selected entities from one floor level to another.

- Pick **Utility > Level Utilities > Copy to Level ?**. The prompts are as follows:

Select entities to be copied: Select desired objects to copy.
Which level to copy to: Enter the floor level to copy the entities to.

Move to Level ?: Moves selected entities from one floor level to another.

- Pick **Utility > Level Utilities > Move to Level ?**. The prompts are as follows:

Select entities to be moved: Select desired objects to move.
Which level to move to: Enter the floor level to move the entities to.

*Note: You can also copy or move entities from a Floor Level to a Floor System, (ex. from 1 to 2F will copy or move from Floor Level 1 to Floor System 2F). However you **cannot** copy or move from one Floor System to another Floor System. Though there are a few instances when this can be done, however the results will most likely be unpredictable. If the layers of the objects being copied or moved does not exist on the target Level the layers will be created, however the new layer's color will not be defined. You can type **(refresh)** at the command prompt to update the basic layers predefined in AutoPLAN. Any user layers must be manually updated. A work around for this problem is to create the target layer before copying or moving the objects.*

ADD Level: Displays a new level in addition to the one already being displayed, but does not reset the active level. This is useful to "overlay" a level on top of another.

- Pick **Utility > Level Utilities > ADD Level**. The prompts are as follows:

Turn on which level: Displays all objects on the desired level.

Set Level: Sets the current (or active) level (use with *CAUTION!*). Any entities created after running this command will be created on the new level, even if another level is currently being displayed.

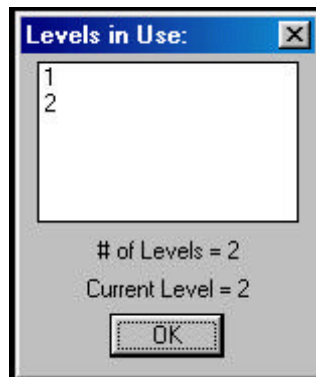- Pick **Utility > Level Utilities > Set Level**. The prompts are as follows:

Current Floor Level = 1
New floor number <1>:   Type the desired level to make current.

? Level: Displays the current level number on the command prompt line.

- Pick **Utility > Level Utilities > ? Level**. The Levels In Use dialog box appears:

```
Levels in Use:                    ✕

   1
   2




        # of Levels = 2
        Current Level = 2

            [   OK   ]
```

Utility - Walls

Clean-up: Contains several commands for wall clean up.
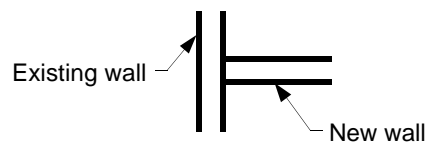
Automatic on creation: Controls the automatic clean-up of adjoining wall lines.

- Pick **Utility > Walls > Clean-up > Automatic on creation**.

If this is checked, then the adjoining wall will be trimmed when a new attached wall is created. If this is unchecked, the adjoining wall will not be trimmed.

Existing wall ⎯⎯   ⎯⎯ New wall   Existing wall ⎯⎯   ⎯⎯ New wall
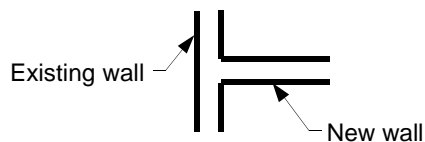
Automatic Trim Enabled   Automatic Trim Disabled

Close Wall: Repairs an opening in a wall.

- Pick **Utility > Walls > Clean-up > Close Wall**. The prompts are as follows:

Crossing/<Pick approximate location of intersecting walls>: Pick or type **C**.
If the opening is not too large, picking inside the opening usually works fine. If the opening is too large for the automatic clean-up, type **C** for Crossing. You will then be prompted:
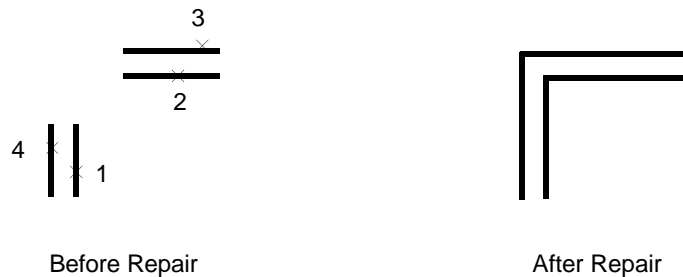
First corner: Pick first corner of crossing box (*Point 1*).
Other corner: Pick second corner of crossing box (*Point 2*).

Before Repair   After Repair
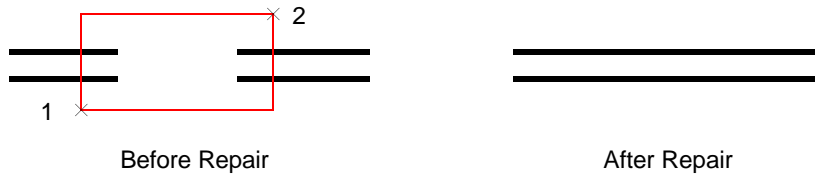
Corner: Simplifies repairing a broken wall corner.

- Pick **Utility > Walls > Clean-up > Corner**. The prompts are as follows:

Pick first line: Pick first wall line (*Point 1*).
Pick second line: Pick second wall line (*Point 2*).
Pick first line: Pick first wall line (*Point 3*).
Pick second line: Pick second wall line (*Point 4*).
**Pick first line:**   Hit Enter to exit the command.

Before Repair   After Repair

Intersection: Trims intersecting walls.
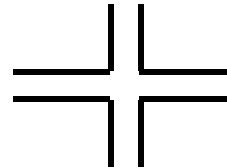
- Pick **Utility > Walls > Clean-up > Intersection**. The prompts are as follows:

Crossing/<Pick approximate location of intersecting walls>: Pick or type **C**.
If the lines are not too far apart, picking inside the intersection usually works fine. If the lines are too far apart for the automatic clean-up, type **C** for Crossing. You will then be prompted:

First corner: Pick first corner of crossing box (*Point 1*).
Other corner: Pick second corner of crossing box (*Point 2*).
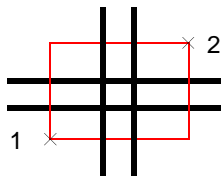
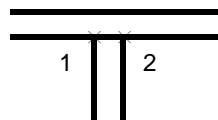Before Repair   After Repair

Tee: Trims walls that intersect in a Tee.

- Pick **Utility > Walls > Clean-up > Tee**. The prompts are as follows:

If you are zoomed to a viewsize greater the 20'-0" you will be prompted to:
Pick in approximate location of intersection: Pick the intersection. At this point you will be zoomed in on the intersection. Otherwise you will just be prompted to:
Pick first point: Pick first intersecting point (*Point 1*).
Pick other point: Pick second intersecting point (*Point 2*).
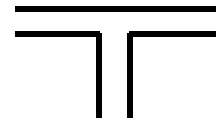
Before Repair   After Repair

**Move Wall**: Stretches an entire wall section including all visible entities. Move Wall behaves just like the AutoCad STRETCH command, except that it turns on and unlocks the BASELINE layer so that it can be moved also, and afterwards turns it back off and locks it again.

•   Pick **Utility > Walls > Move Wall**. The prompts are as follows:

Pick first corner: Pick first corner of crossing box (*Point 1*).
Other corner: Pick second corner of crossing box (*Point 2*).
Base point or displacement: Pick a point (*Point 3*) or type a coordinate.
Second point of displacement: Pick a point (*Point 4*) or type a coordinate.
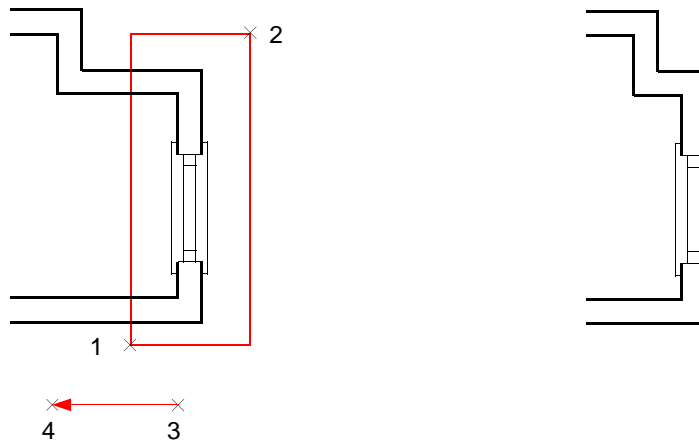
*Note: If you desire to move a wall on several Levels at once, use **Add Level** first to turn on all levels that have a wall you wish to move. For example, if you add Level 2 to Level 1, then use Move Wall, the wall on both levels will move along with the BASELINE. If you want to move a wall that is on an upper level that does not follow the baseline, do NOT use Move Wall. Simply use the Stretch command so the BASELINE will remain intact.*

Poche: Contains several commands for manipulating the wall poche (or Fill).

ON : Turns the wall Poche ON.

- Pick **Utility > Walls > Poche > ON**.

OFF : Turns the wall Poche OFF. Useful if you need to see only the wall lines.

- Pick **Utility > Walls > Poche > OFF**.

Enable : Enables the wall Poche.

- Pick **Utility > Walls > Poche > Enable**.

If this is checked, then any walls created will have a poche (or Fill). This does NOT affect any existing walls.

Disable : Disables the wall Poche.
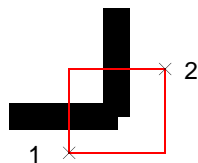
- Pick **Utility > Walls > Poche > Disable**.

If this is checked, then any walls created will not have a poche (or Fill). This does NOT affect any existing walls.

Repair: Repairs broken corner wall Poches. Occasionally some corners do not properly fill if they were manually created or modified. This command will fix them.

- Pick **Utility > Walls > Poche > Repair**. The prompts are as follows:

First corner: Pick first corner of crossing box (*Point 1*).
Other corner: Pick second corner of crossing box (*Point 2*).

Before   After

Hatch: Creates a hatch pattern Poche within a wall.

- Pick **Utility > Walls > Poche > Hatch**. The prompts are as follows:

Pick inside of wall to poche: Pick a point within the wall.
Scale of pattern (Fine/Medium/Wide) <M>:   Type **F**, **M** or **W**.

Utility - Layers

AutoPLAN contains several layer manipulation commands. These commands simplify the daily task of working with layers.

Layer Dialogue...: Opens the standard AutoCAD Layer Dialogue box.

- Pick **Utility > Walls > Layers > Layer Dialogue...**. The dialog box appears:

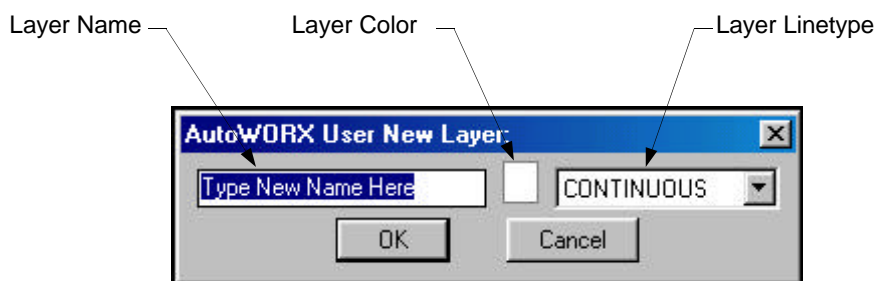**All ON**: Turns ALL layers ON.

- Pick **Utility > Walls > Layers > All ON**.

All OFF: Turns ALL layers OFF except the current layer.

- Pick **Utility > Walls > Layers > All OFF**.

New Layer: Creates a new layer, and places it on the current Level.

Pick **Utility > Walls > Layers > New Layer**. The dialog box appears:

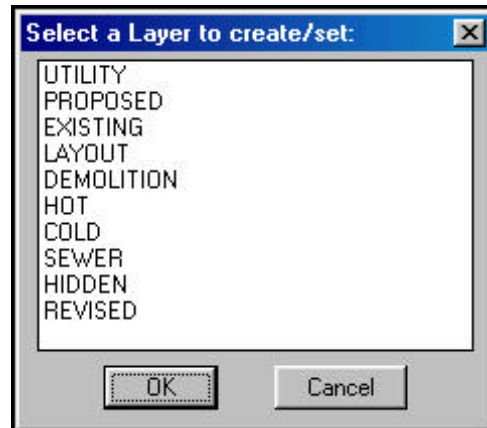Layer Name   Layer Color   Layer Linetype

User Layers: Defines and loads 10 different User Custom Layers. Saves time if you have many layers that you use that are not predefined in AutoPLAN.

Set/Create...: Makes a selected user layer current.

- Pick **Utility > Layers > User Layers > Set/Create...** or type **UL**.

To make a layer current, double click it or select it in the list and hit **OK**.

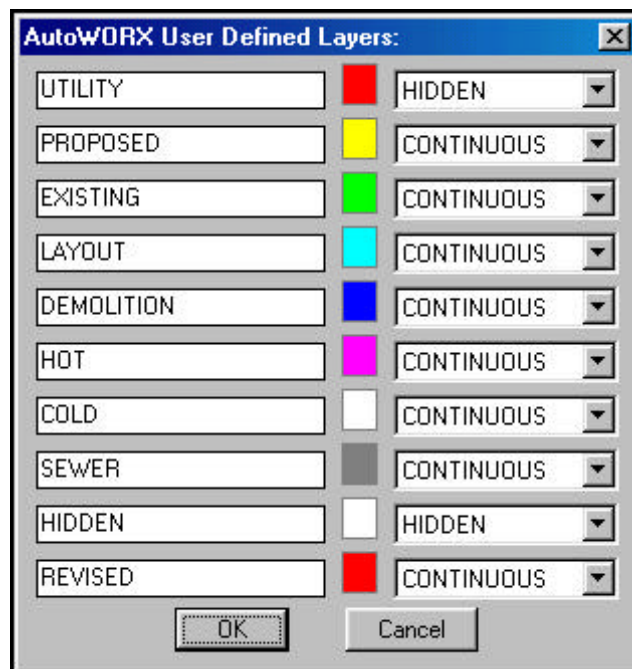**Define...**: Allows the user to define layers for use in the **Set/ Create...** command.

- Pick **Utility > Layers > User Layers > Define...**.

To define a layer, just type the name in the edit box on the left. Then pick the color box to set the layer's color followed by the linetype list box to set the layer's linetype.

These setting will be used when you use the **Set/Create...** command.

Copy to ??? Layer: Copies selected objects to another layer.

- Pick **Utility > Walls > Layers > Copy to ??? Layer**. The prompts are as follows:

Select entities to be copied: Select objects.
Choose from list/Point to entity on target layer: Pick an object or type **C**.
If you picked a target entity then the selected objects will be copied in the same location, but will reside on the target layer. If the target entity is not visible, then type **C** to choose from a list of existing layers. To select a layer, double click it or select it in the list and hit **OK**.
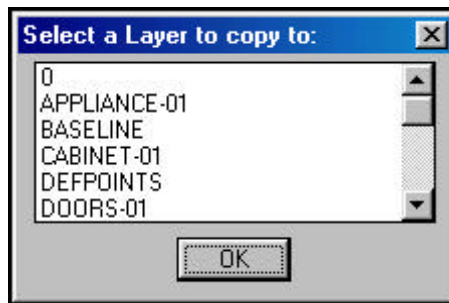
Change to ??? Layer: Moves selected objects to another layer.

- Pick **Utility > Walls > Layers > Change to ?? Layer**. The prompts are as follows:

Select entities to be changed: Select objects.
Choose from list/Point to entity on target layer: Pick an object or type **C**.
If you picked a target entity then the selected objects will be copied in the same location, but will reside on the target layer. If the target entity is not visible, then type **C** to choose from a list of existing layers. To select a layer, double click it or select it in the list and hit **OK**.
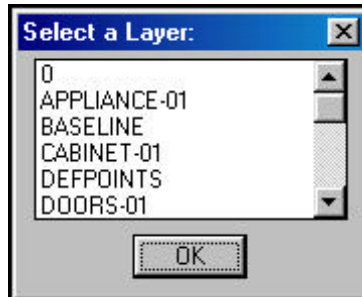
Change to Current Layer: Moves selected objects to the current layer.

- Pick **Utility > Layers > Change to Current Layer**. The prompts are as follows:

Select object(s) to move to current layer:
Select objects: Select objects to change, ENTER when finished.

Isolate Layer: Turns off all layers except the layer of the selected object, which becomes the current layer.

- Pick **Utility > Layers > Isolate Layer**. The prompts are as follows:

Select entity on layer to isolate: The selected layer is isolated.

Set Layer to...: Makes the layer of the selected object the current layer.

- Pick **Utility > Layers > Set Layer to...**. The prompts are as follows:

Select entity on target layer: The selected layer is now current.
AutoPLAN returns "<*selected layer name*> **is now the current layer.**"

Layer OFF: Turns off the layer of all selected objects.

- Pick **Utility > Layers > Layer OFF**. The prompts are as follows:

Select object on layer to turn off: Select layers to turn off, ENTER when finished.

Layer Lock: Locks the layer of all selected objects.

- Pick **Utility > Layers > Layer Lock**. The prompts are as follows:

Select object on layer to lock: Select layers to lock, ENTER when finished.

Layer Unlock: Unlocks the layer of all selected objects.

- Pick **Utility > Layers > Layer Unlock**. The prompts are as follows:

Select object on layer to unlock: Select layers to unlock, ENTER when finished.

Freeze Layer: Freezes the layer of all selected objects.

• Pick **Utility > Layers > Freeze Layer**. The prompts are as follows:

Select object on layer to freeze: Select layers to freeze, ENTER when finished.

Delete: Deletes ALL entities on the layer of the selected object.

• Pick **Utility > Layers > Delete**. The prompts are as follows:

Select object on layer to be deleted: Select layers to delete, ENTER when finished.

Utility - Lines

AutoPLAN contains several line manipulation commands. They are described below.

Break Lines: This set of commands breaks lines in several ways.

Break: Breaks a selected line where it intersects another object. Break uses the DIMGAP variable to control the size of the break. Dimension Extension lines can also be broken, leaving the Dimension intact.

• Pick **Utility > Lines > Break Lines > Break**. The prompts are as follows:

Select line to break: Select line (*Point 1*).
Pick breaking point: Pick the intersection of the two objects (*Point 2*).
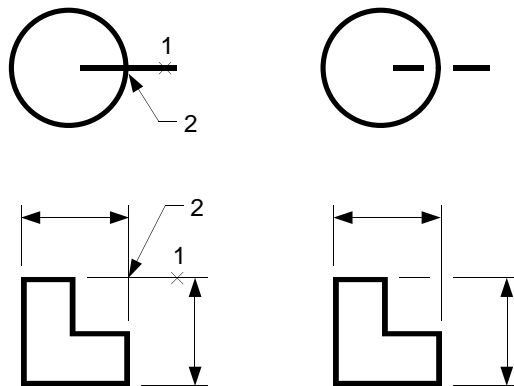
Boxed/Curved/Straight: Breaks a selected line with a break symbol. There are three different shapes for the symbols. Each one is placed in the middle of the line.

- Pick **Utility > Lines > Break Lines > ???**. The prompts are as follows:

Select line to break: Select a line.

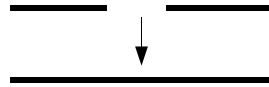|		
Boxed	Curved	Straight

Join 2 Lines: Joins 2 selected lines into a single line or turns an arc into a circle.

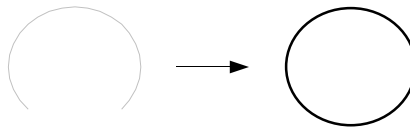- Pick **Utility > Lines > Join 2 Lines**. The prompts are as follows:

Select first line or arc: Select the first line or an arc to join together.
If you select a line you will then be prompted to:
Select second line: Select the second line to join.

If you selected an arc, the arc will then be converted to a circle with the same center point and radius as the original arc.

Lines to Polyline: Joins selected lines and arcs into a single polyline.

- Pick **Utility > Lines > Lines to Polyline**. The prompts are as follows:

Select objects to link together: Select lines or arcs to join together.
Select objects: Select more lines or arcs, ENTER when finished.

Weld: This command takes multiple lines that are colinear and makes them one.

- Pick **Utility > Lines > Weld**. The prompts are as follows:

Pick one end of line: Pick first point (*Point 1*).
Pick other end of line: Pick second point (*Point 2*).

1   2

If the above horizontal line was actually made up of three individual line segments, **Weld** would turn them into one line segment.

Compare Length: This inquiry command compares the length of two lines.

- Pick **Utility > Lines > Compare Length**. The prompts are as follows:

Select first line: Pick first line.
Select second line: Pick second line.

If the two lines were identical in length, AutoPLAN would return:
The selected lines are the same length.
Otherwise, AutoPLAN would return:
Lines are NOT the same length.
The first line is 2" shorter than the second line.

ID Length: This inquiry command identifies the length of a line, arc or circle.

- Pick **Utility > Lines > ID Length**. The prompts are as follows:

Select object to identify: Pick the line, arc or circle.

If the object selected was a line, AutoPLAN would return:
Length of line = 4'-0"
If the object selected was an arc or a circle, AutoPLAN would return:
Arc: **Radius: 3'-0"   Arclength: 4'-8 9/16"**

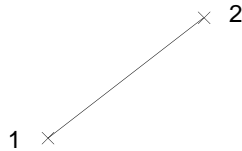Circle: **Radius: 2'-3 11/16"   Circumference: 14'-6"**
         Diameter: 4'-7 3/8"   Area: 200'-8 15/16"

ID Slope: Specifies the slope of a line in Rise over Run.

- Pick **Utility > Lines > ID Slope**. The prompts are as follows:

Pick one end of line: Pick first point (*Point 1*).
Pick other end of line: Pick second point (*Point 2*).

AutoPLAN would then return:
Slope = 8/12

Change Linetype: Changes the linetype of selected objects to that of another.

- Pick **Utility > Lines > Change Linetype**. The prompts are as follows:

Select entitie(s) to be changed: Select objects.
Choose from list/Point to target entity: Pick an object or type **C**.
If you picked a target entity then the selected objects linetype will be changed to match the linetype of the target entity. If the target entity is not visible, then type **C** to choose from a list of existing linetypes. To select a linetype, double click it or select it in the list and hit **OK**.

Change Linetype to...: Changes the linetype of selected objects to one in the list.

* Pick **Utility > Lines > Change Linetype to...**. The prompts are as follows:

Select objects: Select object to change.

Change Pline Width: Changes the width of selected polylines.

* Pick **Utility > Lines > Change Pline Width**. The prompts are as follows:

0/Fine/Medium/Wide/Set: <Medium>:   Type **0**, **F**, **M**, **W** or **S**.
Select entity to be changed: Select a polyline to change.
Select entity to be changed: Select another polyline or ENTER to exit.
If you typed **F**, **M**, or **W** AutoPLAN will change the width of the polyline. If you typed **0** the width of the polyline will be set to 0. If you typed **S** for Set, you will be prompted to:
Enter width of polyline: Enter the desired width.

Utility - Attributes

AutoPLAN contains several attribute manipulation tools. They are described below.

Edit: Edits a blocks attributes through the AutoCAD Edit Attributes Dialog Box.

* Pick **Utility > Attributes > Edit**. The dialog box appears.

Dynamic: Allows an attribute to be moved and rotated in one step.

* Pick **Utility > Attributes > Dynamic**. The procedure is as follows:

Pick the attribute to edit, pick a rotation angle, then pick a new location.

Move: Allows an attribute to be moved.

* Pick **Utility > Attributes > Move**. The procedure is as follows:

Pick the attribute to move, then pick a new location.

Resize: Allows an attribute to be resized.

• Pick **Utility > Attributes > Resize**. The procedure is as follows:

Pick the attribute to resize, then type a new size.

Rotate: Allows an attribute to be rotated.

• Pick **Utility > Attributes > Rotate**. The procedure is as follows:

Pick the attribute to rotate, then pick a new rotation angle.

Global Update: A search and replace command for attributes.

• Pick **Utility > Attributes > Global Update**. The prompts are as follows:

Select Attributes: Select attributes to change
String to change: Type the characters you wish to replace (*Case sensitive*)
New string: Type the new characters to replace them with.
Ex.: To change the word **iron** in the below example to **steel**, select both text entities, then the match string would be **iron**, and the new string would be **steel**.

1. The flange is iron.	1. The flange is steel.
2. The bushing is iron.	2. The bushing is steel.

Utility - Applications

Applications tools allow easy access to several helpful external programs.

Explorer...: Starts Windows Explorer in the current drawing's directory.

• Pick **Utility > Attributes > Explorer...**. Explorer is started.

Load Application...: Loads an AutoLISP, ADS or ARX application.

• Pick **Utility > Attributes > Load Application...**. Application is loaded.

Load Lisp Routine...: Loads an AutoWORX AutoLISP routine.

- Pick **Utility > Attributes > Load Lisp Routine...**. Routine is loaded.

Load Windows Program...: Loads a Windows program such as Calculator.

- Pick **Utility > Attributes > Load Windows Program...**. Program is loaded.

Run Script...: Loads and runs an AutoCAD script file.

- Pick **Utility > Attributes > Run Script...**. Script is loaded and activated.

Utility - Drawing Status

Drawing Status is simply a menu to provide information about the current drawing.

Drawing: Displays the drawing's name.
Scale: Displays the drawing's scale.
Date: Displays current date.
Time: Displays current time.

Utility - PURGE Drawing

The PURGE Drawing provides a quick and easy way to purge the drawing. The choices are:
    All, Blocks, Dimstyles, Layers, Linetypes, Shapes, Styles or Mlinestyles.

The advantage of this routine is that it purges three times, which will purge things that the AutoCAD purge will leave behind on the first run.

Utility - Set Up

AutoPLAN Set Up tools allow the user easy access to configure the program's variables to meet his requirements.

Current: Changes AutoPLAN's configuration in the current session only.

- Pick **Utility > Set Up > Current**. The dialog box appears.

Global: Changes AutoPLAN's configuration permanently for all new drawings.

- Pick **Utility > Set Up > Global**. The dialog box appears.

The **Current** and **Global** options look identical and will be discussed as one. If you only want to turn off the interior window sill for a couple of windows, use **Current**. If you want the interior sill to be turned off by default with every new drawing, use **Global**.
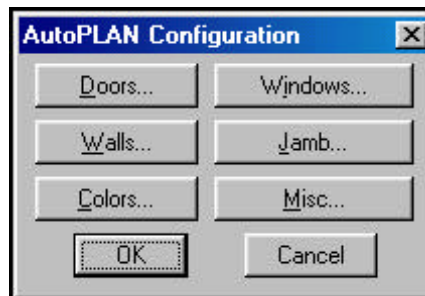
> Doors: Allows the user to customize the defaults for new doors.
> Windows: Allows the user to customize the defaults for new windows.
> Walls: Allows the user to customize the defaults for new walls.
> Jamb: Allows the user to customize the defaults for door and window jambs.
> Colors: Allows the user to customize the default colors for new layers.
> Misc: Allows the user to customize the defaults for text, startup and more.

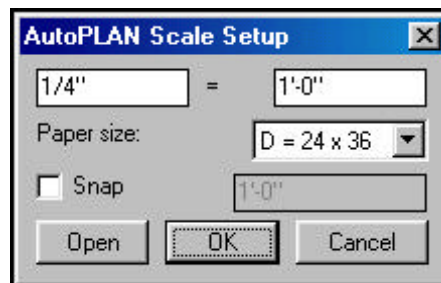**Save to Disk**: Copies AutoPLAN's configuration files to a disk for backup purposes.

- Pick **Utility > Set Up > Save to Disk**. The files are saved to disk.

Utility - View

AutoPLAN's View tools allow the user easily setup the scale of the drawing area.

Scale Setup...: Sets the current drawing scale and sheet size.

- Pick **Utility > View > Scale Setup...**. The dialog box appears.

Simply type the desired scale, select a paper size from the list, choose whether or not to turn on the snap (then set the snap size if turned on) and choose **OK**. The drawing scale and sheet size will be set to the desired parameters and AutoPLAN will return:

Scale: 1/4" = 1'-0", Sheet size: D, Snap: OFF.

After the above response is returned, you will see a red rectangle on the screen representing the actual paper outline at the desired scale. This rectangle is a display only and does not exist as an entity in the drawing and will disappear on the next zoom. This rectangle gives you a feel on where to start drawing.

Rescale...: Resets the current drawing scale to a new scale.

- Pick **Utility > View > Rescale...**. The dialog box appears.
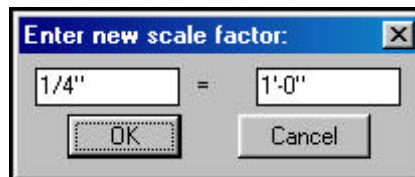
Simply enter the new scale, pick **OK** and the drawing will be rescaled.