Builders
CAD

T U T O R I A L

Builders
CAD

BuildersCAD Tutorial
Version 9.1

Updated July 28, 2006

SIGMA
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DESIGN

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Table Of Contents

Table Of Contents

1. About This Manual

What Is In This Manual

This tutorial will take you step by step through the process of creating a basic database with **BuildersCAD** Version 8.0. You will create a set of working drawings including framing drawings. The Tutorial is organized into the following nine parts, each of which contains a number of chapters.

Part 1: Getting Started (Chapters 1 & 2)
An introduction to the **BuildersCAD** Tutorial. Read this for an overview.

Part 2: Startup (Chapter 3)
A discussion of how to start BuildersCAD (load graphics) and how the database is organized in layers (files that are located in the database directory).

Part 3: Walls and Foundation (Chapters 4, 5, & 6)
Enter walls, place openings, dimension the floor plan. Frame walls using the default setups. Create a foundation plan.

Part 4: Placing Parts (Symbols) (Chapter 7)
Place *Parts* from the Parts Application for the floor plan and electrical plan.

Part 5: Floors (Chapter 8)
Create and frame a floor system.

Part 6: Roofs (Chapter 9)
Create and frame a roof.

Part 7: Elevations (Chapter 10)
Create an elevation.

Part 8: Materials (Chapter 11)
Use the default setups to generate a material takeoff including framing materials.

Before You Begin

Before you begin working with this tutorial you should review the information in the **BuildersCAD** Learning Guide. The Learning Guide provides directions on how to install and authorize **BuildersCAD** on your computer. It will also familiarize you with the menu structure and view controls.

The 3 Button Mouse

The directions presented here assume you are working with a 3 button mouse. It also assumes that the MS Windows mouse setups you have selected will allow the mouse to function according to the "design" of **BuildersCAD**. The left mouse button, F1, should pick a "non-exact" point, indicating direction. You also use the left mouse button to select menu commands. The middle mouse button should function as an F10. You use the middle button to exit routines and for Drag Commands (discussed later in this chapter). The right mouse button should function as F11 and be used to pick exact database and display points (like the corner of a wall).

Check the mouse driver settings. Set the left mouse button to click select, set the middle button to middle button and set the right button to alternate select. If these settings are not available and you have trouble with your mouse contact **BuildersCAD** Technical Support.

1. About This Manual

How We Present Instructions

Following are the conventions used throughout this tutorial to describe the operation of **BuildersCAD** *Designer* Applications, the **BuildersCAD** *Framer*, and the *Materials* Application.

Typograpical Conventions

Bold type

Prompt messages, File names, or specific keystrokes you must enter, as in enter **1'4"**.

Note: The default database units in **BuildersCAD** is feet. If you enter the number 1 and <enter> you are entering 1'-0". After you enter a foot mark, **BuildersCAD** assumes the next number is inches.

When entering feet and inches, do not enter the dash typically seen as a separator. **BuildersCAD** will interpret this as a minus sign and perform the calculation. An entry of 1'-4" will be interpreted as 8" (1 foot minus 4 inches). Therefore instead of entering 1'-4" (with the feet, dash and inch marks) enter 1'4. The inch marks after the 4 are optional.

Names of menu buttons and menu labels.

Italic type

Highlights terms and concepts when introduced for the first time.

Keyboard Conventions

Enter, Return, <cr>

Indicates you should press the key labeled Enter or Return.

F1, F2, F3, etc.

Indicates you should press a function key. Alternatively you can use the mouse buttons if you have the buttons set up for the required function key. The default settings for the left, middle, and right buttons are F1, F10, and F11 respectively.

Mouse Conventions

Pick

Use the mouse to point to an entity or location on the graphics screen, and quickly press and release either the left or right mouse button, as instructed. "Use F1 to pick ..." Means pick with the left mouse button.

Select

Use the mouse to point to a menu item and press the left mouse button (F1) once.

Drag

Use the mouse to point to a location on the graphics screen, then hold it down as you move the mouse.

Instructional Terms

Option

A choice on a menu or prompt line.

Prompt

An on-screen statement that asks for a response.

Enter

Means to type letters or numbers on the keyboard, then press the Enter or Return <cr> key.

Save Your Work

Periodically you will see the following line:

SAVE THE DATABASE

When you see this line select the **diskette** icon in the upper left corner of the menu with the right mouse button. This will save the database. You only want to save the database if you are proceeding through the Tutorial without making a mistake.

If You Make A Mistake

If you make a mistake go to the **BuildersCAD** main menu. Select **Open** on the **Job/Database** Application sub-menu. **BuildersCAD** will display the J**ob Database / Sheet Select** pop-up menu. You will see a list of jobs (databases) on the left side of the menu. Select *pn_std.db*. **BuildersCAD** will load pn_std.db losing the mistake you made.

Select **Open** again and **BuildersCAD** will display the **Job Database / Sheet / Thumbnail Select** pop-up menu. Select your tutorial database/job name. **BuildersCAD** will reload the database back to the point when you executed the last manual **Save**.

The Undo Button

On the Desktop menu across the top of the screen, you will find the **Undo** and **Redo** buttons. When **Undo** is selected (use the F1 mouse button) the last task or function completed is deleted or "undone". It is OK to use the *Undo* feature with most functions.

BuildersCAD will not allow you to use **Undo** to undo Wall Framing, Floor Framing, or Roof Framing. If you try to use the **Undo** button with any of these operations, **BuildersCAD** will give you a warning pop-up menu and turn off the framing layers. For additional information, see the **BuildersCAD** Learning Guide or the **BuildersCAD** Encyclopedia.

The Mouse Motion Commands

BuildersCAD allows you to invoke commands by gesturing (moving the mouse in a specific direction) while holding down the middle or right mouse button. The **Motion Command Interpreter** menu is a menu that includes pictures of the various mouse gestures and the default commands associated with those gestures. This is a powerful productivity feature of **BuildersCAD** but requires that you learn the gestures and associated commands.

1. About This Manual
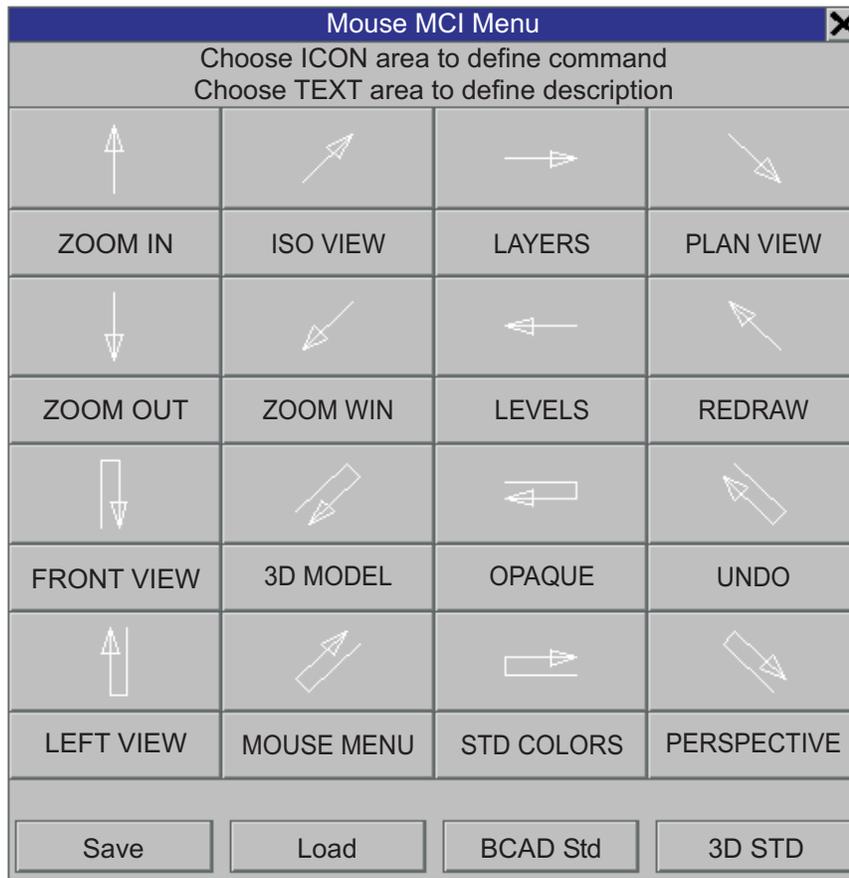
Figure 1-1

If you would like to learn more about the **Motion Command Interpreter** menu and *Mouse Gestures* see the **Hardware User Interface** section of the **BuildersCAD** Learning Guide or the **Motion Command Interpreter** topic in the **BuildersCAD** Encyclopedia.

Drawing Illustrations

Throughout this manual we will use illustrations of the **BuildersCAD** menus and drawing screen to better clarify the process being described.

The default background color in **BuildersCAD** is black, with objects drawn on screen in various colors. For clarity in print, in this manual we will show drawing screen figures with a white background using black lines. Illustrations of menus an menu buttons will be shown in their original, correct, colors. On the next page are two sample illustrations. Figure 1-2 is the drawing screen as you will actually see it in **BuildersCAD**. Figure 1-3 is how the same screen will be illustrated in this manual.
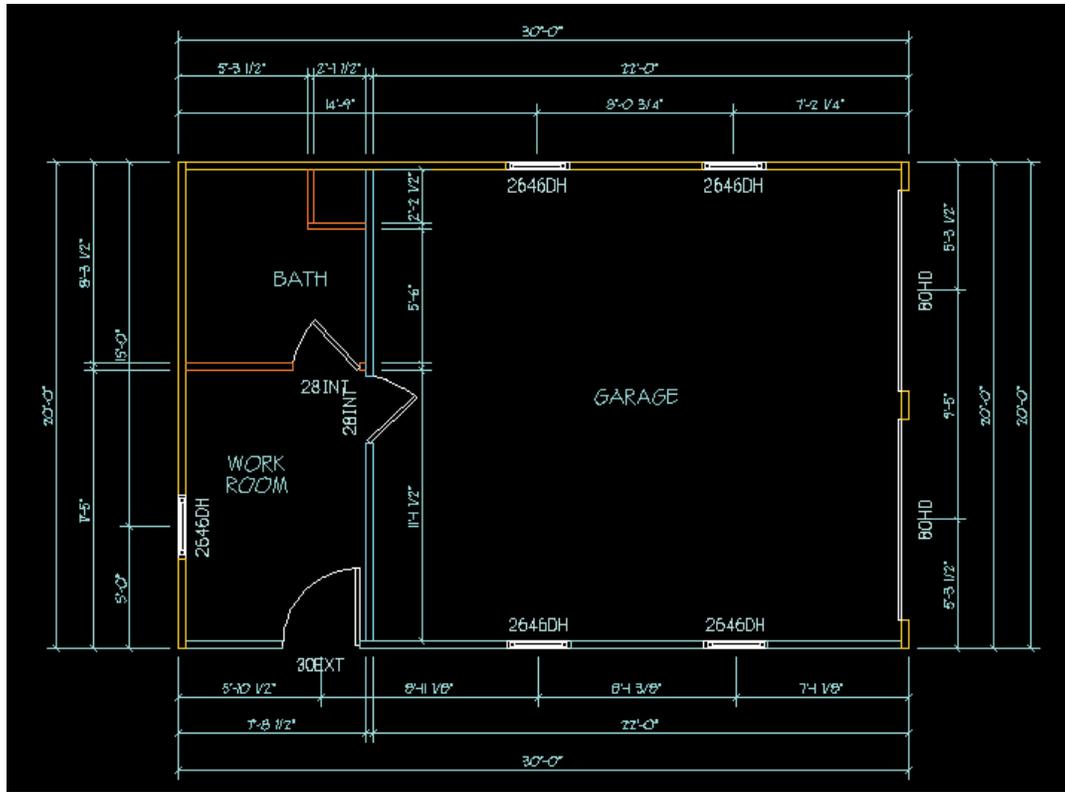
Figure 1-2
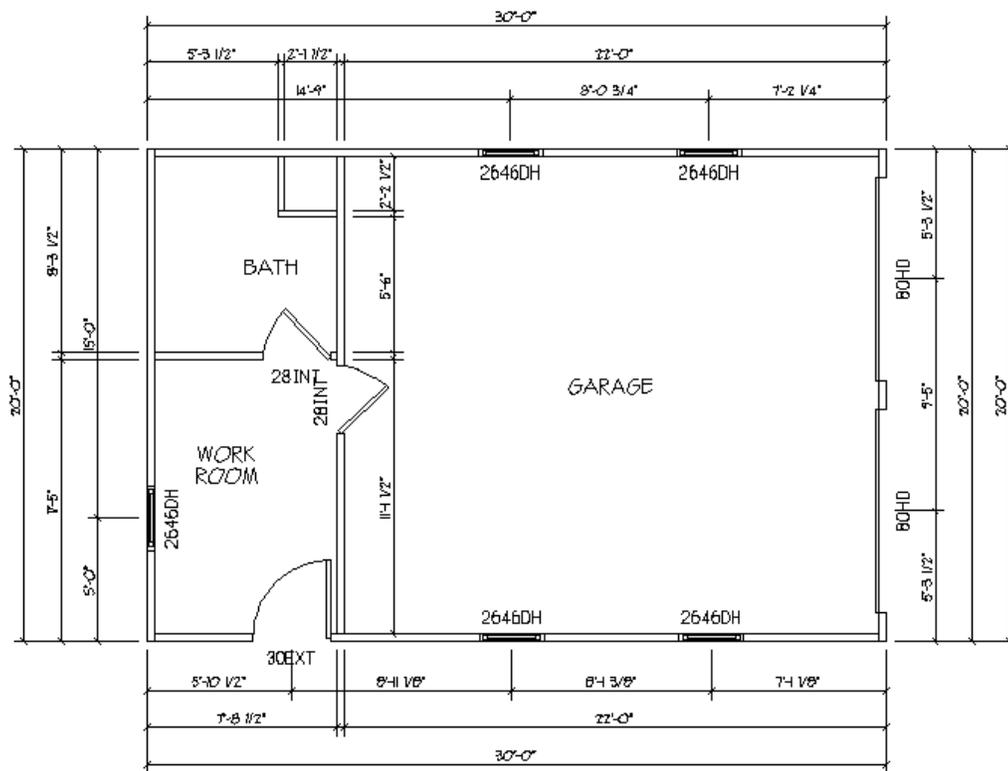
Figure 1-3

1. About This Manual

2. Tutorial Overview

Introduction

The purpose of this Tutorial is to take you through the process of creating a complete *materials ready* database. You can use this experience as a point of reference to develop a more in depth understanding of how **BuildersCAD** works.

This tutorial is updated for use with **BuildersCAD 9.1**. If you have not downloaded and installed **BuildersCAD 9.1**, please do so *before* beginning this tutorial. The software may be downloaded from the **BuildersCAD** web site at www.builderscad.com in the Support section of the web site.

We need to distinguish now between a database and a *materials ready* database. Building a house is a complex process and when you create a materials ready database with **BuildersCAD** you are essentially building a house "in the computer". You enter walls of a specific height and width, with rough openings for windows and doors at the correct elevation. You generate a system of roof planes with the same geometric properties (plane, pitch, elevation, area, etc.) as the roof on the house you build.

If you are not going to use **BuildersCAD** to frame the house or generate material takeoffs you can take a different approach in creating a database. If the graphics look good and you can print the drawing then it's OK.

In this tutorial we will be creating a database that is *materials ready*, that is a database that we can use to generate framing and material takeoffs. If you are not interested in materials output you may discover in the process some shortcuts that will still give you the results you want.

Startup

In this section we will review how to start **BuildersCAD** graphics. We will also show you how to create an empty database that you can use for this tutorial.

Walls and Foundations

We will enter walls, *place* openings and dimension a floor plan. Then we will use a *Walls Application* feature, **Foundations**, that utilizes the walls you have entered to create a foundation plan. Next we will "*frame*" the walls using the default framing rules.

Roof

After entering walls we will create a roof (roof plane system). You will see how BuildersCAD can generate a roof based on information assigned to an outline around the outside of the exterior walls.

After the roof plane system is created you use the **BuildersCAD** *Framer* to generate boards on the plane edges (such as on hip, ridge, or valley edges). After edge boards are generated the *Framer* can "fill" the surface with boards of user defined size and spacing.

Floor

We will outline and create a floor plane. Floor planes may be used to frame the floor and may be used to generate a materials takeoff. If you are not going to use the *Framer* or generate material takeoffs you may not need to create floor planes.

Similar to Roofs after the floor plane system is created you use the *Framer* to generate boards on the plane edges (such as end or rim edges). After edge boards are generated the *Framer* can "fill" the surface with boards of user defined size and spacing.

2. Tutorial Overview

Placing Parts

Floor plans usually have a graphic symbol to represent plumbing fixtures, cabinets, etc. In **BuildersCAD** you can select from libraries of pre-created symbols to represent plumbing fixtures, electrical symbols, cabinets, and more. You can place these symbols in the database. **BuildersCAD** will store them in separate files inside the database directory.

Elevations

BuildersCAD will automatically generate the elevation outlines with window and door symbols located block out the elevations. You may then use existing libraries of patterns (like brick or siding) to complete the elevation drawings.

Materials

After the design is complete and walls, openings, roofs, floors, etc. have been generated you are ready to *apply* materials. You use Material application features to link specific *estimating formulas* to parts of the building. The *estimating formulas* tell **BuildersCAD** what materials to use from the *stock file*. Then based on geometric information available from the building you have built in the computer, material quantities are calculated. For example, an estimating formula that calculates brick, sand, and mortar can be "applied" to the exterior wall surface of the building.

3. Startup Functions

Startup **BuildersCAD**

We will assume here that you have already installed and authorized **BuildersCAD** on your computer. If you have not, see the **BuildersCAD Learning Guide** for directions.

After installation, if you go to the Windows Explorer you will see that **BuildersCAD** has created a folder called **BCAD** on your hard drive. The default installation puts it on the C: drive but if **BuildersCAD** was installed on another drive such as D:, the **BCAD** folder will be located on the same drive where the **BuildersCAD** program directory was installed. Inside of BCAD you will find another folder - the *graphic user* folder. The BCAD folder is parallel to the **Program Files** folder in the directory tree. The default **BuildersCAD** program directory is a folder called **BCAD91** under the **Program Files** directory.

> Note: The default *graphic user* folder will be the same name as your Windows login. If you do not have a Windows login but you assigned a name to your PC when you first installed the operating system then the default graphic user will be the same as the machine name. If you do not have a Windows login and you didn't assign a name to your machine then your "default" graphics user name will be *default*.

Each *graphics user* contains information about how walls, roofs, and floors are framed, about how materials are estimated and graphics style information (how the drawings look) in subdirectories. This information is unique to each *graphics user* and may be customized. When **BuildersCAD** creates a *Graphics User* folder, system defaults are loaded. You can use the system defaults until you are ready to make decisions about customizing **BuildersCAD**. For purposes of creating a database using this tutorial, you should use the system default setups for all applications inside **BuildersCAD**.

Double Click the Graphics User shortcut icon on your desktop or select Start>>Programs>>Bcad 91>>Bcad 91 to start **BuildersCAD**.

The top half of the vertical menu to the right side of the screen is referred to as the **Application Menu**. The lower half of the vertical menu is called the **Application Sub-menu**. The menu that displays horizontally across the bottom of the screen is called the **Status** menu. Just above the **Status** menu, the horizontal row including the *Cycle* button (just to the right of the Stop sign) is the **User Toolbar**. Messages will frequently appear on the **Prompt Line**, just above and to the left end of the **User Toolbar**. Pop-up menus appear over the drawing area. For more information on the menu structure, refer to the **BuildersCAD Learning Guide**.

When you first load **BuildersCAD** you will notice that a database called *pn_std* is loaded. You can see the database that is loaded by looking on the Status menu under the heading Job/Database. In the Windows Explorer you can see this database folder as a sub-folder called **pn_std.db** that is located inside the *graphics user* folder.

The **BuildersCAD** starting screen and menu system is shown in figure 3-1 on the next page.

3. Startup Functions
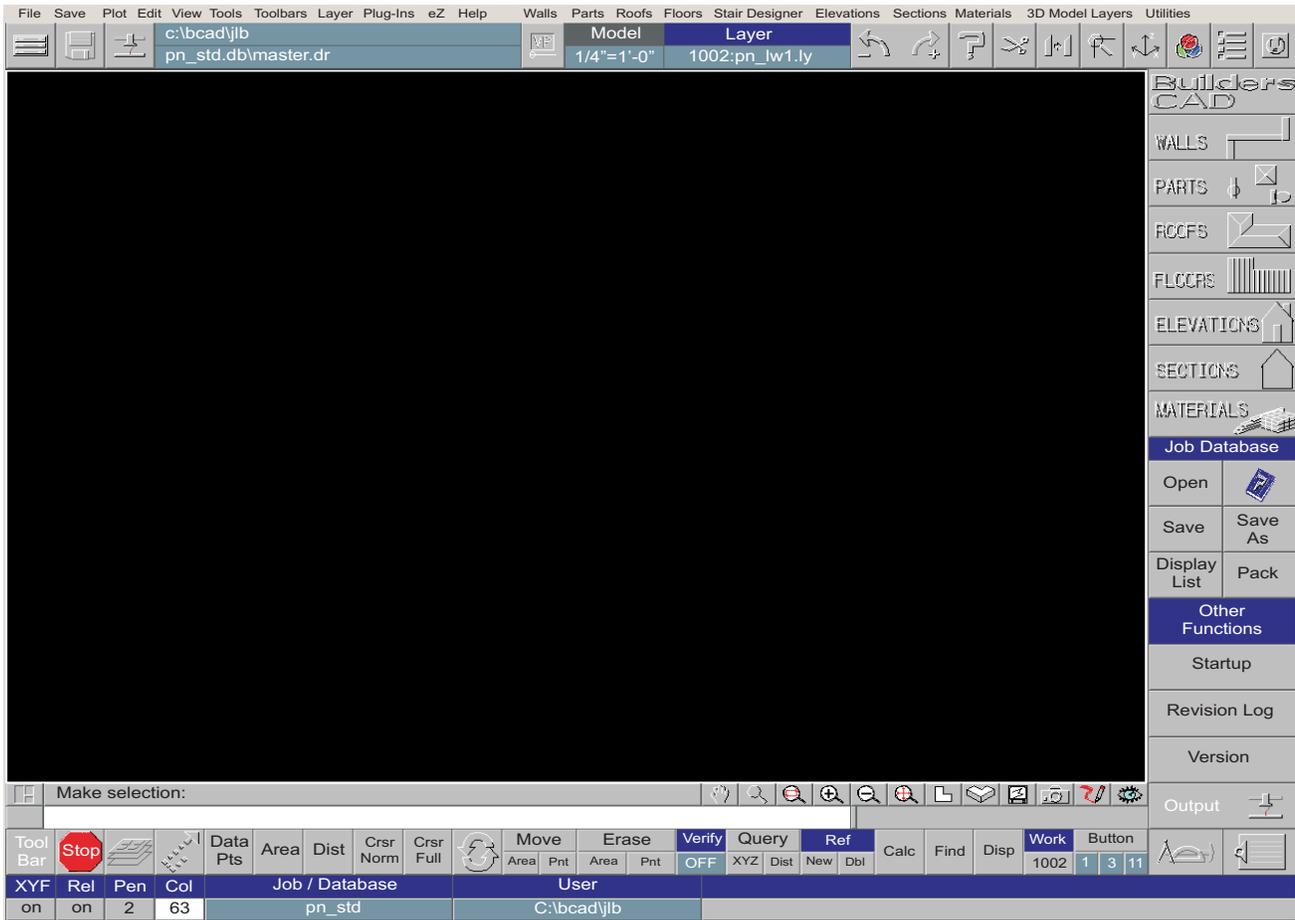
Figure 3-1

Load the Tutorial Database

You can start a new database (or job) in **BuildersCAD** by saving the default database (pn_std) as a new name or by selecting the New button on the **Job/Database** Application sub-menu. For the tutorial we have already created an empty database called *tutorial* in your graphic user folder.

To load the tutorial database: on the Application menu, under Job/Database select Open.

The **Job Database/Sheet/Thumbnail Select** pop-up menu will display. See figure 3-2 on the next page.

Looking down the column on the left side of the menu select the box containing **tutorial.db**.

Next, you will see a box in the upper left of the matrix on the right side of the menu. The text *master.dr* appears in the box. Select this box with your left mouse button. The box will highlight. Finally select the Open button at the bottom right of the **Job / Database / Sheet / Thumbnail Select** pop-up menu.

1. Select the box containing tutorial.db on the left side of the Job / Database / Sheet / Thumbnail Select menu.

2. Select the master.dr box on the right side of the Job / Database / Sheet / Thumbnail Select menu.

3. Select the Open box at the bottom of the Job / Database / Sheet / Thumbnail Select menu.
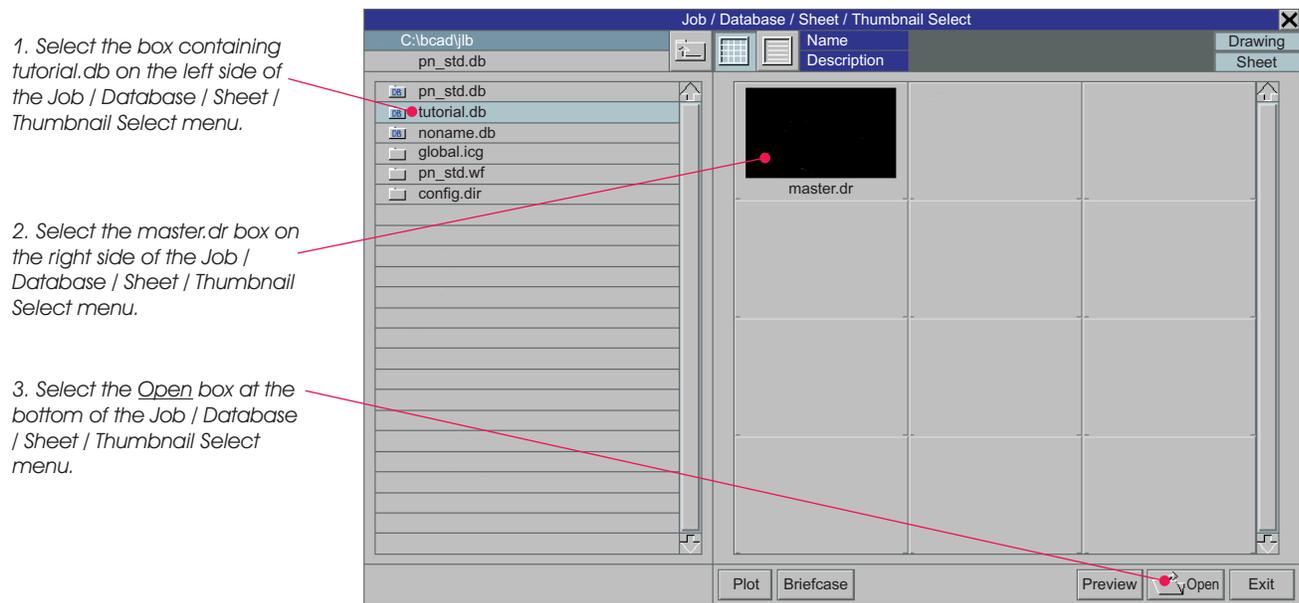
Figure 3-2

The database *tutorial.db* will begin to load. When loading is complete the entry under Job on the **Status** menu will change to *tutorial*.

When the database has loaded you will see a rectangle displayed on the display window. This is an 8 ½ x 11 outline at 1/4"=1'-0" scale. You will be drawing the Tutorial at 1/4" scale and you can plot or print what you draw on 8 ½ x 11 paper as long as what you draw is within the sheet outline displayed.

The sheet outline (4 lines) are on layer zero (0) and may be turned off at any time through the **Layer** Menu.

Note: As you draw or enter data in a database, *entities* will be created in *layers* in the database. In the Windows Explorer you can see these layers as files that are located inside the database directory. **BuildersCAD** manages the layers in a database, creating layers as needed. It will automatically place *walls*, *dimensions*, *text*, etc. In the correct layers where they need to go in the database. It is very important to let **BuildersCAD** manage the layers for you because later when you want to frame or apply materials to a design, the **Materials** Application will expect to find certain entities on certain layers. The way **BuildersCAD** manages layers will also make the task of printing or plotting easier because you will be able to "turn on" only the layers you want to print and therefore have control of what entities you print or plot.

Note: **BuildersCAD** will put database entities on layers numbering from 1001 to 32,000. The first 1000 layers are left open for use by the user.

You are now ready to begin entering your building in the tutorial.

3. Startup Functions

4. Entering Walls and Openings

The Core of the Database

Walls are the core of the **BuildersCAD** database. They are used as a pattern to generate the *Foundation Plan*. The *roof outline* is usually defined by the exterior walls. Therefore it is critical for the wall layout to be correct, which means the correct length walls, a "square" layout, etc. Also, because the of the **BuildersCAD** *Framer* and the *Materials* Application the walls must be the correct height.

Before You Start The Wall Layout

Before beginning the wall layout, from the **User Tool Bar** menu, select the **Layer** Menu icon.

The **Layer** pop-up menu allows you to turn layers *on* and *off* for *Edit*, *Search*, and/or *Display*.

Number	Name	Description	Entities	Modes					Perms
0	0		4	WK	E	S	D	OFF	RW
1001	pn_l1	walls	0	WK	E	S	D	OFF	RW
1002	pn_l1w	other work	0	WK	E	S	D	OFF	RW
2001	pn_l2	walls	0	WK	E	S	D	OFF	RW
2002	pn_l2w	other work	0	WK	E	S	D	OFF	RW
3001	pn_l3	walls	0	WK	E	S	D	OFF	RW
3002	pn_l3w	other work	0	WK	E	S	D	OFF	RW
4001	pn_l4	walls	0	WK	E	S	D	OFF	RW
4002	pn_l4w	other work	0	WK	E	S	D	OFF	RW
5001	pn_l5	walls	0	WK	E	S	D	OFF	RW
5002	pn_l5w	other work	0	WK	E	S	D	OFF	RW

Figure 4-1

Note: From this point forward if you are directed to select a button or pick a point without specific direction on which mouse button to use, you should use the F1 button (left mouse button).

Under the column heading <u>Modes</u> you see 5 columns. The first is the *work layer* (WK) column. The layer you are currently working on is the work layer. The (WK) button will be highlighted for the current working layer. The column all the way to the right indicates which layers are turned *OFF*. If the <u>OFF</u> button is highlighted then you will not see the layer. The other 3 columns determine if a layer is *Editable*, *Searchable*, and *Displayable*. If a layer is on for *Edit*, commands you execute will affect the entities on that layer. If a layer is on for *Search*, but not edit then you may select entities on that layer for reference purposes but you cannot edit them. If a layer is on for *Display* only then you can see the layer on the screen but cannot select or edit entities on that layer.

4. Entering Walls and Openings

Select the **S** to turn on layer number **0** for select and display using the F1 key or left mouse button.

This is the layer with the sheet outline. You will see pre-created layer numbers 0. 1001, 1002, 2001, 2002, 3001, 3002, 4001, 4002, 5001, and 5002. Except for layer 0 these are the working *walls* layers for walls on levels A, B, C, D, and E. Whether or not these are pre-created, **BuildersCAD** will create the layers it needs as you enter the work.

After you have turned on layer *0* for search and display, select: **Exit and Display** at the bottom right of the **Layer** Menu.

At the bottom right corner of the screen, above the Cycle menu is the **View Control Bar**. Here there are 11 icons that control the view of the screen. Following is a picture of each icon with a brief description of what it does. The view controls are described more fully in the **View Control Bar** section of the **BuildersCAD Learning Guide**, and in the **Display**, **View**, and **View Control Bar** topics in the **BuildersCAD Encyclopedia**.

Dynamic Pan - Pans the current view around the drawing. Left Click, hold and drag the cursor to move around the drawing.

Dynamic Zoom - Zooms the current view dynamically. Left Click, hold and move the cursor Up to zoom in and Down to zoom out.

Zoom Window - Zooms the display to a window defined by two opposite corner points.

Zoom In - Zooms the display in (larger) by a pre-set factor. The zoom factor is set on the View menu.

Zoom Out - Zooms the display out (smaller) by a pre-set factor. The zoom factor is set on the View menu.

Zoom All - Displays all entities on all layers turned on for display as large as possible.

Plan View - Sets the view to plan (top) view and displays all entities on all displayable layers as large as possible.

Isometric View - Sets the view to isometric and displays all entities on all displayable layers as large as possible.

Re-Display - Refreshes the screen keeping the current zoom window and view.

View Menu - Displays the View pop-up menu which contains more view orientation options including front, rear, left, right, inverted, and perspective views.

eZ 2D - If eZ from Sigma Design is installed, this button opens the current 2D drawing into eZ. If eZ is not installed, the current 2D drawing is opened in eZView.

eZ 3D - If eZ from Sigma Design is installed, this button opens the current 3D model into eZ. If eZ is not installed, the current 3D model is opened in eZView.

Use these icons to move around or change views of the *display window*.

In addition to the *View Control* Icons you can change views of the display window by using commands available on the **User Tool Bar**. If you select the **Cycle** button on the **User Toolbar** you will see the command selection buttons on the toolbar change. This menu changes or "*cycles*" as you repeatedly select the **Cycle** button.

There are two sets of commands on 2 different "*Cycle Bars*" shown in figures 4-2 and 4-3 below. On Cycle bar #1 (figure 4-2 below) you will find the commands **MOVE AREA** or **POINT**, **QUERY DIST** (distance), **REF** (reference point) **NEW** or **DBL** (double), etc. For more information on the Cycle menus, refer to the **Cycle Menu** section of the **Special Menus** topic in the **BuildersCAD** **Learning Guide**, and the **Cycle Menu** topic in the **BuildersCAD** **Encyclopedia**.

	Move		Erase		Verify	Query		Ref		Calc	Find	Disp	Work	Button		
	Area	Pnt	Area	Pnt	OFF	XYZ	Dist	New	Dbl				1002	1	10	11

Figure 4-2

	Modes and Match	Utilities			Multiple Offset Lines	Site Tool	Wall Levels	3D Model		Cycle Setup	Work	Button		
		Text	Line	Dim				Hline	Shad		1002	1	10	11

Figure 4-3

At this point you should see only the sheet layout on your screen.

The Wall Layout

Under **BuildersCAD** on the **BuildersCAD** Main Application menu:

> Select: **Walls**

This will generate the **WALLS** Application menu and the **Place Walls** Application sub-menu. You will also see a new **Status** menu that tells you the current *JOB*, what *LEVEL* you are on, and the wall *HEIGHT* and *WIDTH*, and other information.

We want to start the wall layout by entering exterior walls. Select the button at the top of the **Place Walls** Application sub-menu, **SELECT**.

This will display the **WALL Select** pop-up menu. This menu is shown in figure 4-4 on the next page.

Walls are sorted by *Type*. *Wall Types* are shown in a column on the left side of the **WALL Select** pop-up menu. Select the *EXTLB* (Exterior Load bearing) wall type and then select the wall number **1** in the matrix on the right side of the **WALL Select** pop-up menu.

After you select this wall your selection should be reflected in the display on the **Status** menu across the bottom of the screen. To clear the **WALL Select** menu,

> Select: **EXIT** at the bottom right of the **WALL Select** menu.

> Note: Before beginning entering the wall layout look on the **Status** menu in the bottom left corner of the screen. Notice the box under the **Rel** label. By selecting on this box it will toggle from *on* to *off*. Make sure it is set to *on*. Also if the 8 ½ x 11 sheet is not displayed you might want to go back to the **Layer** Menu and turn it *on* so you can start the wall layout near the lower left corner of the sheet. Leave room for dimensions that will be added later.

4. Entering Walls and Openings

1. Select the EXTLB box on the left side of the WALL Select menu.

2. Select wall type number 1 from the matrix on the right side of the WALL Select menu.

3. Select Exit at the bottom of the WALL Select menu to clear the menu from the screen.

WALL Select

| Catalog | BuildersCAD Catalog | Wall Number | Rule Set |
| Type | EXTLB - EXTERIOR LOAD BEARING | Size | Load From project |

EXTLB - EXTERIOR LOAD BEARING
EXTNLB - EXTERIOR NON-LOAD BEARING
INTLB - INTERIOR LOAD BEARING
INTNLB - INTERIOR NON-LOAD BEARING
CONCRETE
STEEL
RFRNC - REINFORCED CONCRETE
BEAM

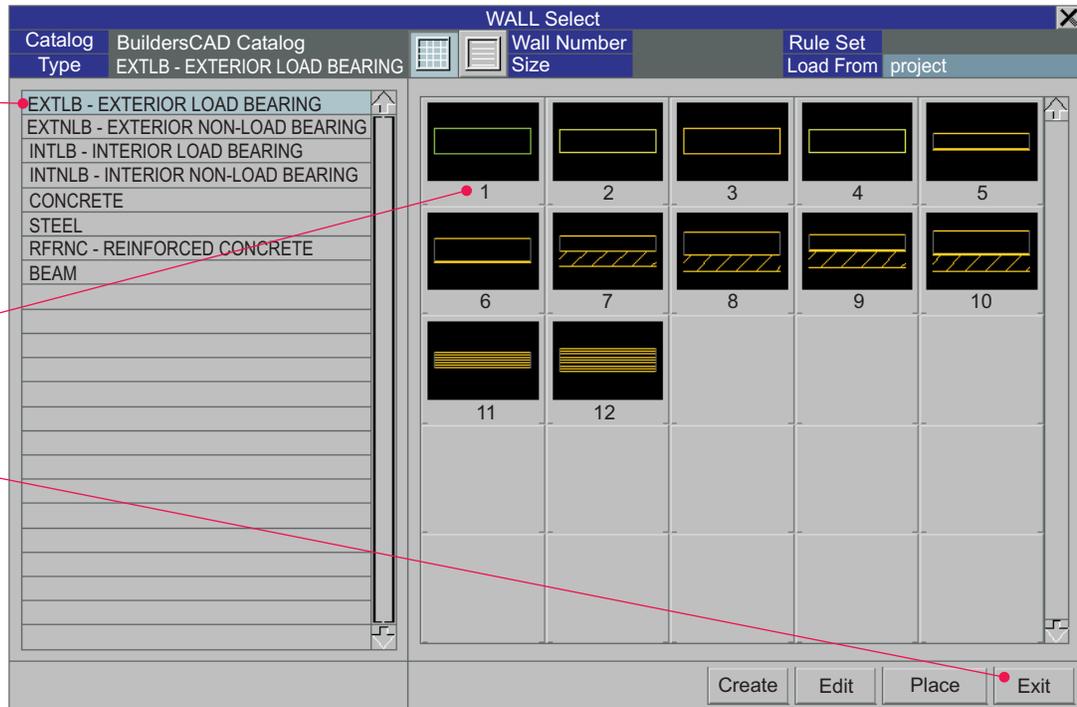Create   Edit   Place   Exit

Figure 4-4

On the **Place Walls** Application sub-menu,

    Select: **CCW**

This means you should layout exterior walls in a counterclockwise direction.

    Note: Counterclockwise is the common choice in CAD drawings because the rotation angle is always positive. This will also help organize your walls by keeping the "sheathing side" or front to the outside of the building and the "drywall side" or back side to the inside.

To begin wall entry,

    Select: **DRAG** on the Place Walls Application sub-menu.

    Prompt: **First point of wall (F10 to cancel):**

    Select: **New** under **Ref** on the **Cycle** menu.

    Prompt: **New reference point:**

With the right mouse button pick the lower left corner of the sheet outline.

    Prompt: **First point of wall (F10 to cancel):**

    Enter: **7,7 <cr>**

The cursor will jump to a point inside the sheet outline. Moving the mouse to the right will cause a red double line to stretch behind it.

Move to the right until the distance register equals 30'-0". This register appears on the **Prompt Line**.

> Note: You can move the mouse up or down as you move it to the right and the register will display degrees measured from the horizontal, counter-clockwise. Here you want the wall to be horizontal, or zero degrees.

Once 30' has been achieved, press F1. This will display the **Wall Input** pop-up menu (figure 4-5) with many new choices on it. By selecting the **Place Wall** button on this menu, the 30' wall will be entered, the word **OUT** will appear below the first wall and the cursor will be free to move again.

Move the cursor toward the top of the screen (at 90 degrees) until the distance reaches 20'-0".

Press F1 / left mouse button.

> Select: **Place Wall**

> Note: You have noticed that this input technique moves in even 1'-0" increments. To move to a specific inch or fraction, select the Feet, Inch, & Fraction buttons located in the middle of the menu. The selected wall length will be displayed on the menu and on the message line at the bottom of the screen. Select the **Place Wall** option to input the wall.

Now move the cursor toward the left (any distance, at 180 degrees) and press **F1** with your mouse. What we want to do is match the back left wall corner to the left front wall corner. The best way to accomplish this is to select the **Double Reference** button near the upper left corner of the **Wall Input** pop-up menu.

> Prompt: **Select double reference point:**

Move the mouse to place the cursor over the lower left corner of the first wall and press the right mouse button. This will use the *F11* to "snap" to the end of that wall. The wall length will now equal that of the front wall, 30'-0". Select **Place Wall** on the **Wall Input** pop-up menu.

Next move the cursor toward the first wall (at any degree) and press F1 with your mouse. The command we need now is on the **Wall Input** pop-up menu.

> Select: **Create Closure**

This will automatically "close" the exterior walls and terminate the **Drag** wall input session.

> Note: It is important that the last wall is created with the **Create Closure** command so that the system can properly locate and draw the corner, thereby also adding the proper corner framing condition.

You have now created a simple 30' x 20' rectangular structure.

We now want to **SAVE THE DATABASE**. If you do not remember how to do this see Chapter 1 of this Tutorial.

When you enter walls with **BuildersCAD** you are entering *wall panels*. The system is determining *panel laps* as you enter the walls. If you want to change the laps there are tools on the **Edit Walls** Application sub-menu. Select on **Edit Walls** at the bottom of the **Place Walls** Application sub-menu to display the **Edit Walls** sub-menu. At the bottom of the menu there are two icons. The one to the left shows a *standard lap* and the one to the right shows a *mitered lap* or intersection. These are shown in Figure 4-6.
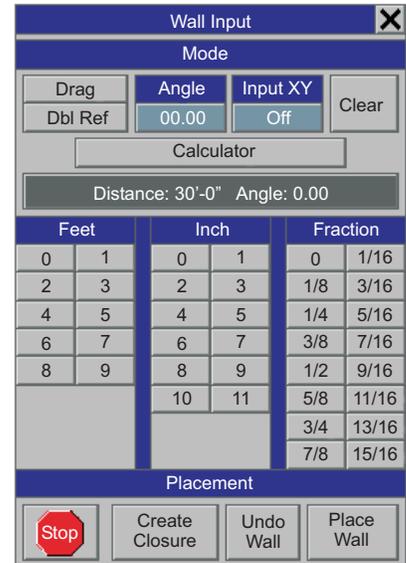
Figure 4-5

4. Entering Walls and Openings

Standard Lap

Mitered Lap
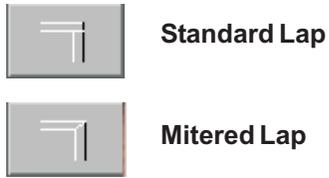
Figure 4-6

On the Edit Walls Application sub-menu:

Select: **Standard Lap** icon

Prompt: **Select wall to change (F10 Cancel):**

Pick point at a corner using the left mouse button. The wall nearest the pick will be the wall which laps over the other wall in the intersection. Try selecting each of the corners and changing the lap until the laps are like those in Figure 4-7.

Figure 4-6

We are leaving the laps set so that the two end walls (running vertically on the display window) extend to the outer corners of the structure.

We have now completed entry of exterior walls. **SAVE THE DATABASE**.

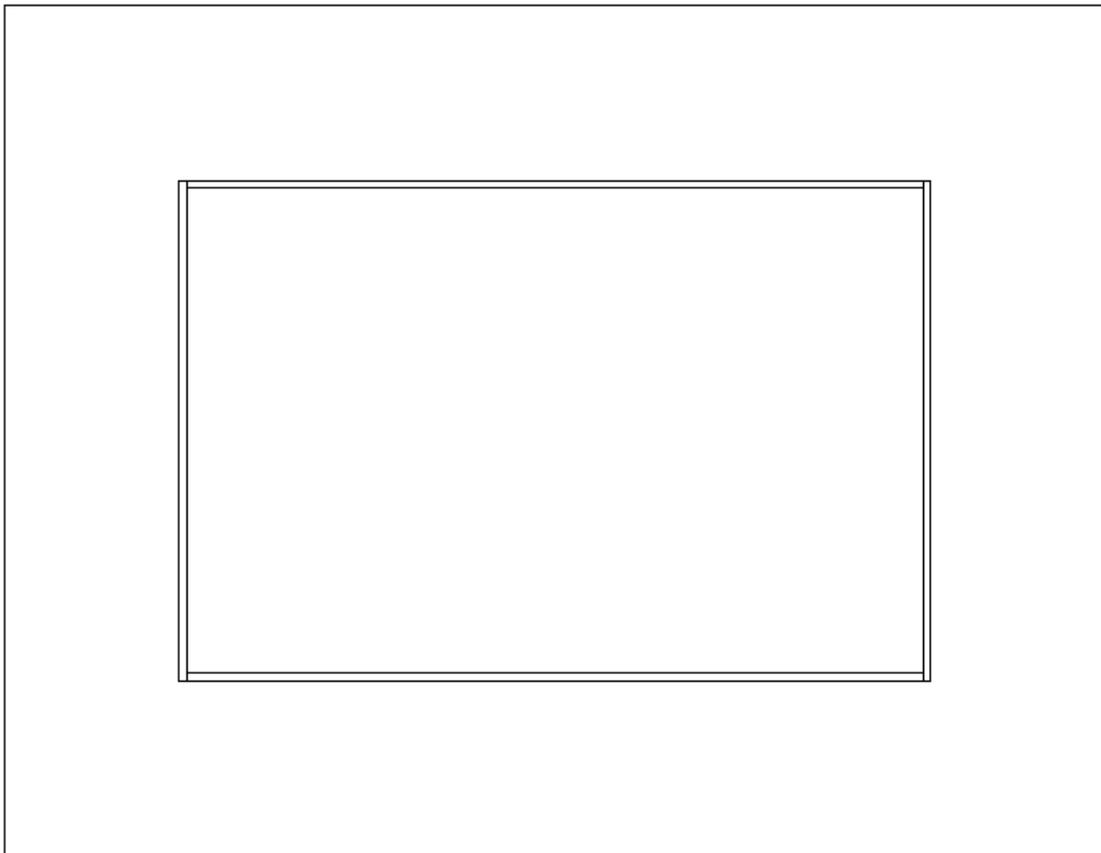Next we will enter interior load bearing walls. At the bottom of the **Edit Walls** Application sub-menu select on **Place Walls** to flip back to the **Place Walls** Application sub-menu.

> Select: the **SELECT** button

This displays the **WALL Select** pop-up menu. On the left column listing *Wall Types*:

> Select: **INTLB** (interior load bearing), then select wall **1** in the matrix (that is 3 1/2" in width), then **Exit**.

On the **Place Walls** Application sub-menu, under the **Insert** heading:

> Select: **Reference Point** icon.
>
> Prompt: **Select wall near end (F10 Cancel):**

With the F1 button select a point near the end of the bottom, horizontal wall, but inside the structure.

Pick point here.
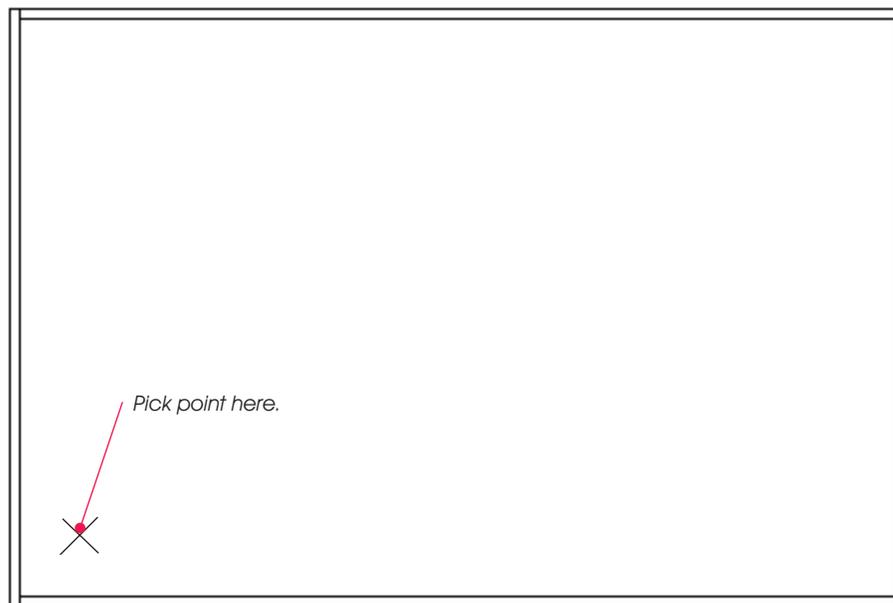
Figure 4-7

The wall will highlight and an **X** will appear on the left inside corner.

> Prompt: **Enter Option? DRAG NEW REFERENCE CALC MENU 1' 2' 3' 4' 5' 2'1" 3'1" 3'7" OTHER**
>
> Enter: **7'5 <cr>**

The **X** will jump 7'-5" down the wall.

> Prompt: **Wall Length? AUTO-EXTEND DRAG MAN-EXTEND DBL-REF CALC MENU   CANCEL OTHER**
>
> Select: **AUTO-EXTEND**

The wall will extend across the room until it intersects the opposite wall.

> Prompt: **Select a wall near the end (F10 Cancel):**

4. Entering Walls and Openings

With the F1 button select a point near the upper end of the wall you just entered but to the left side.

Pick point here.
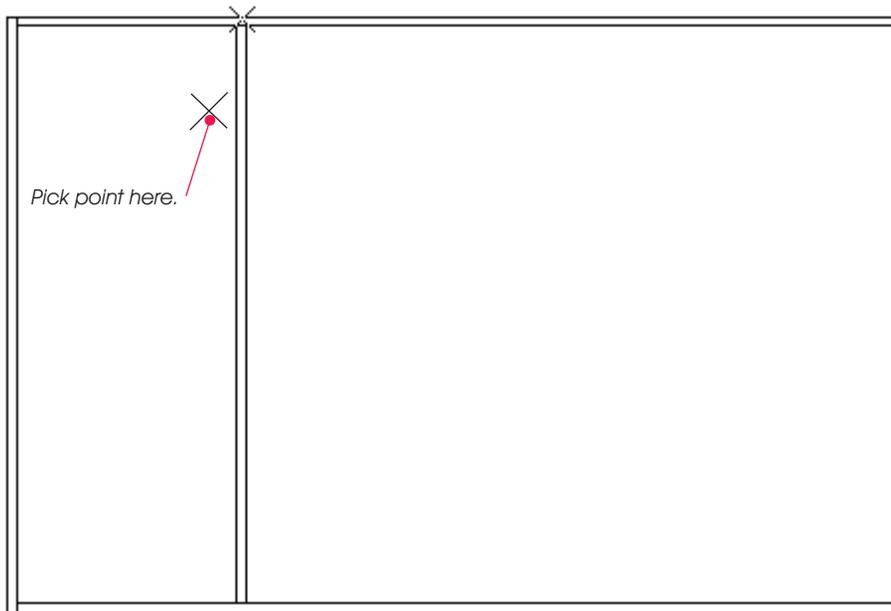
Figure 4-8

Prompt: **Enter Option? DRAG NEW REFERENCE CALC MENU 1' 2' 3' 4' 5' 2'1" 3'1" 3'7" OTHER**

Enter: **8 <cr>**

This measures 8' down the wall. After the **X** jumps into position,

Prompt: **Wall Length? AUTO-EXTEND DRAG MAN-EXTEND DBL-REF CALC MENU   CANCEL OTHER**

Select: **AUTO-EXTEND**

This enters a horizontal wall.

Select the same point near the end of the same vertical wall.

Prompt: **Enter Option? DRAG NEW REFERENCE CALC MENU 1' 2' 3' 4' 5' 2'1" 3'1" 3'7" OTHER**

Enter: **2'2.5 <cr?**

This references a wall starting point 2' 2 1/2" down from the top horizontal wall.

Prompt: **Wall Length? AUTO-EXTEND DRAG MAN-EXTEND DBL-REF CALC MENU   CANCEL OTHER**

Enter: **2.5 <cr>**

This inserts a 2' 5" horizontal wall. From the **Place Walls** Application sub-menu, under the **Insert** heading,

Select: **Insert From Near Face icon**

Prompt: **Select wall near end (F10 Cancel):**

You want to insert a wall off of the short horizontal wall you just entered by picking a point (with the F1 button) near the free standing end but closer to the exterior wall.
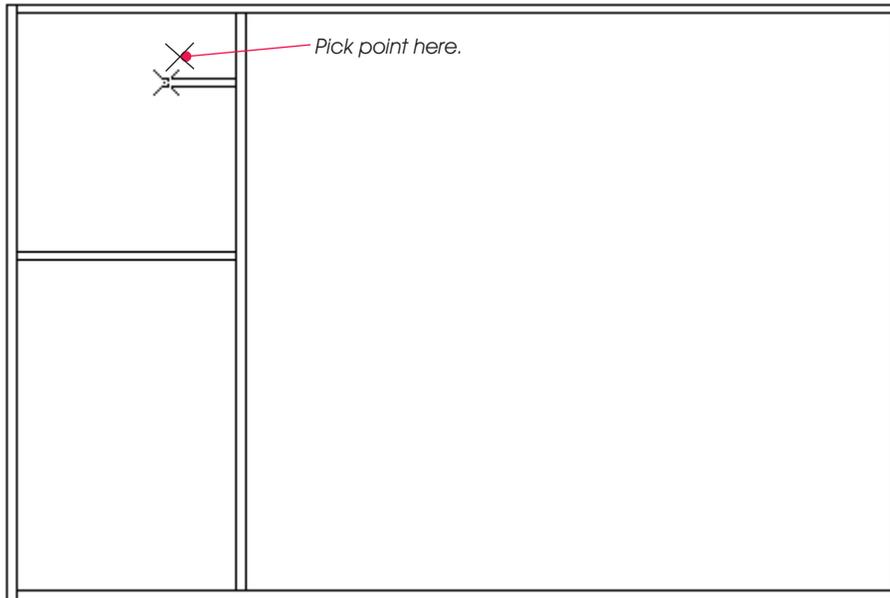
Figure 4-9

Prompt: **Wall Length? AUTO-EXTEND DRAG MAN-EXTEND DBL-REF CALC MENU   CANCEL OTHER**

Select: **AUTO-EXTEND**

Select: the **Stop** sign button on the **User Tool Bar** to terminate wall entry.

Interior wall entry is now complete. **SAVE THE DATABASE**.

Because we are going to put a *gable* roof on this structure we need to "*rake*" both end walls; that is slope the top plate upward so the wall will fill the space under the gable roof on each end of the structure.

Select: the wall at the right end of the structure.

This will cause a wall specific edit pop-up menu to display as shown in Figure 4-10.

Select: The **Alter Wall** button.

The **Alter Wall** pop-up menu (Figure 4-11) will display.
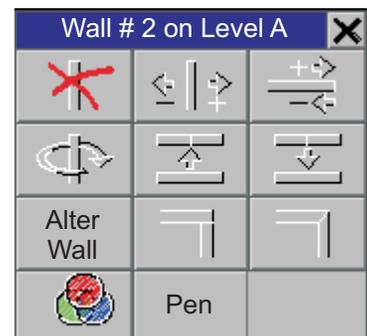
Figure 4-10

4. Entering Walls and Openings
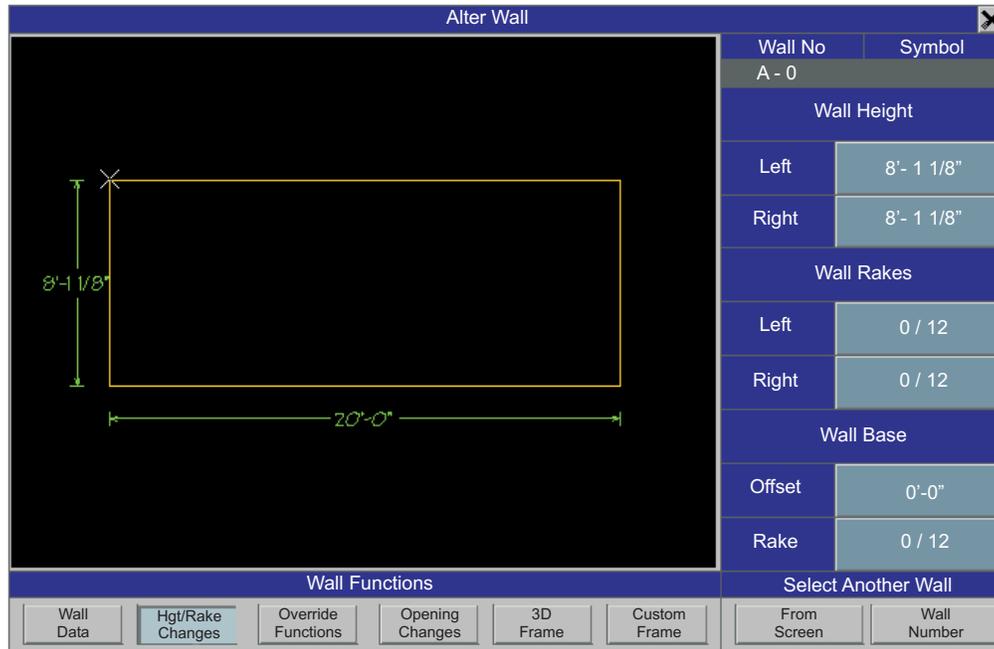
Figure 4-11

Along the bottom of the **Alter Wall** pop-up menu under the **Wall Functions** heading select on **Hgt/Rake Changes**. The right side of the pop-up menu will change. Select on the boxes under **Wall Rakes**, **Left** and **Right** and change the rake on both sides to 8/12. You will be able to pick the 8 from a **Choice** menu at the prompt. We will be putting an 8/12 rake gable roof on this structure.

After you have changed this wall select the button **From Screen** under the **Select Another Wall** heading in the bottom right corner of the menu. Select and change the rakes on the other end wall. When this is complete select the "**X**" box in the very top right corner of the **Alter Wall** pop-up menu to clear the menu from the screen.

SAVE THE DATABASE.

You have completed and saved the wall entry and should have a floor plan as shown in Figure 4-12.

Figure 4-12

Insert Doors and Windows

You are now ready to insert *Openings*. When you insert an opening with **BuildersCAD** you are inserting the rough opening for the window or door in a wall panel. Every opening in the Opening Libraries has a width, height, and header height established. These parameters are editable on the **OPENING Select** menu.

We will start with *Exterior Doors*. On the **WALLS** Application menu,
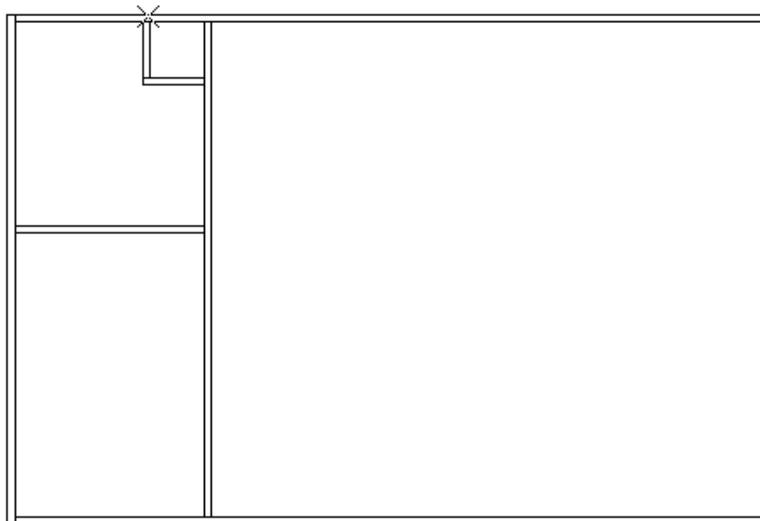
> Select: **Place Openings**.

This will display the **Place Openings** Application sub-menu. On this menu select the **SELECT** button. This will display the **OPENING Select** pop-up menu, shown in Figure 4-13 below.
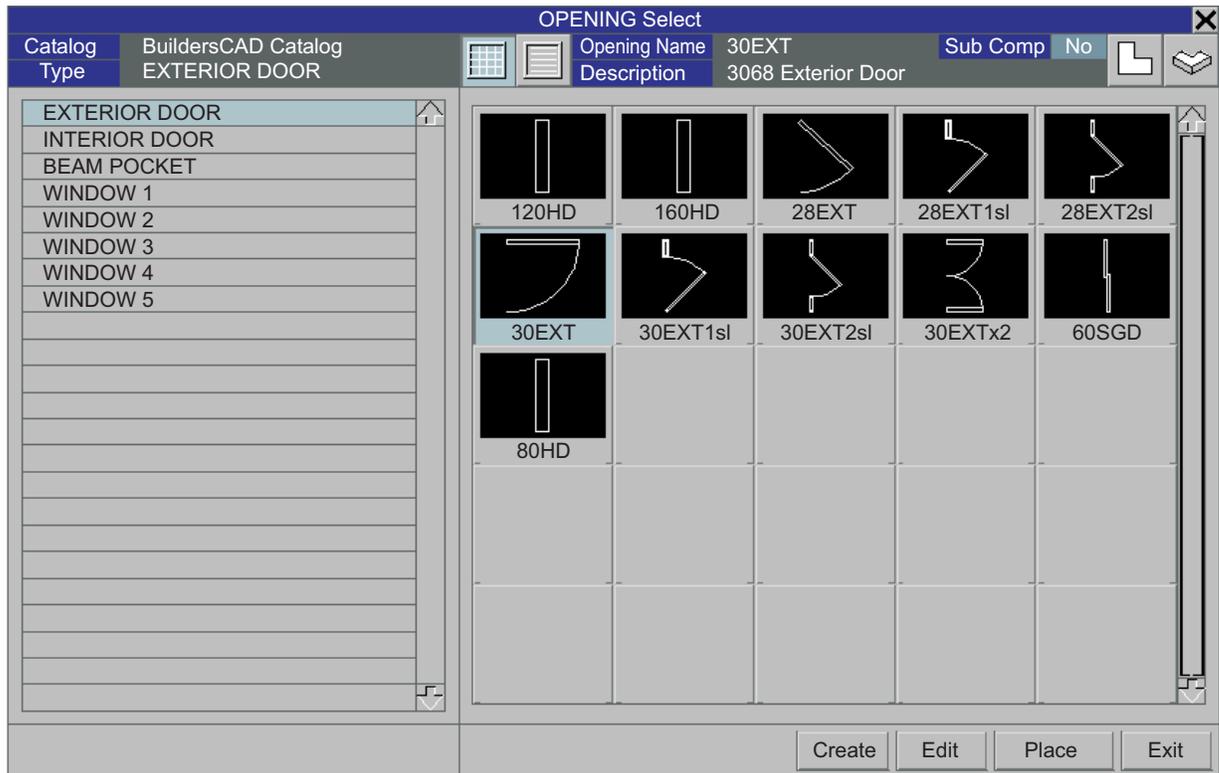
Figure 4-13

The various opening types are listed on the left side of the menu. When one of these types is selected, the right side of the menu displays either a list or a matrix showing the names and images of openings of the selected type.

The various opening types are listed on the left side of the menu. When one of these types is selected, the right side of the menu displays either a list or a matrix showing the names and images of openings of the selected type. On the **OPENING Select** menu, under the opening type column,

> Select: **EXTERIOR DOOR**.

The matrix on the right side of the **OPENING Select** menu will change to display the exterior doors.

> Select: **30EXT** on the right side of the **OPENING Select** pop-up menu.

4. Entering Walls and Openings

Select: **Exit** at the bottom right of the **OPENING Select** pop-up menu.

We want to insert the door we have selected in a location measured off of the lower left hand corner of the structure. On the **Place Openings** Application sub-menu under the **Place** heading,

Select: **Ref Pt**.

Prompt: **Enter reference point (F10 options)**

On the outside of the floor plan, at the bottom to the left of the vertical wall, pick the bottom outside corner of the wall with the F11/right mouse button. A white **X** will appear on the corner.

Prompt: **Select wall for opening (F10 options)**.

We will now select the wall to put the door in. At any point on the bottom horizontal wall, between the interior and exterior wall, pick a point on the wall with the F1 button. This places a marker for measurement. Two "arrows" appear, one points to the left and has a negative sign (-), the other points to the right and has a positive sign (+). See Figure 4-14 below. Because we are working in the bottom left corner of the plan you may only be able to see the (-) negative arrow, the other being obscured by the wall.
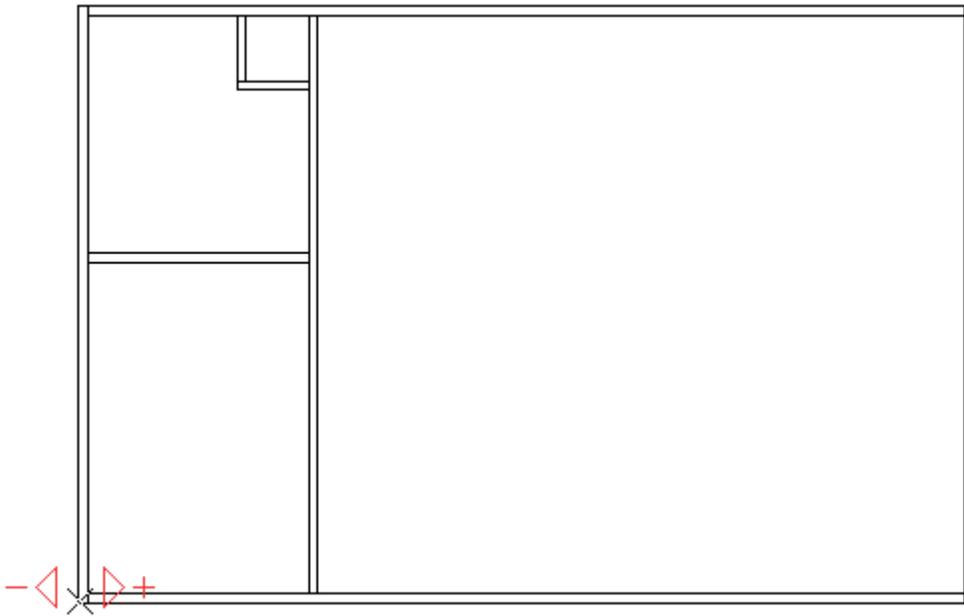
Figure 4-14

Prompt: **Distance (+) or (-) -12" -5.5" -3.5" 3.5" 5.5" 12" OTHER**

We will now enter the distance measurement from the corner to the opening.

Enter: **5'6 <cr>**

You will see 3 vertical bars appear on the wall you selected for the opening. See Figure 4-15. These 3 bars represent the *Left Jamb*, *Center*, and *Right Jamb* of the opening.
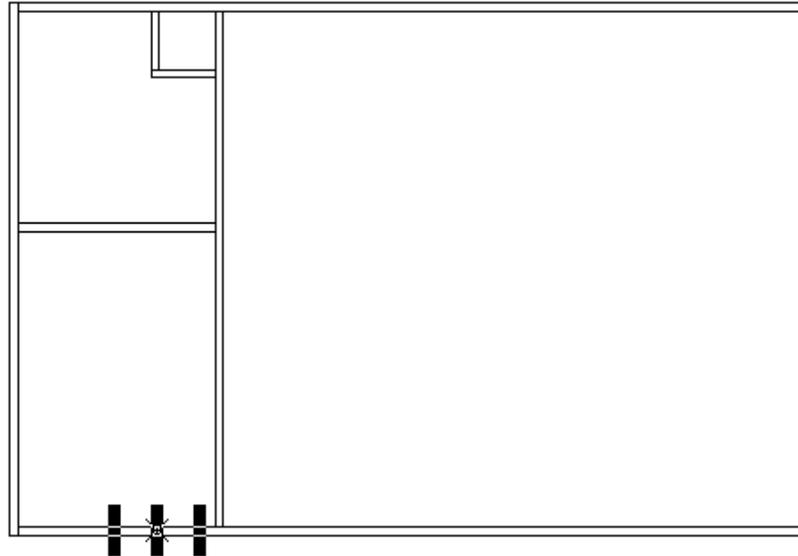
Figure 4-15

Prompt: **Select bar to align on reference point**.

The dimension you entered is to the center of the opening so pick the center bar with the F1 key. The door will be inserted in the wall, highlighted in red, with the door swinging in, hinged on the right side of the opening.

Prompt: **PLACE? DEF: PLACE REV HAND REV SWING MOVE EDIT UNDO**

Reverse the hand or swing by selecting the appropriate box on the **Choice** menu above the prompt line. Use these options until the door appears as shown in Figure 4-16 below. When the hand and swing are correct, select the **PLACE** option for the prompt on the **Choice** menu. The color of the door on the screen will change to white and it will be placed in the wall.
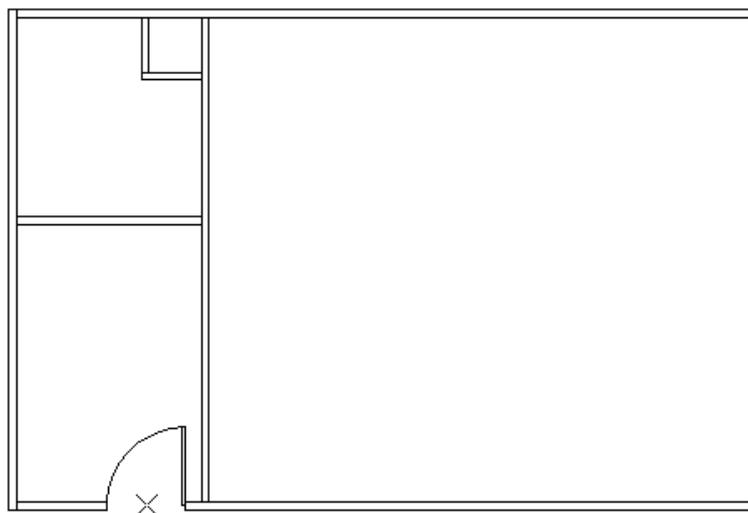
Figure 4-16

4. Entering Walls and Openings

Now let's insert two garage doors. On the **Place Openings** Application sub-menu, select the **SELECT** button. This will display the **OPENING Select** pop-up menu.

> Select: **EXTERIOR DOOR** on the opening types list on the left side of the **OPENING Select** menu.
>
> Select: **80HD** in the matrix on the right side of the **OPENING Select** menu.
>
> Select: **Exit** at the bottom right of the **OPENING Select** menu to clear the menu from the screen.
>
> Select: **Multiple** under the **Place** heading on the **Place Openings** Application sub-menu

This brings up the **Multiple Placement Method** Selection pop-up menu shown in Figure 4-17 below.
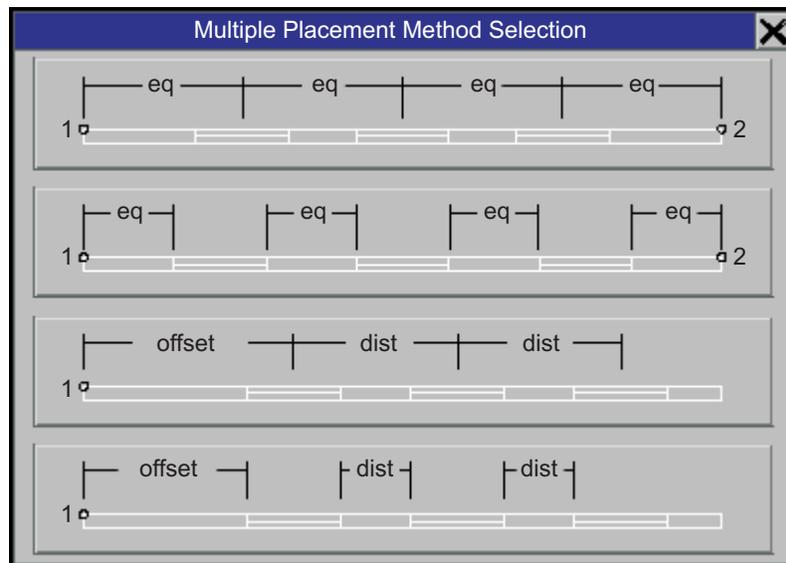
Figure 4-17

Select the placement method shown second from the top. This will place openings with equal spaces from the wall end point to rough opening edge and between rough opening edges.

> Prompt: **Enter number of openings? 1 2 3 4 5 6 OTHER**

From the choice menu above the prompt line select 2.

> Prompt: **Select start point (F10 reset):**

Pick the upper right corner of the building layout using the F11 key / right mouse button.

> Prompt: **Select end point (F10 reset):**

Pick the lower right corner of the wall layout using the F11 key / right mouse button. Two (2) Garage Doors will be inserted, as shown in Figure 4-18 on the next page.
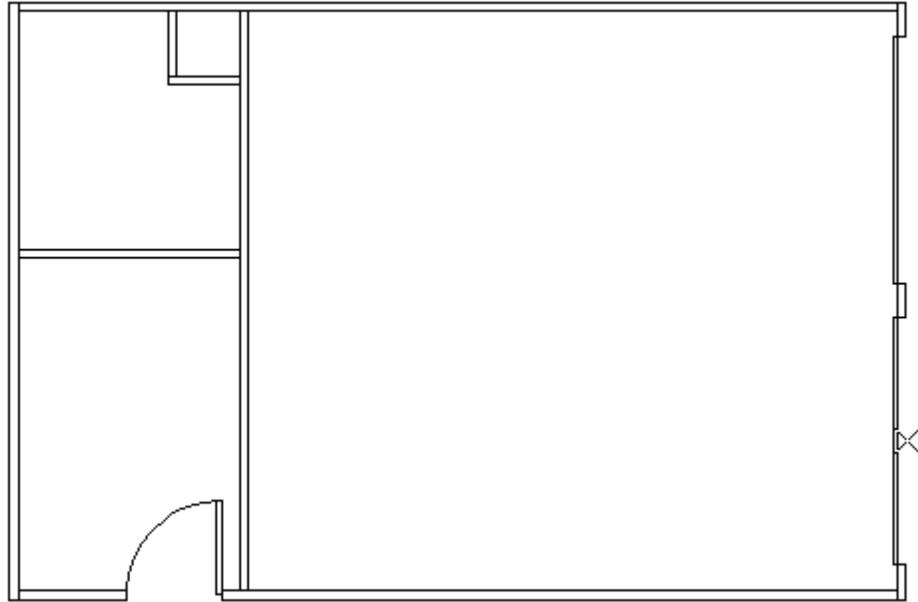
Figure 4-18

SAVE THE DATABASE

You have completed insertion of exterior doors and saved the database, and should have a floor plan as shown in Figure 4-18 above.

We are now ready to insert interior doors. On the **Place Openings** Application sub-menu select the **SELECT** button. This will display the **OPENING Select** pop-up menu.

> Select: **INTERIOR DOOR** on the opening types list on the left side of the **OPENING Select** menu.

> Select: **28INT** in the matrix on the right side of the **OPENING Select** menu.

> Select: **Exit** at the bottom right of the **OPENING Select** menu to clear the menu from the screen.

> Select: **Int - Casing** (Intersection minus casing) under the **Place** heading on the **Place Walls** Application sub-menu.

> Prompt: **Select wall for opening (F10 options):**

On the interior vertical wall, below the interior horizontal wall, intersecting at approximately the middle, pick a point on the wall with the F1 button.

> Prompt: **Select intersecting wall (F10 for options):**

With the F1 button select the interior horizontal wall intersecting near the middle of the wall. See Figure 4-19 on the next page. An opening will appear in the wall. The opening will be located in the wall with the Jamb 3" from the intersecting wall to allow for jamb framing. This distance is set and displayed on the **Status** menu in the lower right corner of the screen.

4. Entering Walls and Openings
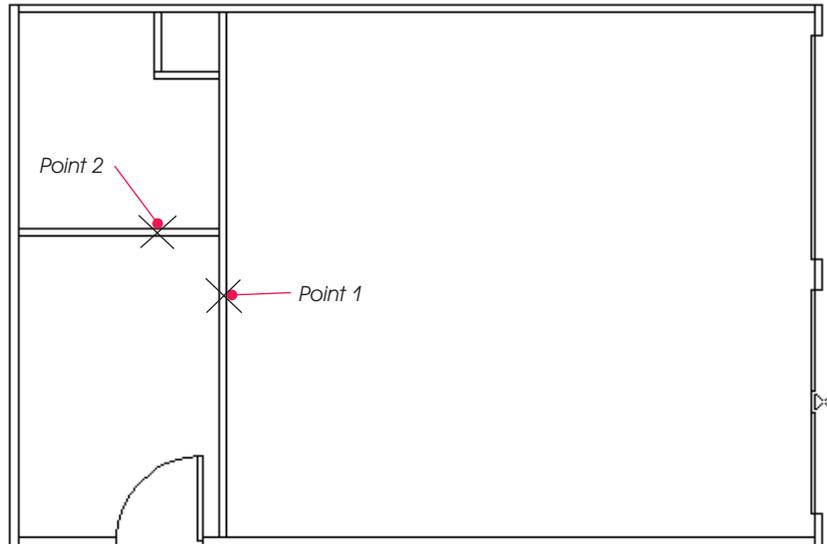
Figure 4-19

Prompt: **PLACE? DEF: PLACE REV HAND REV SWING MOVE EDIT UNDO**

You may need to reverse the swing or the hand of the door similar to the process for exterior doors, until the door looks like Figure 4-20. When the door is shown on the screen correctly, select **Place** on the **Choice** menu for the prompt.
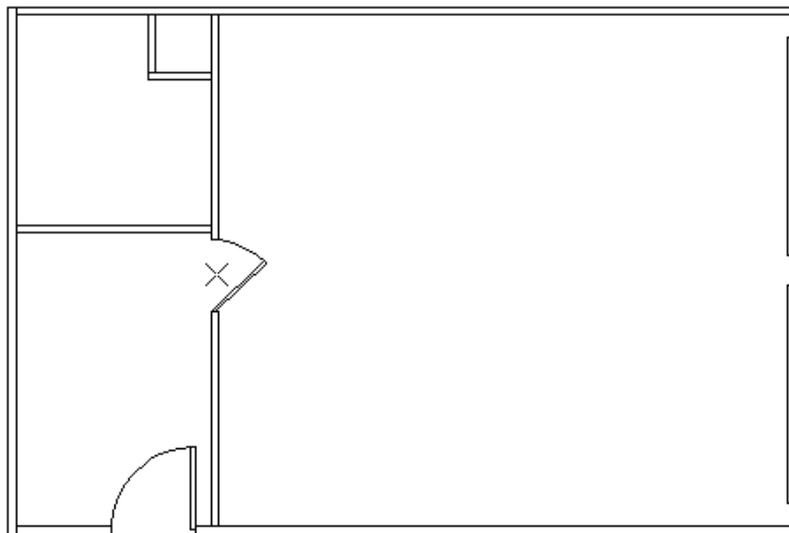
Figure 4-20

Prompt: **Select wall for opening (F10 options):**

On the **Place Openings** Application sub-menu, select **End - Casing.**

Prompt: **Select wall near end (F10 options):**

Select the interior horizontal wall toward the right end. The door will appear in the wall.

Prompt: **PLACE? DEF: PLACE REV HAND REV SWING MOVE EDIT UNDO**

Reverse the hand or swing as needed by selecting the appropriate choice on the **Choice** menu above the prompt until the door appears as shown in figure 4-21 below. Select **Place** on the **Choice** menu to place the door.
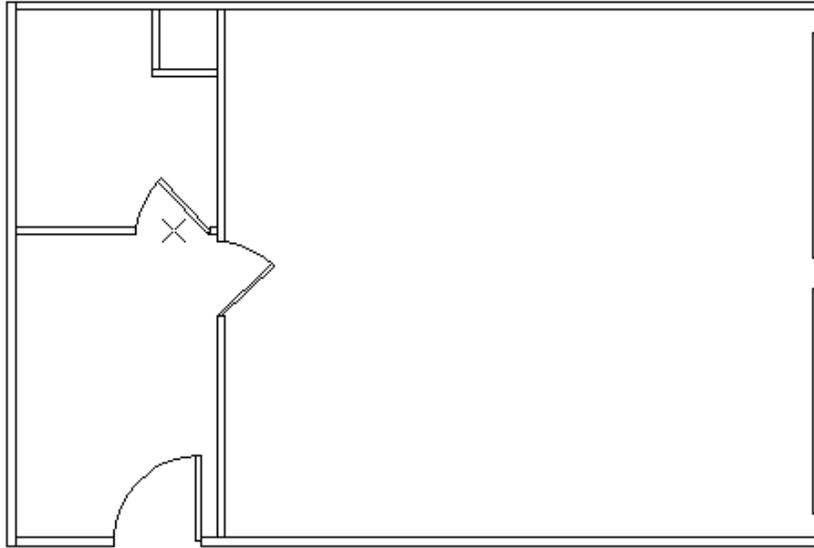
Figure 4-21

We are now ready to insert windows. On the **Place Openings** Application sub-menu, select the **SELECT** button to display the **OPENING Select** pop-up menu.

Select: **Window 1** on the opening types list on the left side of the **OPENING Select** menu.

Select: **2646DH** in the matrix on the right side of the **OPENING Select** menu.

Select: **Exit** at the bottom right of the **OPENING Select** menu to clear the menu from the screen.

Select: **Multiple** under the **Place** heading on the **Place Walls** Application sub-menu.

This will display the **Multiple Placement Method Selection** pop-up menu. See Figure 4-17 on page 26. Select the placement method shown second from the top. This will place the openings with equal spaces from the wall end point to the rough opening edge and between rough opening edges.

Prompt: **Enter number of openings? 1 2 3 4 5 6 OTHER**

From the choice menu above the prompt line select 2.

Prompt: **Select start point (F10 reset):**

Pick the interior of two wall intersections with the F11/right mouse button as shown in Figure 4-22 for the start point and end point.

4. Entering Walls and Openings

Pick points here
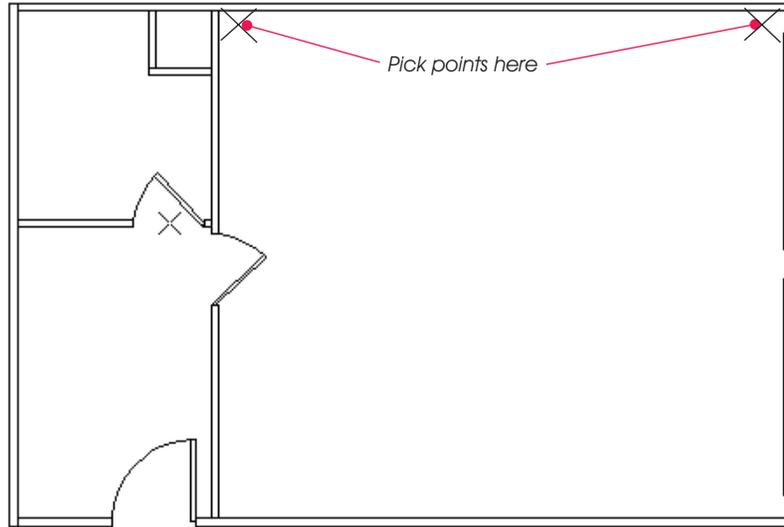
Figure 4-22

Two 2646DH windows will go into the wall at equal spacing. We will now nsert two (2) 2646DH windows in the opposite wall using the same process.

Select: **Multiple** under the **Place** heading on the **Place Walls** Application sub-menu.

This will display the **Multiple Placement Method Selection** pop-up menu. See Figure 4-17 on page 26. Select the placement method shown second from the top. This will place the openings with equal spaces from the wall end point to the rough opening edge and between rough opening edges.

Prompt: **Enter number of openings? 1 2 3 4 5 6 OTHER**

From the choice menu above the prompt line select 2.

Prompt: **Select start point (F10 reset):**

Pick the interior of two wall intersections with the F11/right mouse button as before on the opposite wall for the start point and end point. The two windows will be inserted into the wall. We will place one more 2646DH window.

Select: **Point** under the **Place** heading on the **Place Walls** Application sub-menu.

Prompt: **Enter point for opening (F10 options):**

On the **Cycle** menu, under the **Ref** heading,

Select: **New**

Prompt: **New reference point:**

Pick the outside lower left corner of the floor plan with the F11/right mouse button. A white "X" will appear on the corner.

Prompt: **Enter point for opening (F10 options):**

Enter: **,5 <cr>** (a direction 5'-0" up in the positive Y axis)

The opening will appear in the wall highlighted.

Prompt: **PLACE? DEF: PLACE REV HAND REV SWING MOVE EDIT UNDO**

Select: **Place**

The wall layout with windows and doors should look like Figure 4-23 below.
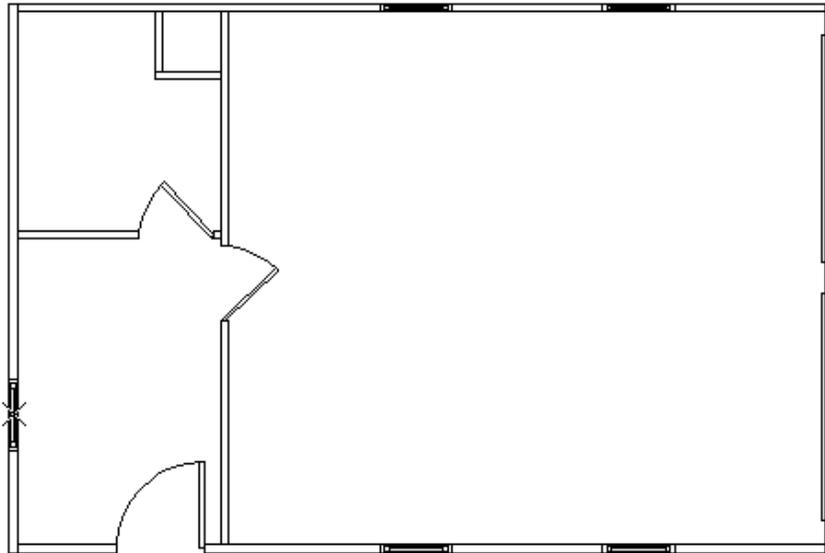
Figure 4-23

SAVE THE DATABASE.

You have completed input of openings and saved the database, and should have a floor plan as shown in Figure 4-23 above.

We will now label the openings. On the **Place Openings** Application sub-menu,

Select: **Label Openings** icon

The **Label Openings** pop-up menu will display. See Figure 4-24 on the next page. On the **Label Openings** pop-up menu, be sure the following parameters are set:

Search Mode is set to **All**

Text Size is set to **1/8"**

Window Placement is set to **INSIDE**

Under the **Command Execution** heading on the **Label Openings** pop-up menu:

Select: **Create Labels**

4. Entering Walls and Openings

1. Set Search Mode to All.

2. Set Text Size to 1/8″

3. Set Window Placement to INSIDE.

4. Select Create Labels.
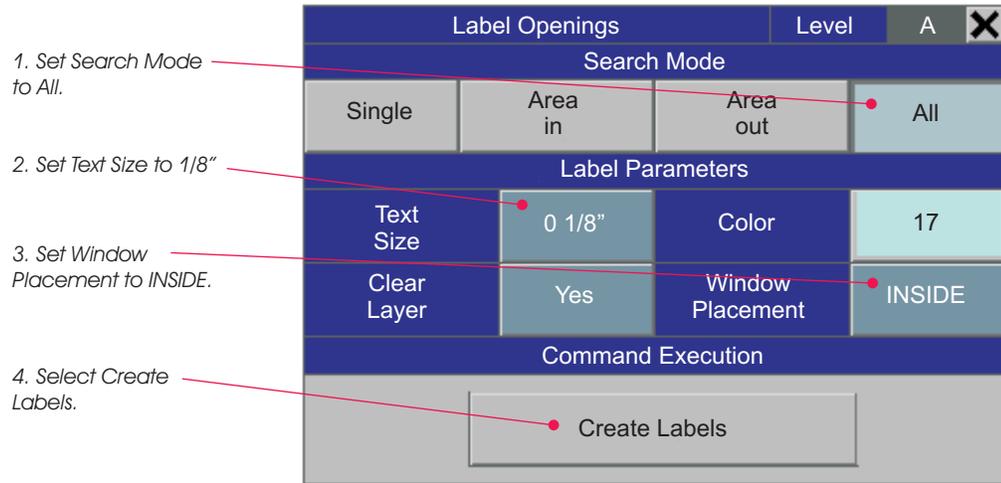
Figure 4-24

When you have completed this task the floor plan should look like Figure 4-25.
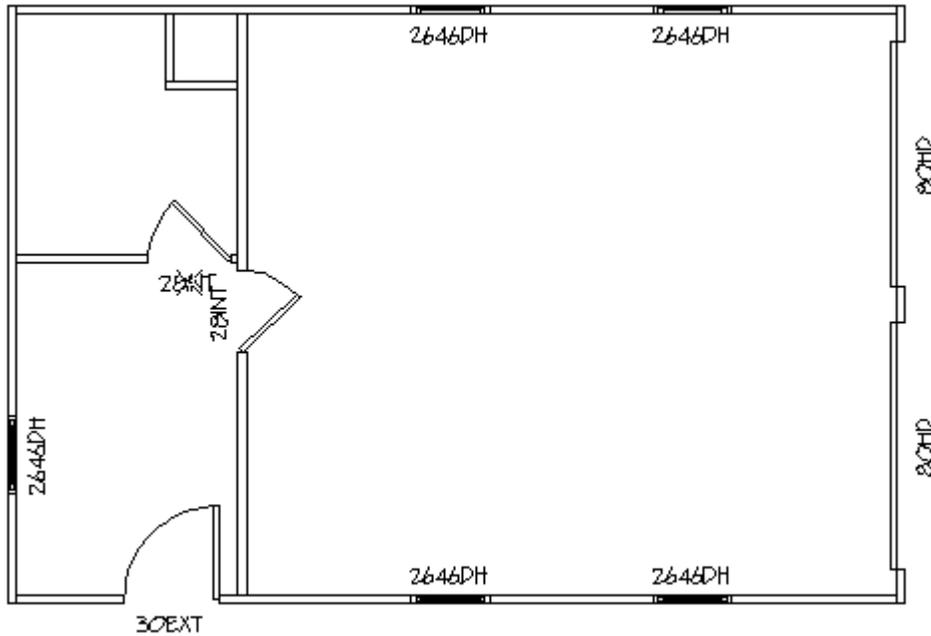
Figure 4-25

The wall, door, and window layout are complete.

SAVE THE DATABASE

Frame the Walls

BuildersCAD will utilize *Wall Framing Rules* to frame the wall layout. The *Wall Framing Rules* will determine the stud spacing, header size, how walls will be framed at intersections, etc. The default wall framing project, *pn_std.wf*, loads when you load **BuildersCAD**. This is the rule set we will use to frame the walls you have entered. For additional information on Wall Framing Rules see the **Wall Framing Rules** section of the **Walls Application** topic in the **BuildersCAD Encyclopedia**.

> Note: If you only want wall panel drawings from **BuildersCAD** you don't need to add dimensions, notes, or other details to the wall layout. You can frame the walls and generate panel drawings as soon as the wall layout is complete.

> Select: **Wall Framing** on the **Walls** Application menu to display the **Wall Framing** Application sub-menu.

> Select: The **Framer** icon.

This will display the **Framing Data** pop-up menu as shown in Figure 4-26. You can generate framing data or remove existing framing data from this menu.
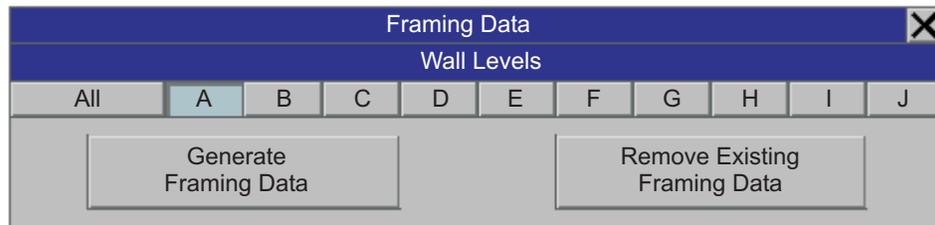
Figure 4-26

> Select: **A** under the **Wall Level** heading on the **Framing Data** pop-up menu.

> Select: **Generate Framing Data** on the **Framing Data** pop-up menu.

> Prompt: **Framing Alert:? DEF: VIEW FILE PRINT FILE IGNORE**

> Select: **IGNORE**

> Note: The Framer expects to have at least 3 1/2" from the edge of an opening to the edge of the wall panel or an intersecting wall. Since there is less than 3 1/2" from the edge of some of the interior doors to the edge of an intersecting wall, the Framer generates an error message.

View the 3D Boards

It is not necessary to generate the 3D boards before you generate *Wall Panel Elevation* drawings or run a *Pull List*. You may however want to view the 3D boards as a means of verifying how the walls are framed.

> Select: The **Display** icon on the **Wall Framing** Application sub-menu.

This will display the **Display Wall Boards** pop-up menu. This menu is split into two sections. The left side has parameters that affect **3D Boards** display and the right side has parameters that affect display of a **2D Sheathing Layout**. This menu is shown in Figure 4-27.

4. Entering Walls and Openings

Display Wall Boards		Level	A	✕
3-D Boards		**2-D Sheathing Layout**		
Display 3D Boards	YES	Display Inside Sheathing		YES
Display Inside Sheathing	NO	Display Outside Sheathing		YES
Display Outside Sheathing	NO			
Use Temporary Layer	YES			
Create Shadeable Boards	YES			
Create 3-D Boards		Create 2-D Sheathing		
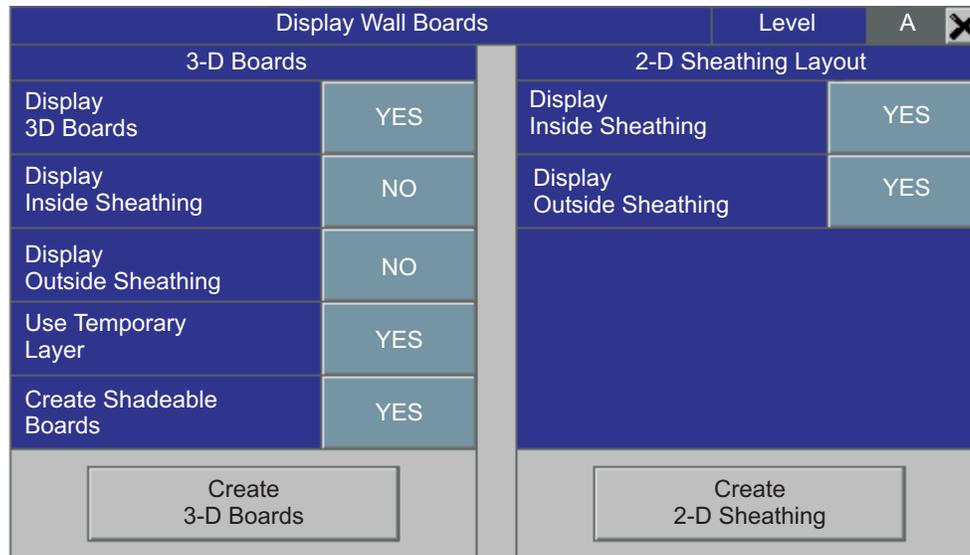
Figure 4-27

Set the **3-D Boards** parameters as indicated below.

> **Display 3-D Boards** should be set to **YES**.
>
> **Display Inside Sheathing** should be set to **NO**.
>
> **Display Outside Sheathing** should be set to **NO**.
>
> **Use Temporary Layer** should be set to **YES**.
>
> **Create Shadeable Boards** should be set to **YES**.

After the parameters have been modified,

> Select: **Create 3-D Boards** on the **Display Wall Boards** pop-up menu.

BuildersCAD will generate the 3D boards. After they are generated, select the **Iso View** display button on the **View Control Bar**. The boards should look like the image in Figure 4-28.
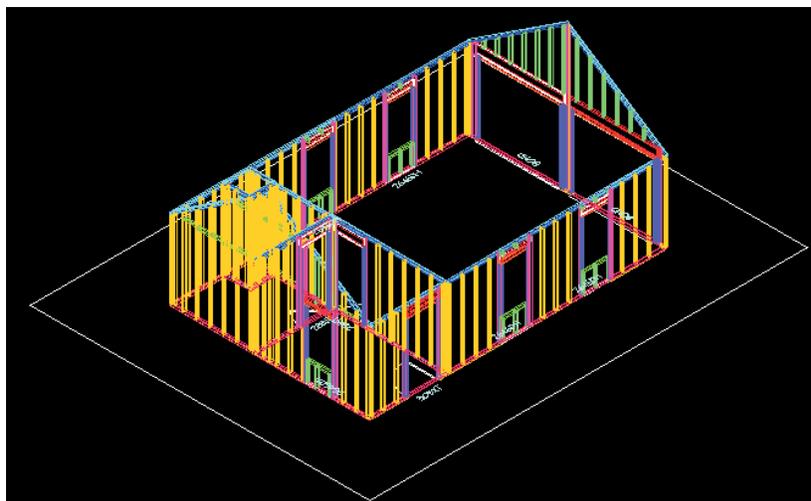
Figure 4-28

Use the tools on the **View Control Bar** to review the 3D Boards.

Select: **Place Walls** at the top of the **Walls** Application Main menu to turn off the 3D Boards display.

Select: The **Plan View** icon to return the view to plan.

Panel Elevation Drawings

Now that walls and openings are entered and the building has been framed, we will create a *Panel Elevation Drawing* of one of the wall panels.

Select: **Wall Framing** on the **Walls** Application Main menu.

This will display the **Wall Framing** Application sub-menu.

Select: The Panel Elevation Drawings icon.

The **Wall Drawing Options** pop-up menu will display. This menu is shown in Figure 4-29. We will not modify settings here but for more information on the settings shown, refer to the **Wall Framing** section in the **Walls Application** topic of the **BuildersCAD** Encyclopedia.

Wall Drawing Options				
Drawing Parameter Selection				
Border Setup	Dmns Layout	Dmns Setup	Label Layout	Drawing Layout
Dimension Layout				
Opening	OFF			
Subassembly	LEFT			
Opening Width	ON		OFF	
Opening Height	ON		OFF	
Overall Top	ON		OFF	
Overall Bottom	ON		OFF	
Overall Sides	LEFT			
Angled	ON		OFF	
Slope Symbol	RISE/RUN			
Dimension From	LEFT			
Wall Selection				
All Walls	Single Level		Single Wall	
Output Selection				
Plot	Drawing		View	

Figure 4-29

4. Entering Walls and Openings

Select: **Single Wall** under the **Wall Selection** heading on the **Wall Drawing Options** pop-up menu.

Select: **Drawing** under the **Output Selection** heading on the **Wall Drawing Options** pop-up menu.

Prompt: **Make drawing layer temporary? yes no**

Select: **no**

Tip: By selecting no the *Wall Panel Elevation Drawing* you generate will be saved in the database. If you select *yes*, when you save the database and close **BuildersCAD** the *Wall Panel Elevation Drawing* layer will be deleted automatically.

Prompt: **Select wall to draw (F10 to Cancel):**

Using the left mouse button (F1) pick the wall with the garage doors. **BuildersCAD** will generate a *Wall Panel Elevation Drawing* like the one shown in Figure 4-30.
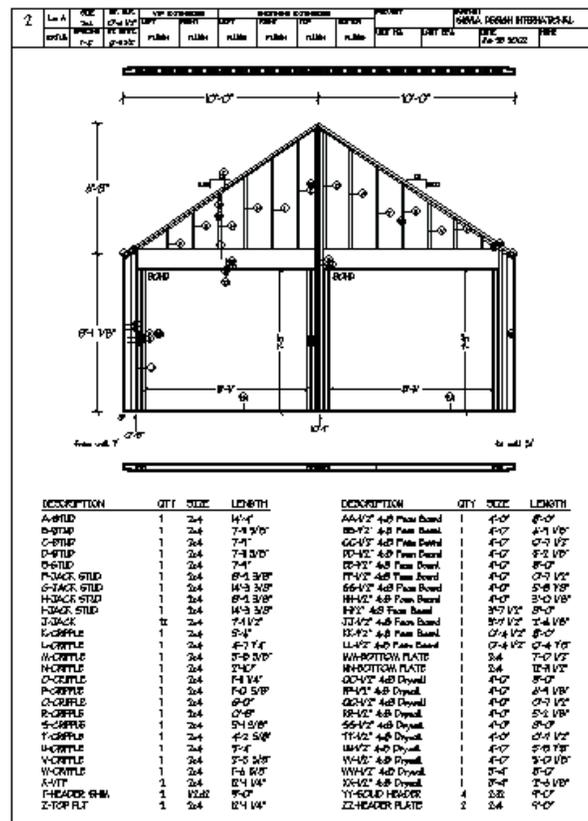
Figure 4-30

Prompt: **Enter Choice: Continue Cancel**

Select: **Cancel**

The wall layout will display again.

We have now framed the walls, viewed the 3D boards, and generated a Wall Panel Elevation Drawing. In the next chapter we will dimension the floor plan.

SAVE THE DATABASE.

5. Walls - Dimensions and Text

Dimensioning Walls vs Dimensioning the Floor Plan

BuildersCAD creates a layer specifically for the dimensions associated with walls (a separate layer for each level of walls). **BuildersCAD** will also create a layer for dimensioning associated with other applications such as Parts, Foundations, etc. Typically the *wall dimensions* will be used and displayed as the dimensions for the floor plan.

Manual vs. Global Dimensioning

There are manual dimensioning tools available under drawing tools in each Application. In the **Walls** Application, there are additional dimensioning tools called *Global Dimensions*. Select **Drawing Tools** on the **Walls** Application menu. This will display the **Drawing Tools** pop-up menu. On this menu you will see the **Dimension** icon, which accesses *manual* dimensioning tools, and **Global** which accesses the *Global* Dimensioning tools. For dimensioning the floor plan, you will probably find the tools available under **Global** make dimensioning faster and easier.

Dimensioning the Floor Plan

To begin dimensioning the tutorial database, make sure you are in the **WALLS** Application and layers associated with Level A (1001, 1002, etc.) are on for edit, search, and display (on the **Layer** menu). On the **Status** menu you should see **tutorial** displayed under **Job**, and **A** displayed under **Level**.

To access Global Wall Dimensioning,

Select: **Drawing Tools** on the Walls Application menu.

This will display the **Drawing Tools** pop-up menu as shown in figure 5-1.
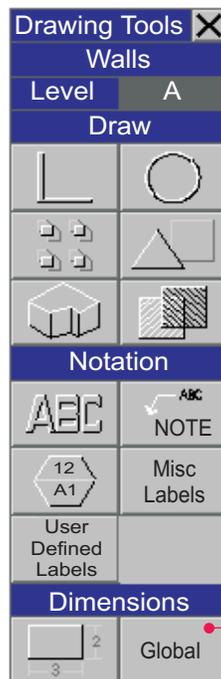
Select the Global Wall Dimension button.

Figure 5-1

5. Walls - Dimensions and Text

Select: **Global** under the **Dimensions** heading on the **Drawing Tools** pop-up menu.

This will display the **Global Wall Dimensioning** pop-up menu, shown in Figure 5-2 below.
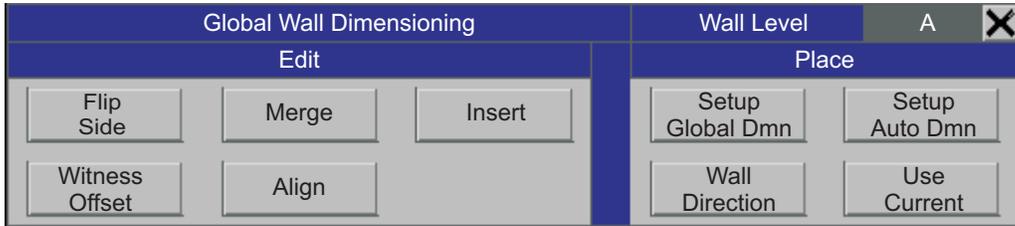
Figure 5-2

Select: **Setup Global Dmn** on the **Global Wall Dimensioning** pop-up menu.

This will display the **Global Wall Dimensioning Setup** pop-up menu, shown in Figure 5-3.
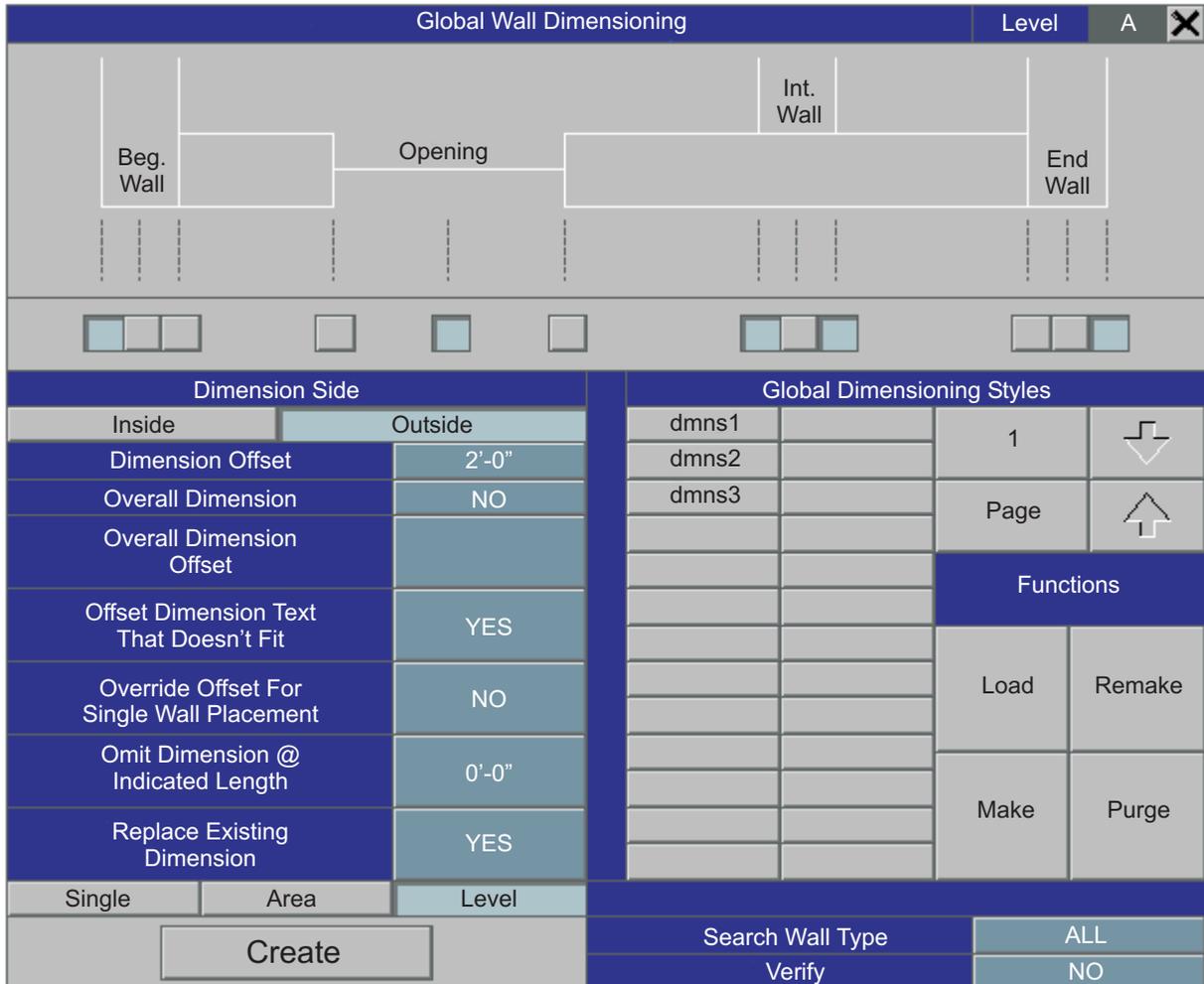
Figure 5-3

The top portion of the pop-up menu consists of a diagram that depicts a wall layout including a wall opening and an intersecting interior wall. There are boxes below the diagram that enable you to determine how walls and openings will be dimensioned. If a box is highlighted then the corresponding point will be dimensioned. For example by selecting on the appropriate box you can cause **BuildersCAD** to dimension to the outside, center, or inside of exterior or outside walls. The same applies to interior intersecting walls and openings. You can use **BuildersCAD** to dimension to either the outside corner, the inside corner or the center.

To begin dimensioning turn *off* the **INT. WALL** buttons directly below the intersecting wall diagram. To do this:

> Select: **INT. WALL** highlighted buttons.

All interior wall buttons should now be gray. **BEG. WALL**, **OPENING**, and **END WALL** buttons should be highlighted as shown in Figure 5-3.

Along the left side of the **Global Wall Dimensioning** pop-up menu there are other dimension parameters to set. Under **Dimension Side**:

> Select: **Outside**
>
> Select: The box next to **Dimension Offset**.
>
> Prompt: **Offset distance for dimension:**
>
> Enter: **2 <cr>**

The **Overall Dimension** setting toggles from **YES** to **NO**. This should be set to **YES**.

> Select: The box next to **Overall Dimension Offset**.
>
> Prompt: **Offset distance for overall dimensions:**
>
> Enter: **3 <cr>**

The **Offset Dimension Text That Doesn't Fit** should be set to **YES**.

The **Override Offset For Single Wall Placement** should be set to **NO**.

> Select: The box next to **Omit Dimension @ Indicated Length.**
>
> Prompt: **Width for dimension omission?:**
>
> Select: **3 1/2"** from the **Options** menu above the prompt line.

Replace Existing Dimension should be set to **YES**.

> Select: The box next to **Search Type** located in the bottom right corner of the **Global Wall Dimensioning** pop-up menu.
>
> Prompt: **Search wall type?**
>
> Select: **EXTLB** from the **Options** menu above the prompt line.

Verify should be set to **NO**.

> Select: **Level** located just above the **Create** button.
>
> Select: **Create**.
>
> Prompt: **Perform described edit? DEF: YES NO**

5. Walls - Dimensions and Text

Select: **YES** to confirm the command.

Select: The **Display All** icon to display the entire drawing in the display window.

BuildersCAD will dimension the plan as shown in Figure 5-4.

Figure 5-4

Next we want to lay down an additional string of dimensions, from outside wall corners to interior partitions.

Select: **Drawing Tools** on the **Walls** Application menu to display the **Drawing Tools - Walls** pop-up menu.

Select: **Global** under the **Dimension** heading on the **Drawing Tools - Walls** pop-up menu to display the **Global Wall Dimensioning** pop-up menu.

Select: **Setup Global Dmn** under the **Place** heading on the **Global Wall Dimensioning** pop-up menu.

This will display the **Global Wall Dimensioning** Setups menu with the parameter settings you just set.

Select: The box under the center of the **OPENING**, turning off the highlight so that you will not dimension the opening again.

Select: The boxes on both sides of the interior wall intersection at the top of the **Global Wall Dimensioning** Setup menu causing both to highlight.

Now we will be dimensioning from outside corners to both sides of interior partitions. Looking at the other parameters:

> Change the **Dimension Offset** to **3'6**.
>
> Change **Overall Dimension** to **NO**.
>
> Toggle **Replace Existing Dimension** to **NO**.
>
> Select: **Create** again.
>
> Prompt: **Perform described edit? DEF: YES NO**
>
> Select: **YES** from the **Options** menu above the prompt line.

BuildersCAD will generate another string of dimensions on each exterior wall.

> Select: The **Display All** icon to display the entire drawing in the display window.

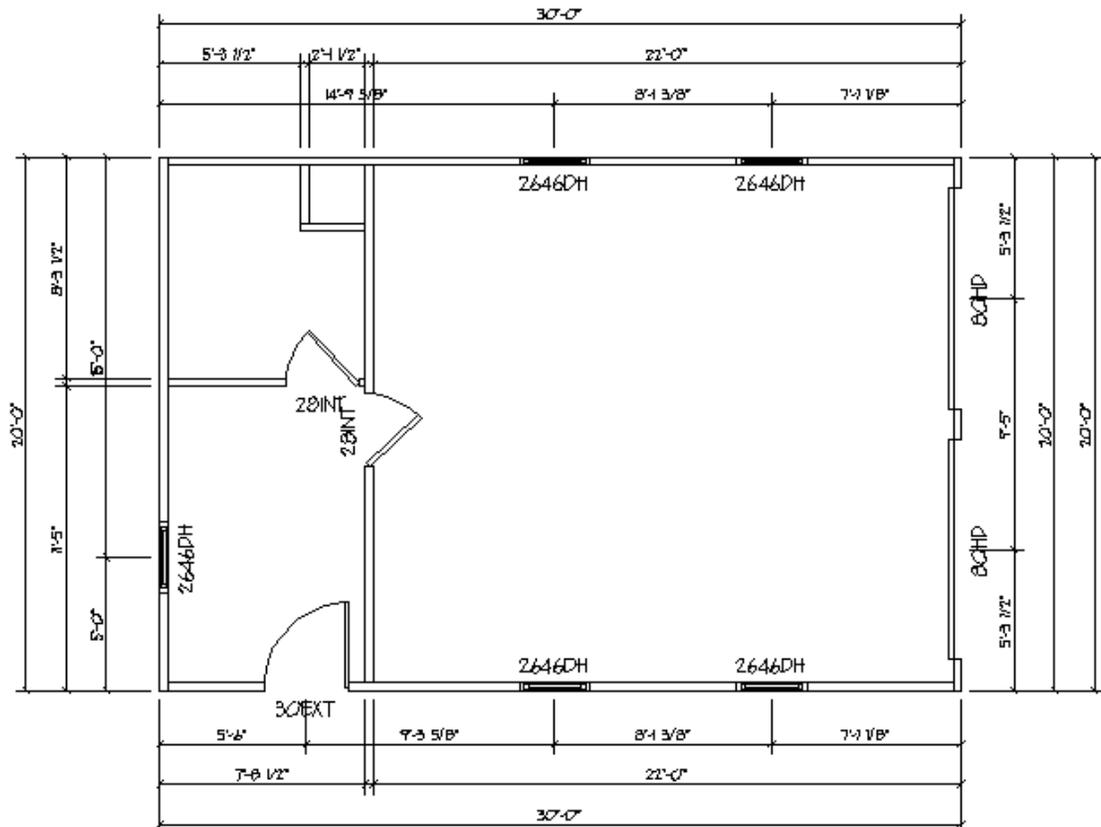Your floor plan should now look like Figure 5-5.

Figure 5-5

SAVE THE DATABASE.

Next we want to add a dimension string on the interior wall separating the garage from the other two rooms.

---

5. Walls - Dimensions and Text

Select: **Drawing Tools** on the **Walls** Application menu to display the **Drawing Tools - Walls** pop-up menu.

Select: **Global** under the **Dimension** heading on the **Drawing Tools - Walls** pop-up menu to display the **Global Wall Dimensioning** pop-up menu.

Select: **Wall Direction** under the **Place** heading on the **Global Wall Dimensioning** pop-up menu.

We want to be sure we place the dimensions on the "right side" of the vertical interior wall. After you select **Wall Direction** you will be prompted:

Prompt: **Select wall to display (F10 Cancel)**

Pick: the vertical interior wall using F1.

The wall will highlight in red and the words **BEGIN**, **END**, and **OUT** will appear on the right side of the wall. If it appears on the left side, that's OK too. Note which side of the interior wall **BuildersCAD** considers the outside of the wall.

Prompt: **Restore display? YES NO**

Select: **YES** from the **OPTION**S menu above the prompt line.

Select: The **Stop** sign icon on the **User Toolbar** to exit this routine.

Select: **Drawing Tools** on the **Walls** Application menu to display the **Drawing Tools - Walls** pop-up menu.

Select: **Global** under the **Dimension** heading on the **Drawing Tools - Walls** pop-up menu to display the **Global Wall Dimensioning** pop-up menu.

Select: **Setup Global Dmn** under the **Place** heading on the **Global Wall Dimensioning** pop-up menu.

This will display the **Global Wall Dimension** Setup pop-up menu. Deselect all highlighted buttons in the diagram at the top of the pop-up menu, turning them all to gray.

Across the diagram at the top of the pop-up menu, select the boxes on the interior edge of the **BEG. WALL** and **END WALL**, and both sides of the **INT. WALL**.

Under **Dimension Side**, make sure **Outside** is highlighted. If the **OUT** designation appeared on the left side of the vertical wall in the previous step, the **Dimension Side** should be set to **Inside**.

Dimension Offset should be set to **2'-0"**.

Overall Dimension should be set to **NO**.

Offset Dimension Text That Doesn't Fit should be set to **YES**.

Override Offset For Single Wall Placement should be set to **NO**.

Omit Dimension @ Indicated Length should be set to **3 1/2"**.

Replace Existing Dimension may be set to either **YES** or **NO**.

Search Wall Type at the bottom right of the **Global Wall Dimension** Setup pop-up menu should be set to **ALL**.

Select: **Single** above the **Create** Button.

Select: **Create**.

Prompt: **Select wall to dimension (F10 Cancel):**

Pick the vertical interior wall.

BuildersCAD will generate a string of dimensions for the interior wall. Your floor plan should now appear as shown in Figure 5-6.

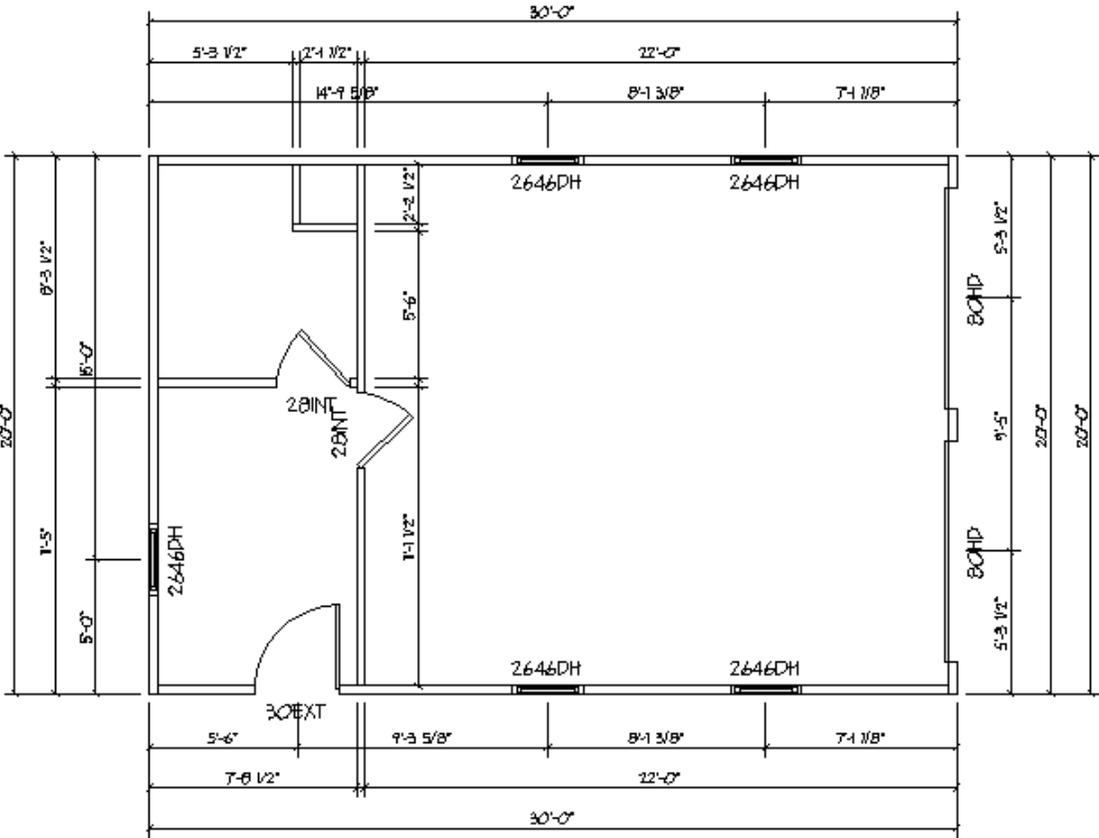Select: The **Stop** sign icon on the **User Toolbar** to exit this routine.

Figure 5-6

We have completed dimensioning the floor plan.

Tip: If you want to relocate any of the dimension text, see the **Dimensions** topic in the **BuildersCAD Encyclopedia**.

SAVE THE DATABASE.

5. Walls - Dimensions and Text

Adding Text to the Floor Plan

To add text to the drawing:

Select: **Drawing Tools** on the **Walls** Application menu to display the **Drawing Tools Walls** pop-up menu.

Select: The **Text** icon on the **Drawing Tools** pop-up menu.

This will cause the **Text** application sub-menu to display. Notice also that **BuildersCAD** has created a layer number 1008 for text connected with *Walls Level A*.

We will add room labels with the text functions. When the **Text** application sub-menu appeared you may have noticed that the **Status** menu across the bottom of the screen also changed.

Select: **Size** on the **Status** menu.

Select: **.15** on the **Sizes (Paper Units)** pop-up menu.

Select: The **Place Single Text** icon under the **Place** heading on the **Text** Application sub-menu.

Prompt: **Location for text (F10:exit):**

Pick: A point with the F1 / left mouse button on the floor plan approximately the center of the garage area.

Prompt: **Enter text (Cntrl-E for menu):**

Enter: **GARAGE <cr>**.

Prompt: **Location for text (F10:exit):**

Pick: A point with the F1 / left mouse button in the room in the upper left corner of the floor plan, just above the door.

Prompt: **Enter text (Cntrl-E for menu):**

Enter: **BATH <cr>**.

Select: The **Paragraph Text** icon under the **Place** heading on the **Text** Application sub-menu.

Select: **Justify** on the **Status** menu.

Select: **C** in the **Lower** row under the **One Point** heading on the **Text Justification Options** pop-up menu.

Prompt: **Location for text:**

Pick: A point with the F1 / left mouse button just above the center of the room in the lower left corner of the floor plan.

Prompt: **Enter text (Cntrl-E for menu):**

Enter: **WORK <cr>**.

Enter: **ROOM <cr>**.

Enter: **<cr>** to finish the paragraph text.

Select: The **Stop** sign icon on the **User Toolbar** to exit this routine.

Note: Another way to label the rooms is with the **BuildersCAD** *Room Label* feature. Select **Drawing Tools** on the **Walls** Application menu. Under the **Notation** heading select **Misc Labels** and from the pop-up menu select **Place Room Labels**. You will be able to box around rooms or outline a room, point to point. After you define the area of the room you will be able to manually or automatically place a room label (selecting from a menu). To find out more about the *Room Label* feature, see the **BuildersCAD Encyclopedia**.

Select: **Size** on the **Status** menu.

Select: **.25** on the **Sizes (Paper Units)** pop-up menu.

Select: The **Place Single Text** icon under the **Place** heading on the **Text** Application sub-menu.

Prompt: **Location for text (F10:exit):**

Pick: A point below the floor plan bottom horizontal dimension.

Prompt: **Enter text (Cntrl-E for menu):**

Enter: **FLOOR PLAN <cr>**.

Prompt: **Location for text (F10:exit):**

Select: the **F10** key or the **Stop** sign icon on the **User Toolbar** to exit the routine.

Note: Again you can use the **MISC LABEL** feature, accessed through **Drawing Tools** to place a drawing label.

The floor plan should now appear as shown in Figure 5-7 below.
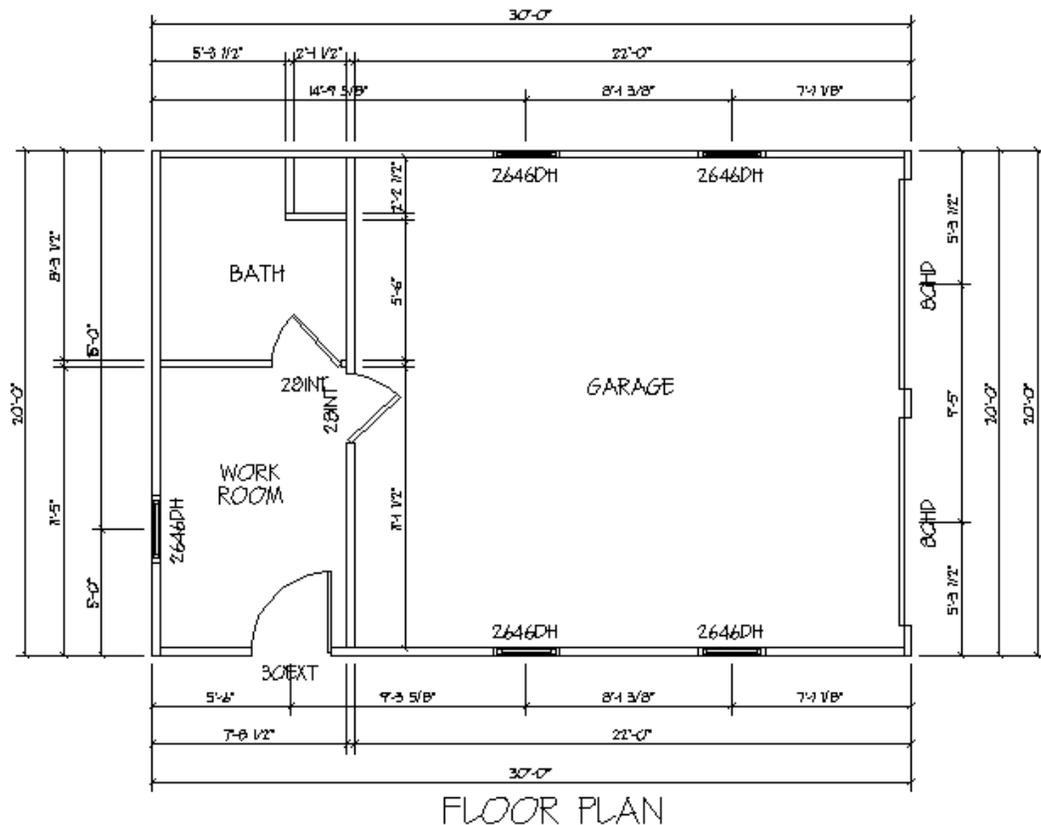
Figure 5-7

5. Walls - Dimensions and Text

If you want to move the text around,

Select: The **Edit** icon on the **Desktop** menu (at the top of the screen, to the right of center).

This will display the **Edit** menu as shown in Figure 5-8 below.
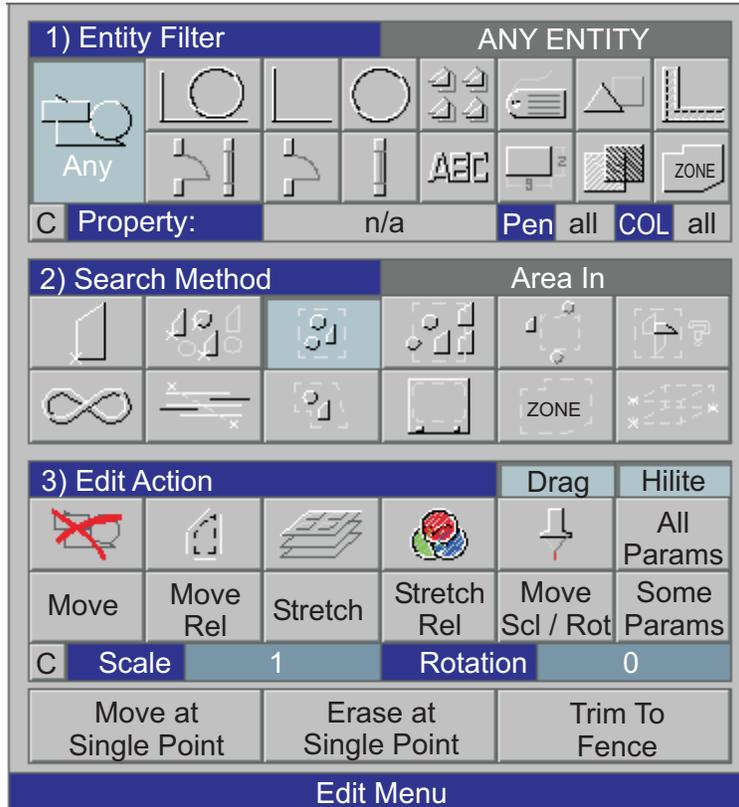
Figure 5-8

Select: The **Text** icon under the **Entity Filter** heading on the **Edit** menu (as highlighted in Figure 5-8 above).

Select: The **Single Entity** icon under the **Search Method** heading on the **Edit** menu (as highlighted in Figure 5-8 above).

Select: **Move** under the **Edit Action** heading on the **Edit** menu.

Prompt: **Move which text:**

Pick any text. You will be prompted to select a *Reference Point* and a *New Location* for the text. Use these move text tools to adjust the text locations as desired.

We have completed the Floor Plan. In the next chapter we will create a Foundation Plan.

SAVE THE DATABASE.

6. Using Walls to Create a Foundation Drawing

Introduction

Foundations is a feature in the **Walls** Application. When you create a *Foundation Plan* using this feature you are creating a line drawing, not another level of foundation *walls*.

Foundation drawings cannot be viewed in 3D and they cannot be used to generate material takeoffs, however this is a quick and easy way to generate a Foundation Plan. The Foundation drawing we create will be based on the assumption that a footing with foundation wall will support the back portion of the structure (Work Room and Bath), but the front (Garage) will be on a slab.

Creating a Foundation Drawing

Select: **WALLS** on the **BuildersCAD** Main Application menu to display the **Place Walls** Application sub-menu.

Select: **Edit Walls** at the bottom of the **Place Walls** Application sub-menu. This will display the **Edit Walls** and **Edit Openings** Application sub-menu.

Select: The **Change Wall Lap** icon.

Prompt: **Select wall to change (F10 Cancel):**

Pick: The interior vertical wall at each end.

This will change the wall laps on the vertical interior wall so that the interior panel looks as though it extends to the exterior surface of the exterior walls. See Figure 6-1.

Note: You will find a brief discussion on Wall Laps in Chapter 4 of this tutorial, **Entering Walls and Openings**. For more information on **Laps**, refer to the **Layout** portion of the **Walls Application** topic in the **BuildersCAD** Encyclopedia.
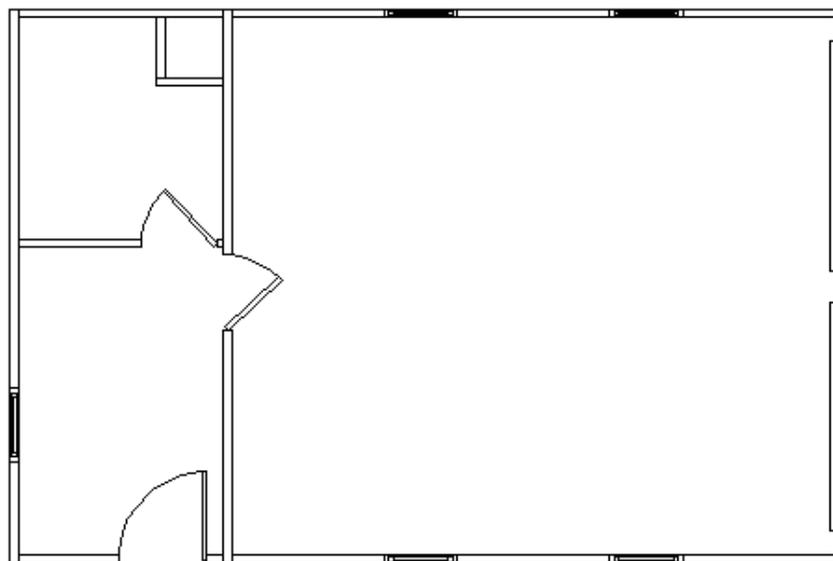
Figure 6-1

6. Foundation Drawing

Select: **Foundations** on the **Walls** Application menu. This will display the **Footings** Application sub-menu.

Select: **Display Foundation Layers** on the **Footings** Application sub-menu. This will display the **Foundation Layers** pop-up menu as shown in Figure 6-2.

Select: **Walls** on the **Foundation Layers** pop-up menu.

Select: **Display On** on the **Foundation Layers** pop-up menu.

Select: **Execute** on the **Foundation Layers** pop-up menu.

Foundation Layers	✕
Walls	
Foundation Outlines	
Dimensions	
Miscellaneous	
Notes	
All	

Level	A

Functions	
Display On	Clear Layer
Display Off	
Execute	

Figure 6-2

Select: **Exterior Footings** on the **Footings** Application sub-menu. This will display the **Foundation Wall Type** pop-up menu as shown in Figure 6-3.

Figure 6-3

There are six styles available for drawing the exterior footings. Three show a foundation wall with footing and three show a slab with footing.

Select: the **Foundation Wall Type**, third from the right along the top of the **Exterior Footings** pop-up menu, as shown in Figure 6-3.

Select: The **Overall Footing Width** box under the **Dimensions** heading on the **Exterior Footings** pop-up menu. See Figure 6-3.

Prompt: **Enter overall width? CUR: 2'-0" 1'-4" 2'-0" OTHER**

Select: **1'-4"** on the **Options** menu above the prompt line.

Select: on the **Wall Width** box under the **Dimensions** heading on the **Exterior Footings** pop-up menu. See Figure 6-3.

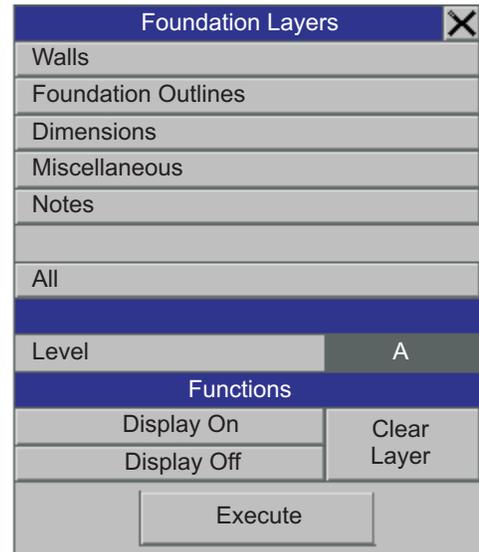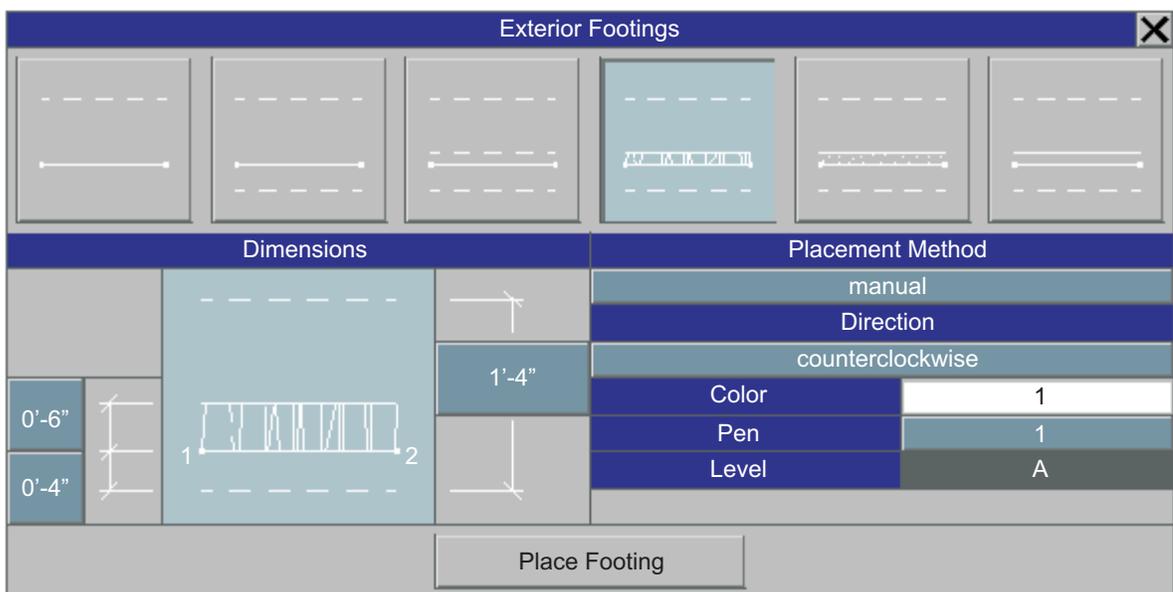Prompt: **Enter width? CUR: 0'-8" 0'-4" 0'-6" 0'-8" OTHER**

Select: **0'-6"** on the **Options** menu above the prompt line.

Select: on the **Distance from the Wall to the Edge of the Footing** under the **Dimensions** heading on the **Exterior Footings** pop-up menu. See Figure 6-3.

Prompt: **Enter width? CUR: 0'-4" 0'-4" 0'-6" OTHER**

Select: **0'-4"** on the **Options** menu above the prompt line.

Select: The box under the **Placement Method** heading on the **Exterior Footings** pop-up menu. See Figure 6-3.

This will toggle the *Placement Method* between **Search EXTLB Walls** and **manual**. The *Placement Method* should be set to **manual**.

Below the **Placement Method** on the **Exterior Footings** pop-up menu, the parameters should be set as follows:

Direction should be set to **counterclockwise**.

Color should be set to **1**.

Pen should be set to **1**.

Level should be set to **A**.

Select: **Place Footing** on the **Exterior Footings** pop-up menu.

Prompt: **Enter points until closure (F10 to end):**

With the F11/right mouse button, pick the lower left corner and then using the F11/right mouse button, trace around the exterior walls selecting the four points as shown in Figure 6-4. You must "draw" the outline in a counter-clockwise direction.

6. Foundation Drawing
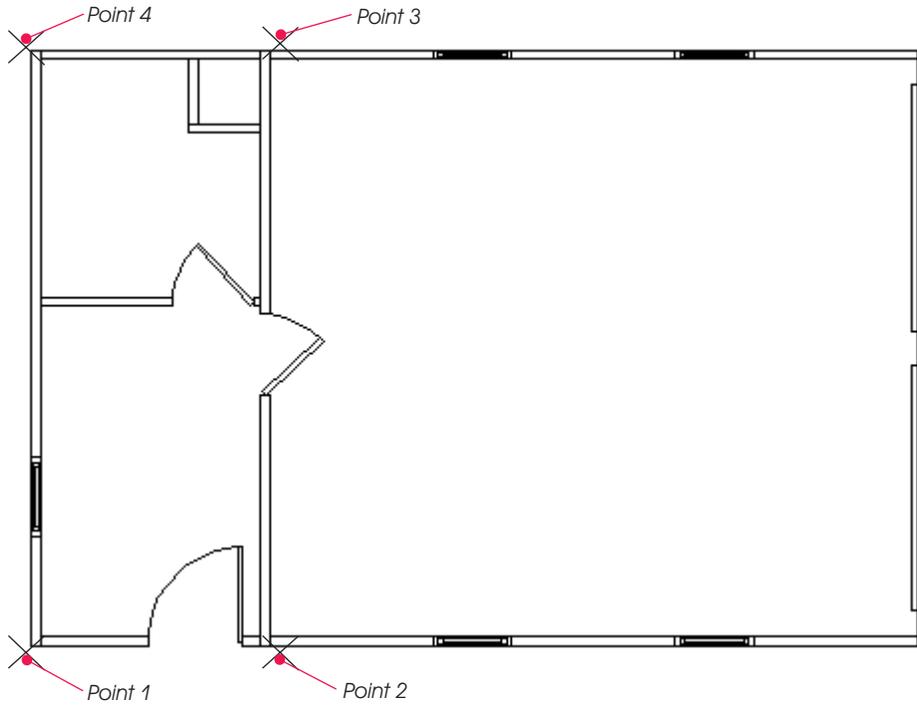
Figure 6-4

After you have picked the lower left corner of the wall layout for the second time (the fifth point), closing the outline, **BuildersCAD** will draw the foundation outline as shown in Figure 6-5 below.
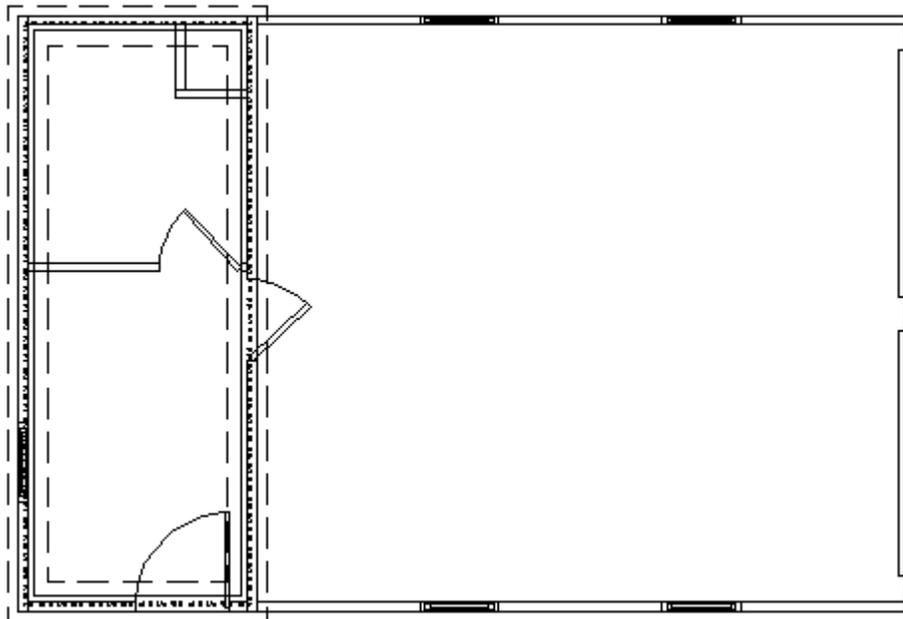
Figure 6-5

Select: **Exterior Footings** on the **Footings** Application sub-menu to display the **Exterior Footings** pop-up menu.

Select: The center **Slab Footing Type**, second from the left on the **Exterior Footings** pop-up menu.

Be sure the parameters are set as follows on the **Exterior Footings** pop-up menu:

Footing Width Dimension should be set to **1'-4"**.

Dimension from slab edge to Outside of Footing should be set to **4"**.

Placement Method should be set to **manual**.

Select: **Place Footing** at the bottom of the **Exterior Footings** pop-up menu.

Pick: The four points (again in a counterclockwise direction) as shown in Figure 6-6 using the F11/right mouse button.
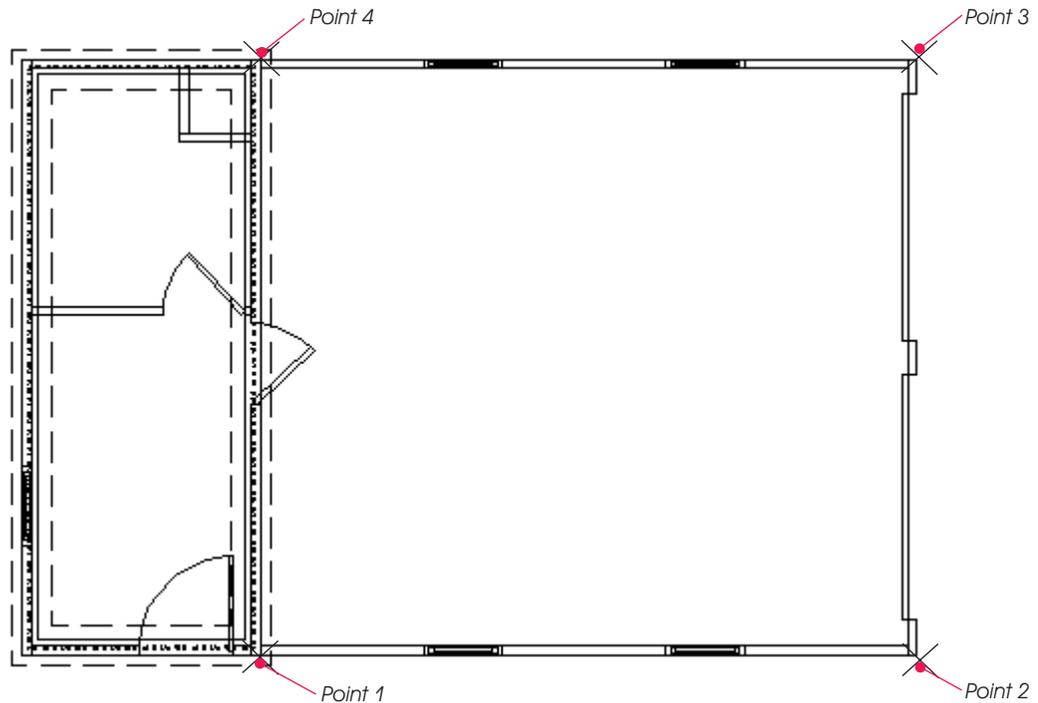
Figure 6-6

After you have picked the fourth point:

Pick: Any point using the F10/middle mouse button to exit the routine.

The foundation outlines should now appear as shown in Figure 6-7.

6. Foundation Drawing
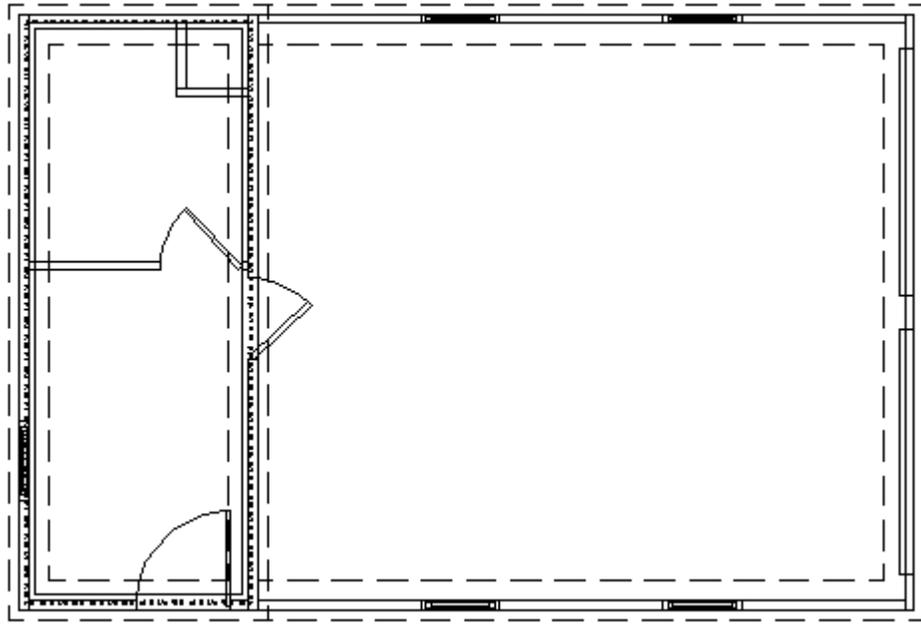
Figure 6-7

Now go back to the **Edit Wall** Application sub-menu and change the internal vertical wall laps back to the original setting, so they do not break the exterior walls. Refer back to the beginning of this chapter if you do not remember how to do edit the wall laps.

SAVE THE DATABASE.

Dimensioning the Foundation Plan

We will now add some dimensions to our foundation plan.

Select: **Foundations** on the **Walls** Application menu. This will display the **Footings** Application sub-menu.

Select: **Display Foundation Layers** on the **Footings** Application sub-menu. This will display the **Foundation Layers** pop-up menu as shown in Figure 6-2.

Select: **Foundation Outlines** on the **Foundation Layers** pop-up menu.

Select: **Display On** on the **Foundation Layers** pop-up menu.

Select: **Execute** on the **Foundation Layers** pop-up menu.

You are again looking at only the **Foundation Outline** layer.

Select: **Drawing Tools** on the **Walls** Application menu to display the **Drawing Tools** pop-up menu.

Select: The **Dimension** icon at the bottom of the **Drawing Tools** pop-up menu. This will display the **Dimensions** Application sub-menu and **Status** menu.

First we will run a string of dimensions across the bottom of the Foundation Plan. On the **Status** menu at the bottom of the screen, under **Text Mode (TX MODE)**, the setting should be **auto**. If you see **manual** here, select the box and it will toggle to **auto**.

Select: The **Running Dimension** icon on the **Dimension** Application sub-menu.

Prompt: **First dimension point:**

Pick the *lower left corner* of the *foundation wall* (not footing) outline using the F11/right mouse button. See Point 1 in Figure 6-8 below.

Prompt: **Next dimension point:**

Pick the *lower right corner* of the *foundation wall* (not footing or slab line) outline using the F11/right mouse button. See Point 2 in Figure 6-8 below.

Prompt: **Position for dimension line:**

Pick: A point 3 as shown in Figure 6-8 with the F1/left mouse button.
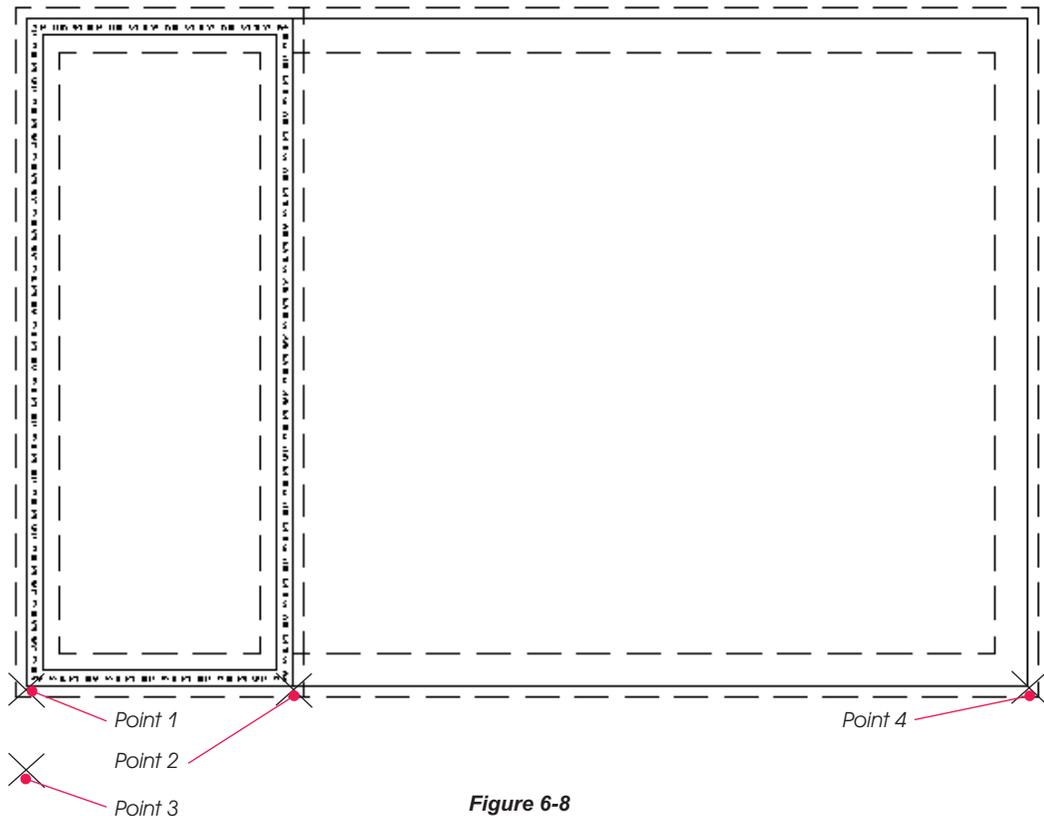
Figure 6-8

Tip: If the 3rd point you pick is too far to the left or right the dimension will not look as expected. You should pick a point "directly below" the first point you picked.

Prompt: **Next dimension point (F10:restart):**

Pick: The lower right corner of the slab using the F11/right mouse button. See Point 4 in figure 6-8.

Prompt: **Next dimension point (F10:restart):**

6. Foundation Drawing

Pick: Any point using the F10/middle mouse button to stop the dimension string.

Pick: Any point using the F10/middle mouse button again or select the **Stop** icon on the **User Toolbar** to exit the Running Dimension command.

You now have a string of dimensions on the Foundation Plan as shown in Figure 6-9.
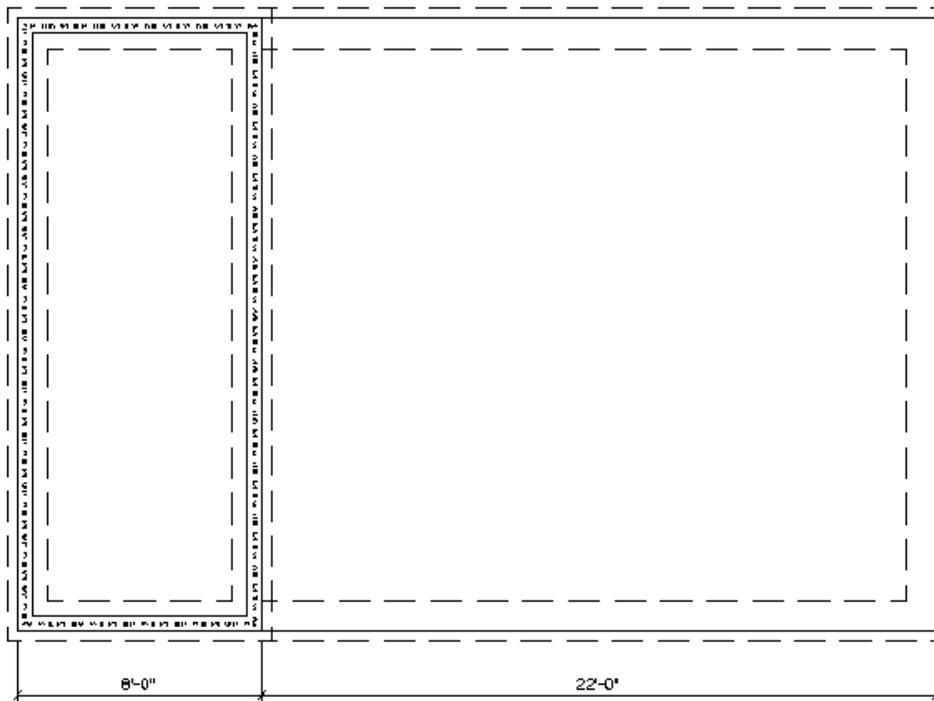
Figure 6-9

We will now add a single overall dimension below the existing string and add a single overall dimension to the right side of the foundation outline.

Select: The **Single Dimension** icon on the **Dimension** Application sub-menu.

Prompt: **First point for dimension:**

Pick the *lower left corner* of the *foundation wall* (not footing) outline using the F11/right mouse button. See Point 1 in Figure 6-8.

Prompt: **End point for dimension:**

Pick the *lower right corner* of the slab line outline using the F11/right mouse button. See Point 4 in Figure 6-8.

Prompt: **Position for dimension line:**

Pick: A point below the existing string of dimensions and directly below the first dimension point to place the overall dimension string.

Prompt: **First point for dimension:**

Pick the *lower right corner* of the slab line outline using the F11/right mouse button.

Sigma Design

Prompt: **End point for dimension:**

Pick the *upper right corner* of the slab line outline using the F11/right mouse button.

Prompt: **Position for dimension line:**

Pick: A point to the right of the first point for this overall dimension, where the dimension line is to be placed.

Select: The **Stop** sign icon on the **User Toolbar** to exit the routine.

The Foundation Plan should be as shown in Figure 6-10.
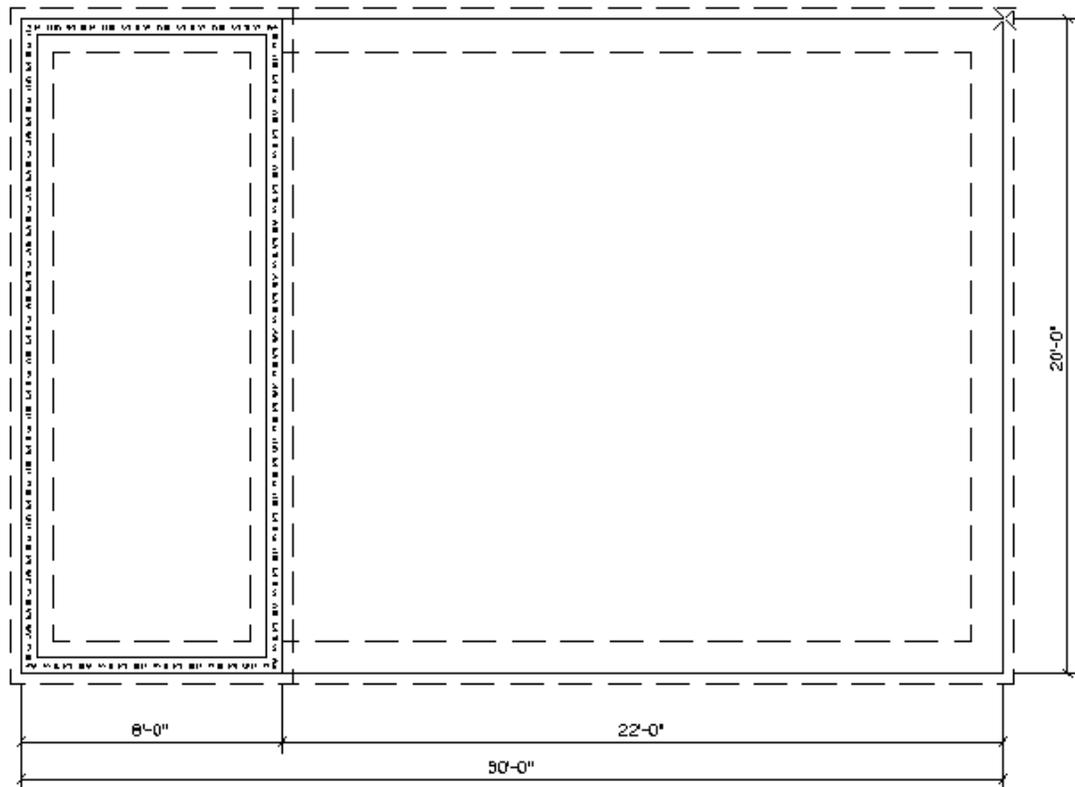
Figure 6-10

Note: You may want to use the **ZOOM WIN** feature to zoom the view in closer to make sure you select the correct points for dimensioning.

Next we will add diagonal dimensions so the foundation subcontractor can insure the foundation is square.

Select: The button under the **Align** heading on the **Status** menu to toggle the **Align** setting to **on**.

Using the Single Dimension command as described above, add the diagonal dimensions shown in Figure 6-11. Use the F11/right mouse button to pick the points on the foundation and F1/left mouse button to pick the location for the dimension strings.

6. Foundation Drawing
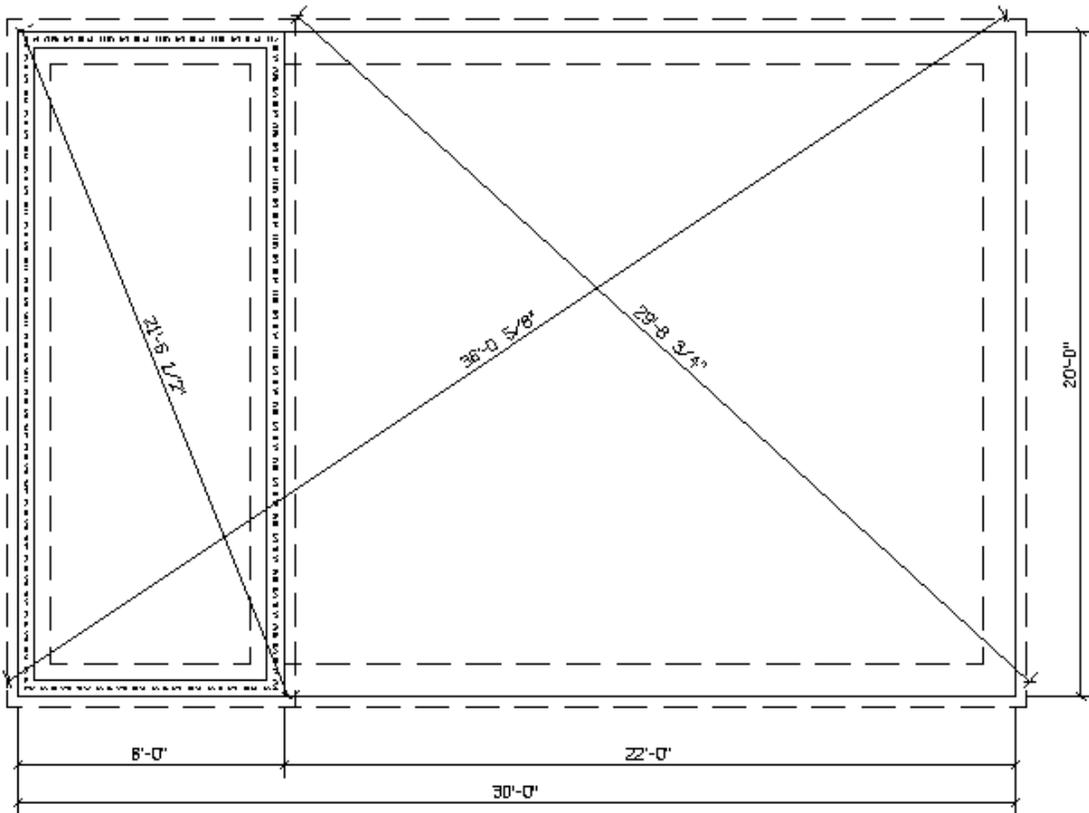
Figure 6-11

SAVE THE DATABASE.

Adding Notes to the Foundation Plan

We will now add notes to the foundation plan drawing using the **Notes** Feature in **BuildersCAD**.

Select: **Drawing Tools** on the **Walls** Application menu to display the **Drawing Tools** pop-up menu.

Select: The **NOTE** icon under the **Notation** heading on the **Drawing Tools** pop-up menu to display the **Notes** Application sub-menu and **Status** menu.

Select: The **Select** icon on the **Notes** Application Sub-menu. The **Catalog Note Placement** pop-up menu will display. See Figure 6-12.

Select: The BuildersCAD Tutorial Notes category on the left side of the **Catalog Note Placement** pop-up menu.

Select: The first note "HOLD DOWN TOP OF FOUNDATION WALL" on the right side of the **Catalog Note Placement** pop-up menu.

Figure 6-12

Select: The <u>Place Note</u> button at the bottom of the **Catalog Note Placement** pop-up menu. The menu will clear from the screen and the cursor will form boxes the size of the note.

Select: The <u>None</u> button under the <u>Left Leader</u> heading on the **Status** menu at the bottom of the screen.

Pick: A point near the upper left corner of the drawing using the F1 key. The selected note will be placed in this location.

Repeat the above process to add the following notes:

        FRAMED FLOOR THIS AREA

        6" FOUNDATION WALL, TYPICAL

        GARAGE SLAB

        1'-4" FOOTING, TYPICAL

Note: For the notes with leaders, select the **2 Segment Leader** button in the center under the <u>Left Leader</u> heading on the **Notes Status** menu at the bottom of the screen. See Figure 6-13 below. When placing the note, after the note text is placed, **BuildersCAD** will prompt for the bend point, then the arrow point of the leader.

Figure 6-13

Place the notes in the locations shown in figure 6-14 on the next page.

6. Foundation Drawing
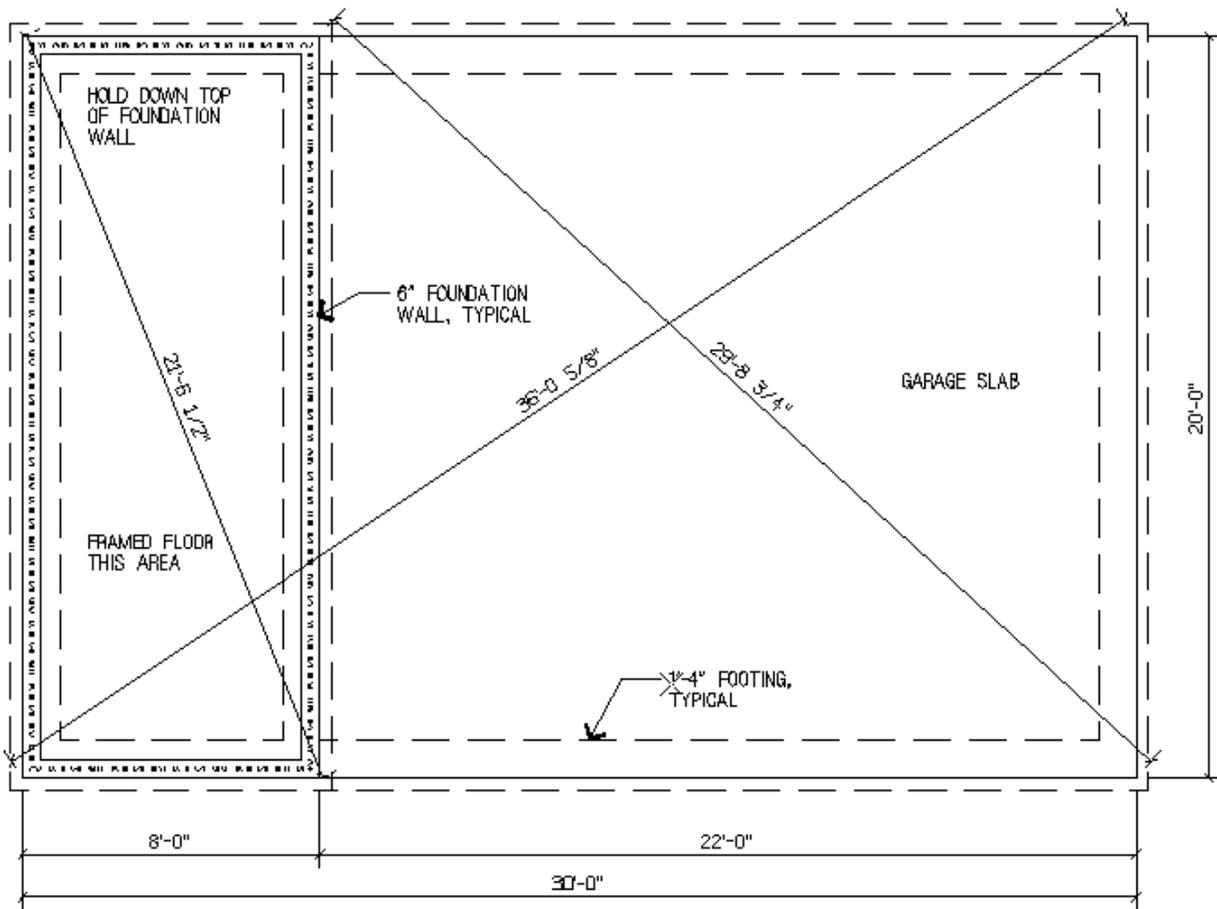
Figure 6-14

SAVE THE DATABASE.

We have now completed the Foundation Plan. In the next chapter we will place symbols (Parts) on the Floor Plan.

7. Placing Parts in the Floor Plan

Introduction

Most floor plans contain symbols, either hand drawn or created in a computer, which are used to represent objects such as a bath tub, toilet, electrical switch, etc. **BuildersCAD** comes with several libraries of pre-created symbols that you can select and place in a database.

Parts for the Floor Plan

Select: **WALLS** on the **BuildersCAD** Main Application menu to display the **Place Walls** Application sub-menu.

Select: **Level** on the **Status** menu. This will display the **Level Creation / Manipulation** pop-up menu.

Select: The box containing **A** under the **LVL** heading on the **Level Creation / Manipulation** menu.

This will turn *off* all layers except the Level A walls layer (number 1001).

Select: **Level Layers** on the **Level Creation / Manipulation** menu. This will display the **Additional Wall Layer Modes** pop-up menu.

Select: **E** under the **Modes** heading on the **Additional Wall Layer Modes** menu adjacent to the following layers:

> **Wall Dimensioning**
> **Wall Notes**
> **Opening Labels**

Select: **Exit w/ Disp** on the **Additional Wall Layer Modes** menu to clear the menu and redisplay the screen. The plan should look like Figure 7-1.
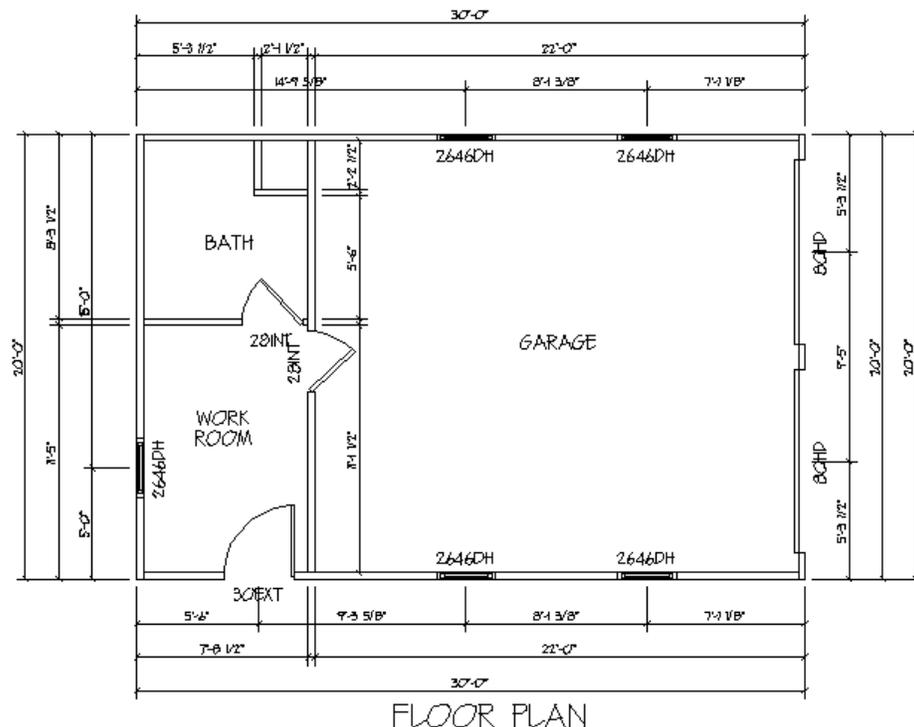
Figure 7-1

7. Placing Parts in the Floor Plan

To get back to the **BuildersCAD** Application menu:

Select: **Walls** (The heading at the top of the **Walls** Application menu). This will toggle the Application menu back to the **BuildersCAD** main menu.

Select: **Parts**. This will display the **Parts** Application menu, the **Place Parts** Application sub-menu, and the Parts **Status** menu.

Select: The **Select** button on the **Place Parts** Application sub-menu. This will display the **PART Select** pop-up menu.

1. Select the PLUMBING box on the left side of the PARTS Select menu.

2. Select the tub from the matrix on the right side of the PARTS Select menu.

3. Select Exit at the bottom of the PARTS Select menu to clear the menu from the screen.

Figure 7-2

Select: **PLUMBING** as the **Part Type** on the left side of the **PARTS Select** pop-up menu. This will change the matrix on the right side of the menu to display the Plumbing parts.

Select: **tub**, near the bottom left of the matrix on the right side of the **PARTS Select** menu, as the desired part.

Select: **Exit** at the bottom of the **PARTS Select** menu to clear the menu from the screen.

Select: **Standard** under the **Placement Method** heading of the **Place Parts** Application sub-menu.

The cursor will become an icon that looks like the plan view symbol of the tub.

Prompt: **F1 to place r.i. (F10 for options):**

Move the cursor (tub) to the upper left hand corner of the Bath, and position it in the wall niche.

Pick: With the F1/left mouse button to place the tub.

Note: You are placing the tub when it looks like it is positioned correctly. Exact placement in the corner is not critical here. If you want to place the tub exactly in the corner you can do so using the *New Reference* tool. See the **Reference Points** topic in the **BuildersCAD Encyclopedia** for more information.

Select: The **Select** button on the **Place Parts** Application sub-menu to redisplay the **PART Select** pop-up menu.

Select: The **Down Arrow** icon at the lower right corner of the matrix on the right side of the **PART Select** pop-up menu. This will page the matrix down to display more items.

Select: **wc1** near the lower right corner of the matrix on the right side of the **PARTS Select** menu.

Select: **Place** at the bottom of the **PARTS Select** pop-up menu. The cursor will form in the shape of the selected toilet.

Prompt: **F1 to place r.i. (F10 for options):**

Move the cursor to the outside wall of the Bath, below the tub to a point that looks correct and place the toilet by picking the point using the F1/left mouse button.

Select: The **Select** button on the **Place Parts** Application sub-menu to redisplay the **PARTS Select** pop-up menu.

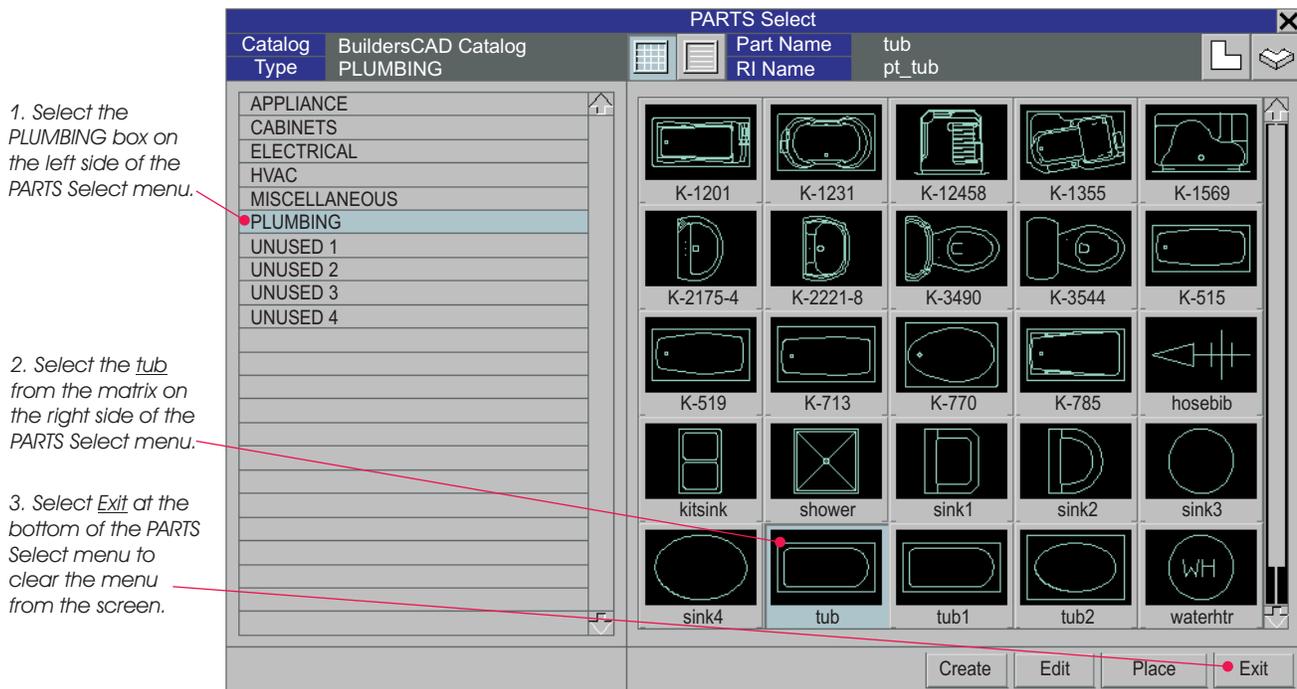Select: **CABINETS** as the Part Type on the left side of the **PARTS Select** pop-up menu. The *Cabinet Parts* will display in the matrix on the right side of the pop-up menu.

Select: The **Down Arrow** icon at the lower right corner of the matrix on the right side of the **PART Select** pop-up menu. This will page the matrix down to display more items. Select the **Down Arrow** until you see the part *VCB24*.

Select: **VCB24** in the matrix on the right side of the **PARTS Select** pop-up menu. This is a 24" Vanity Base Cabinet.

Select: **Place** at the bottom of the **PARTS Select** pop-up menu. The cursor will form in the shape of the selected vanity cabinet.

Prompt: **F1 to place r.i. (F10 for options):**

Pick: The F10 / middle mouse button to display the **Setup** pop-up menu as shown in Figure 7-3.

Select: The **Up Arrow** on the **Select** pop-up menu. This will rotate the vanity cabinet 90 degrees. The Angle of Rotation button in the center of the menu will show the angle of rotation as *90.00*, and the image of the cabinet on the menu will update to show the cabinet rotated 90 degrees clockwise.

Select: **Place** at the bottom of the **Setup** pop-up menu. The cursor will update to reflect the new rotation of the cabinet.

We now have the vanity in the correct orientation to snap it into place in the lower left corner of the bath.

Prompt: **F1 to place r.i. (F10 for options):**

Pick: The lower left corner of the bath using the F11 / Right mouse button.

Select: The **Stop** sign icon on the **User Toolbar** to exit the routine.

This completes the Floor Plan. Your plan should now look like Figure 7-4.
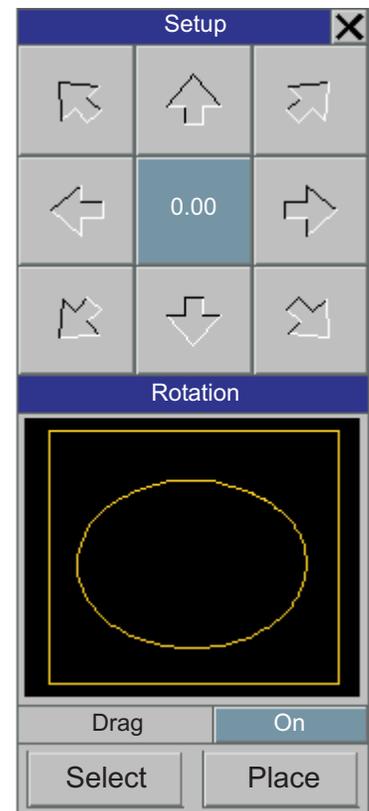
Figure 7-3

7. Placing Parts in the Floor Plan
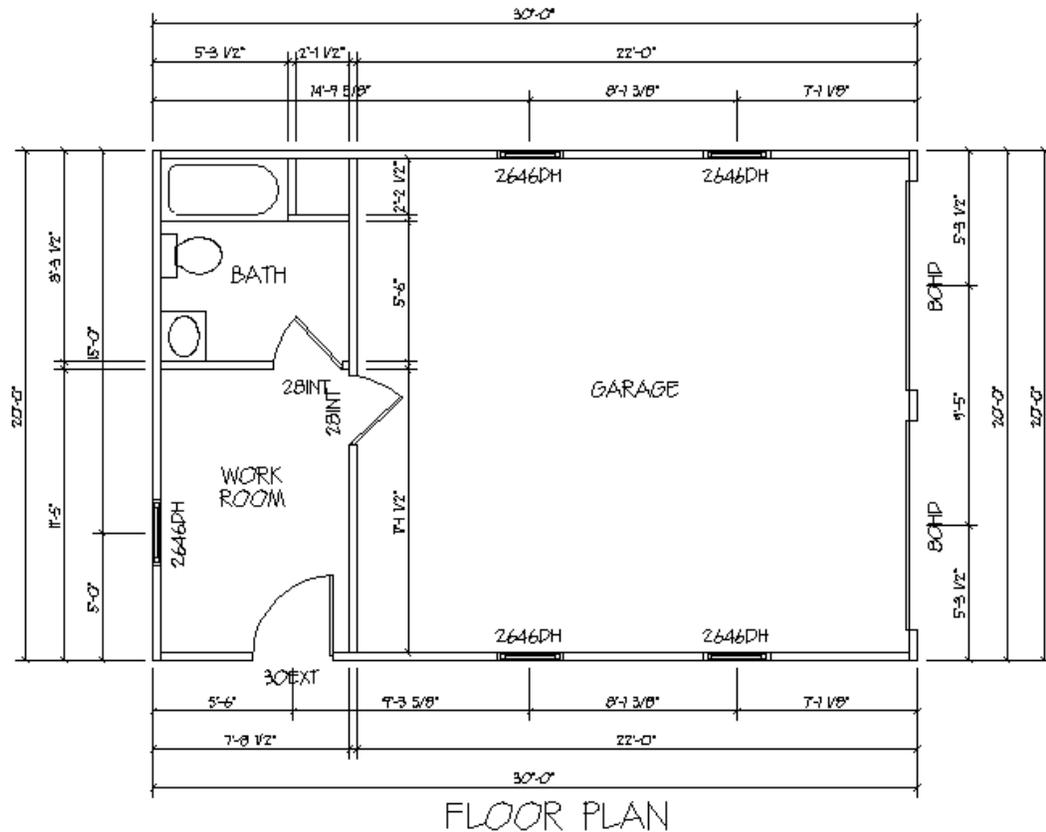
Figure 7-4

SAVE THE DATABASE.

Place Parts to Create the Electrical Plan

Through the **Layer** menu or through the Walls **Level Creation / Manipulation** menu, turn off the wall dimensioning (number 1006), wall notes (number 1008), and opening labels (number 1009) layers. For the start of the *Electrical Plan* you should have the walls, plumbing symbols, and cabinet symbols layers on for edit, select, and display.

> Select: The **Select** button on the **Place Parts** Application sub-menu. This will display the **PART Select** pop-up menu.

> Select: **Electrical** as the **Part Type** on the left side of the **PARTS Select** pop-up menu. This will change the matrix on the right side of the menu to display the Electrical parts.

You will use the Parts *exhstfan2*, *light1*, *light6*, *outlet2*, *switch*, and *switch3*.

Select and place each part. Use the **Standard** and **Snap** commands under the **Placement Methods** heading on the **Place Parts** Application sub-menu to place these parts so that the plan looks similar to Figure 7-5.

> Note: The **Snap** command places the part directly on the wall near the cursor, placing the part using the F1 / left mouse button.

Figure 7-5

To add *connectors* to the Electrical Plan:

Select: **Electrical Connectors** under the **Placement** heading of the **Parts** main menu. This will display the **Line Type** application sub-menu.

Select: The box below the **Line Type** heading on the **Line Type** Application sub-menu. This will display the **Arc Line Types** pop-up menu as shown in Figure 7-6 below.

Figure 7-6   *Select the dash-dot line type.*

Select: The **dash-dot** line type (right side in the middle) on the **Arc Line Types** pop-up menu.

Select: **Place Arc Line** under the **Connector** heading on the **Line Type** Application sub-menu.

Prompt: **First point (F10 to exit):**

Pick: The end of a switch using the F11 / right mouse button.

Prompt: **Next point (F10 to restart):**

7. Placing Parts in the Floor Plan

Pick: A point approximately midway between the switch and the fixture you are going to connect the switch to, midway but not in a straight line, using the F1 / left mouse button.

At this point the cursor will appear white and act like a "rubber band".

Prompt: **Next point (F10 to restart):**

Pick: A point on the end of the fixture you are connecting using the F11 / right mouse button.

The connector will become fixed in place and turn red (or the color of the Electrical Parts).

Prompt: **Next point (F10 to restart):**

Pick: Any point using the F10 / middle mouse button. The command will go back to the **First Point** prompt and you are ready to enter another connector.

Repeat the process until connectors have been added to all switches and the two lights near the back of the garage have been connected. Your plan should appear similar to Figure 7-7.
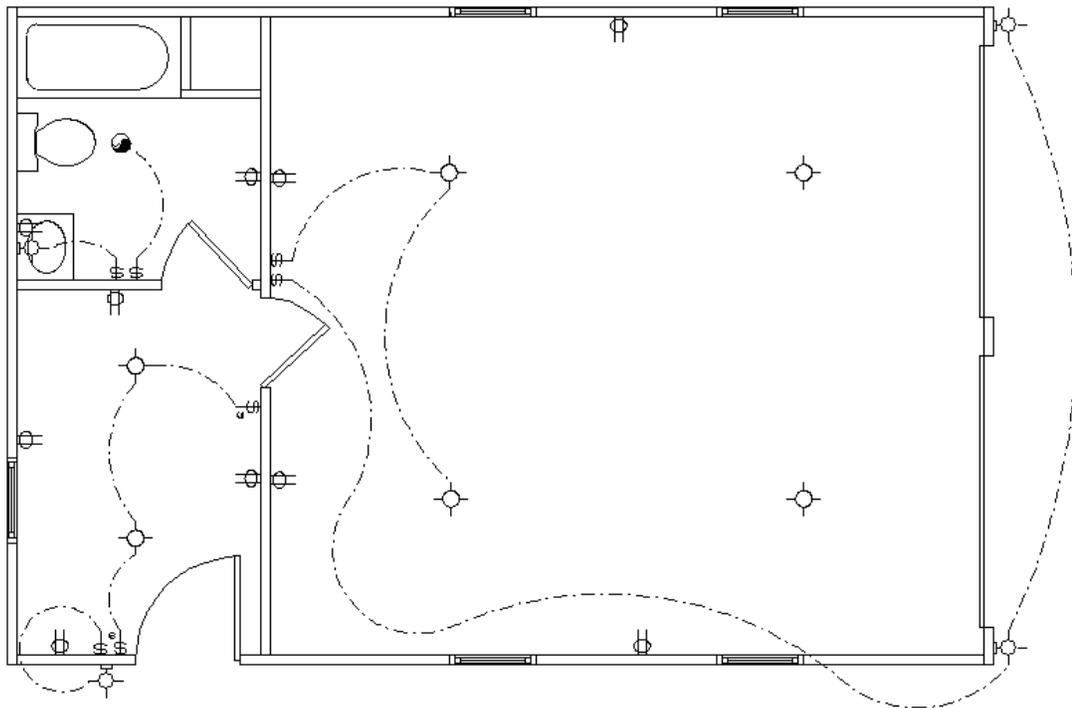
Figure 7-7

To complete the Electrical Plan we need to add a couple of text labels.

With the Part Type, **Electrical** displayed as the current part type on the **Status** menu:

Select: **Drawing Tools** on the **Parts** main Application menu to display the **Drawing Tools** pop-up menu.

Select: The **Text** icon on the **Drawing Tools** menu. This will display the **Text** Application sub-menu and **Status** menu.

Select: The box under the **Size** heading on the **Status** menu. This will display the **Sizes (Paper Units)** pop-up menu.

Select: **.10** on the **Sizes (Paper Units)** pop-up menu. The **Status** menu will display .10 as the current text size.

Add the 2 text labels *GARAGE DOOR* as shown on the plan in figure 7-8 below. When this is complete, change the text size to .20 and add the title *ELECTRICAL PLAN* below the wall layout.
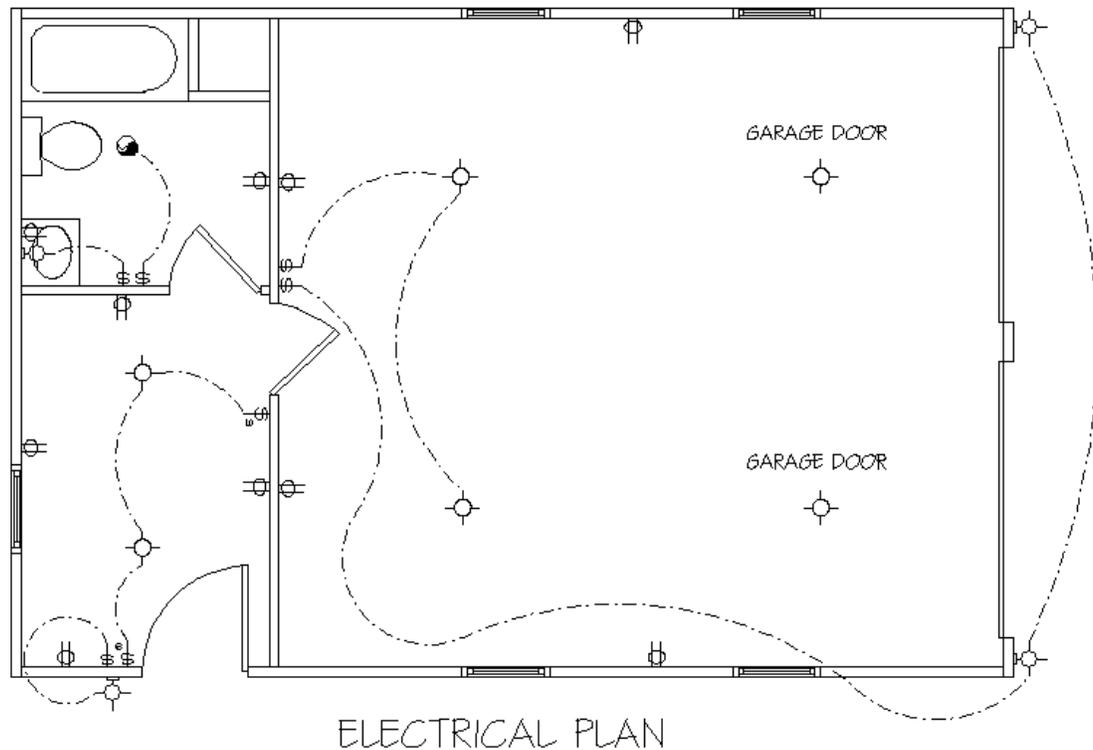
Figure 7-8

The Electrical Plan is now complete.

SAVE THE DATABASE.

8. Creating and Framing Floor Planes

Introduction to Floors

When you create a "floor" with **BuildersCAD** you are actually creating a floor plane. A floor plane is a surface that can be *opaqued* (colored in so that it appears as a solid on the display window), or it can be "framed" by the **BuildersCAD** Framer. A floor plane can also be utilized by the **Materials** Application to generate a material takeoff.

Floor planes are not necessary to create a set of working drawings. If you are not using **BuildersCAD** to generate framing and/or material takeoffs, you may want to skip this chapter.

You must create at least one floor plane to utilize the **Materials** Application for floors. Also you must create floor planes to use the **BuildersCAD** Framer to create a Floor Framing Plan and/or generate a framing lumber takeoff.

In this tutorial we assume that the floor of the rear portion of the "garage", the Work Room and Bath, is supported by foundation walls instead of a slab. Therefore it requires a wood floor system.

Creating a Floor Plane

Select: **Layers** on the **Desktop** menu at the top of the screen to display the **Layer** Pop-up menu.

Select: **D** in the under the **Modes** heading in the **OFF** row for **All Layers** at the bottom of the column. This will turn off all layers.

Select: **Exit & Display** at the bottom right of the **Layer** menu to clear the menu and redisplay the screen.

Select: **Floors** on the **BuildersCAD** main Application menu. This will display the **Floors** Application menu, the **Floor Geometry** Application sub-menu, and the Floors **Status** menu.

Select: The box under the **Floor Level** heading on the **Status** menu. This will display the **Floor Level Creation / Manipulation** pop-up menu.

Select: The first box under the **LVL** heading on the **Floor Level Creation / Manipulation** pop-up menu. This will turn on *Floor Level A*.

Select: The first box under the **Description** heading on the **Floor Level Creation / Manipulation** pop-up menu.

Prompt: **New level description? CANCEL**

Enter: **Work Area <cr>** (or any description you would like).

Select: **Re-Display** on the **Floor Level Creation / Manipulation** pop-up menu to clear the menu from the screen.

On the **Status** menu you will see the **Floor Level** (A), the **Level Description** (Work Area), the **Wall Level** (A), and a display under the **Walls** heading that indicates whether or not the walls are turned *on* for display. **Walls** should be turned *on* to use for reference to draw the floor plane outline. We are now ready to create a floor plane.

Select: **Add Plane** on the **Floor Geometry** Application sub-menu. This will display the **Add Plane** pop-up menu as shown in Figure 8-1.

The information on the **Add Plane** pop-up menu includes the following:

Plane Number - The number of the plane you are about to create.

Pitch - Horizontal indicates a flat plane.

---

8. Creating and Framing Floor Planes

Base Elev - The elevation of the floor plane. The bottom of the bottom plate of first floor walls is typically 0'-0".

Color - The color used to display the floor plane you are about to create.

You can select from three commands available to create a floor plane outline, **Run**, **Box**, or **Trace**. You would use **Run** to outline an irregular shaped area, **Box** to outline a square or rectangular shaped area, and **Trace** to automatically trace around the perimeter of the exterior walls to define a floor plane. In this tutorial, we will be creating a simple rectangular floor plane.

Add Plane	Level	A
Plane	1	
Pitch	Horiz	
Base Elev	0"	
Color	49	
Commands		

Figure 8-1

Select: The **Box** icon under the **Commands** heading on the **Add Plane** pop-up menu.

Prompt: **First point of box (F10 to exit):**

Pick: The *outer lower left* corner of the wall layout (point 1 as shown in Figure 8-2 below) using the F11 / right mouse button.
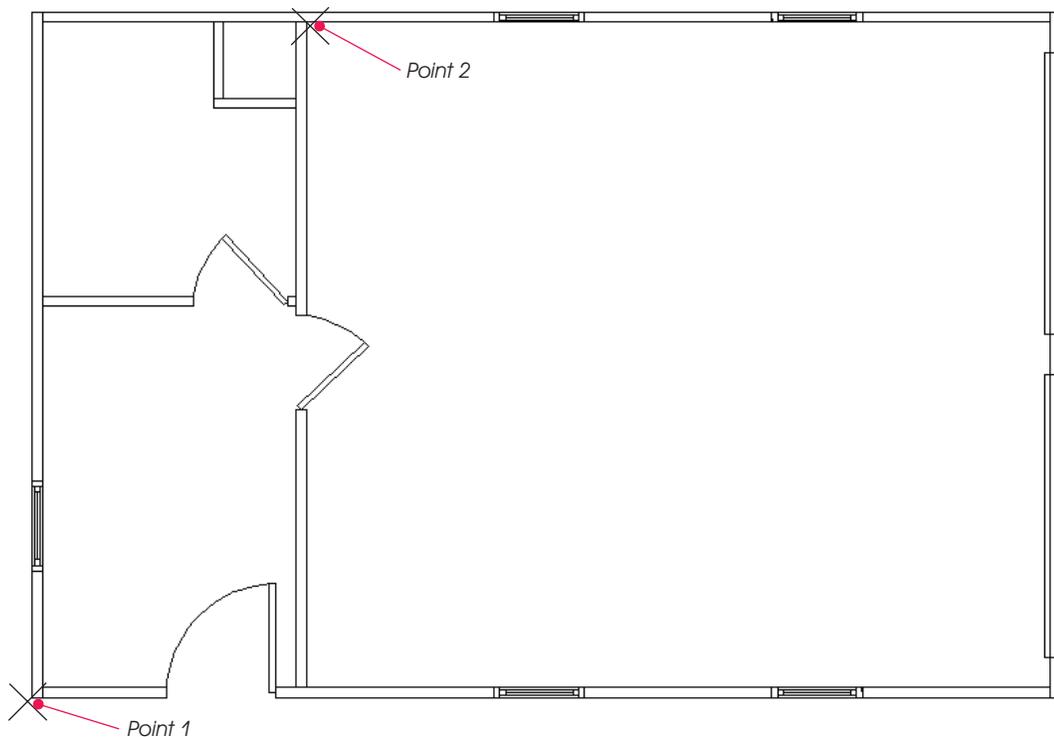
Figure 8-2

Prompt: **Second point of box. (F10 to exit):**

Select: **New** under the **Ref** heading on the **Cycle** menu.

Prompt: **New reference point:**

Pick: The point 2 indicated in Figure 8-2 above, where the back inside wall of the garage meets the top exterior wall, using the F11 / right mouse button. This sets the reference point at point 2.

The actual point desired for the second corner of the floor plane is along the outside wall, even with the garage side of the vertical wall dividing the garage from the bath and work room. By setting the new reference to a pick-able point along the inside of the wall, the second corner may now be entered by entering the known distance from the new reference to the desired point.

Prompt: **Second point of box (F10 to exit):**

Enter: **,3.5" <cr>**

After the second point of the rectangular area has been entered, **BuildersCAD** will prompt to verify the creation of the floor plane.

Prompt: **Create closure and add plane? DEF: yes redraw exit**

Select: **yes** on the options menu above the prompt line. The floor plane outline will blink and highlight in the designated floor plane color.

Prompt: **Select edge perpendicular to framing:**

Pick: Along one of the "vertical" floor plane edges, for example along the interior wall that runs vertically on the display window, using the F1 / left mouse button.

An arrow will be displayed as shown in Figure 8-3. This arrow indicates the direction of the floor joists if you decide to frame the floor. In this example, the joists will run horizontal on the screen, parallel to the short walls of this floor plane.
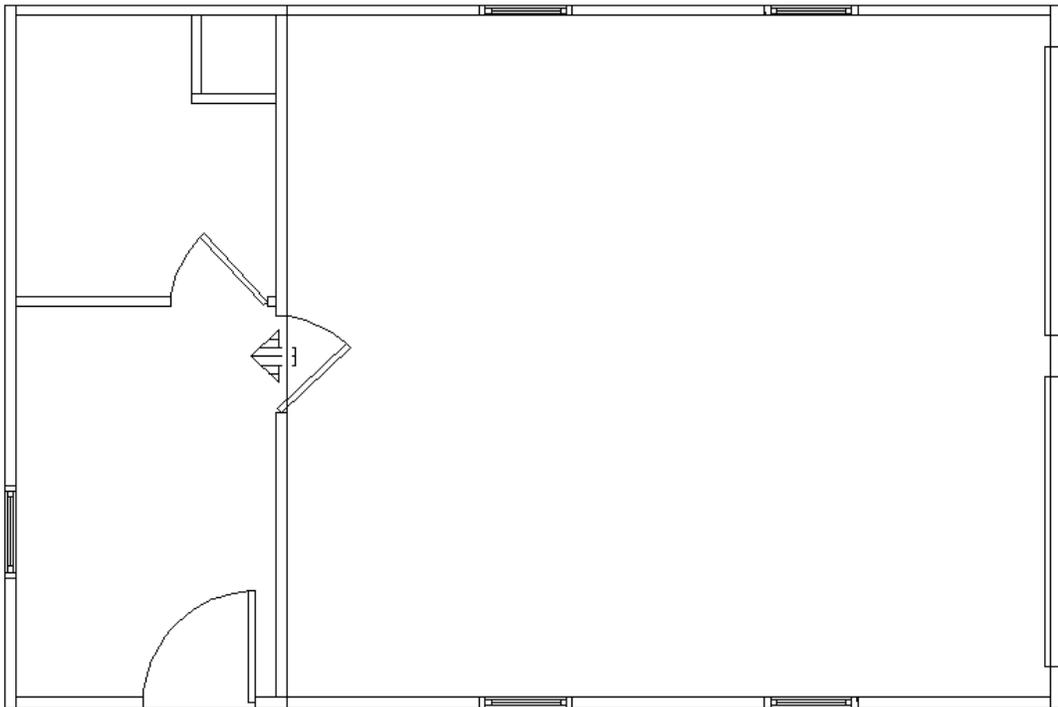
Figure 8-3

The floor plane has been created and can now be utilized by the **BuildersCAD Framer** for framing the floor and the **Materials** Application for generating a material takeoff.

SAVE THE DATABASE.

8. Creating and Framing Floor Planes

Framing the Floor

We will now use the **BuildersCAD Framer** to frame the floor plane we have just created.

Select: The **Edges** button under the **3D Boards** heading on the **Floors** Application menu to display the **Edge Boards** Application sub-menu.

Select: The **Assign Markers** button under the **Markers** heading on the **Edge Boards** Application sub-menu. This will display the **Floor Board Specification** pop-up menu.

Floor - Board Specification		Level	A ✕

Parameters		Available Boards	
		Entry	Description
Text Size	.2	f.b102	(2) 2x10 Beam
Pen	3	f.b123	(3) 2x10 Beam(Drp)
Color	5	f.ej10	2x10 End Joist
Piece Specification		f.fj10	2x10 Floor Joist
		f.fltr	12" Floor Truss
Overrides		f.h102	(2) 2x10 Header
Behavior	DEFAULT	f.hd10	2x10 Header
End 1 CT B	DEFAULT	f.msej	2x6 Mud Sill End
End 2 CT B	DEFAULT		

Clear	Floor Edge Type for Selected Boards				
	Any Type	Rim	End	Lap	Rough Opening

Selected Boards				
1				
2				
3				
4				

Edit Function				Execute	
Level	Plane	Area	Single	Erase	Place

Figure 8-4

The *Markers* you assign to the plane edges contain information ("framing rules") about the boards to generate on each plane edge (size of board, number of board[s], location of board relative to the plane edge).

In the upper right corner of the **Floor-Board Specification** pop-up menu is a list of the **Available Boards** (all of the "framing rules" that determine board parameters). Below this under the **Floor Edge Type for Selected Boards** heading is a row of the various types of floor plane edge types: **Any Type**, **Rim**, **End**, **Lap**, and **Rough Opening**. Below each *edge type* is a blank column.

Select: **End** under the **Floor Edge Type for Selected Boards** heading. The box will highlight.

Select: **2x10 End Joist** from the **Available Boards** list.

Select: **Rim** under the **Floor Edge Type for Selected Boards** heading. The box will highlight.

Select: **2x10 Rim Joist** from the **Available Board**s list. You will have to scroll the list down to find and select this board.

Select: **Level** under the **Edit Function** heading on the **Floor - Board Specification** pop-up menu.

Select: **Place** under the **Execute** heading on the **Floor - Board Specification** pop-up menu. The edges of the floor plane will highlight.

Prompt: **Add/change floor line markers? DEF: yes no**

Select: **yes** on the Choice menu above the prompt line. Markers will appear pointing to the edges of the floor plane. See Figure 8-5.
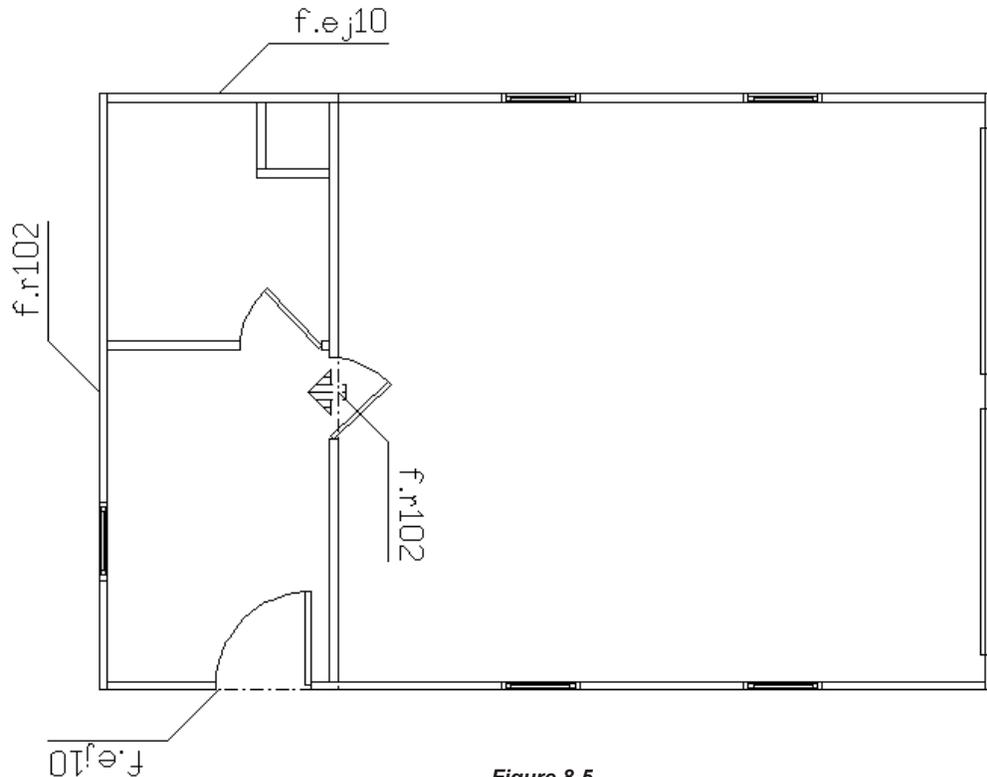
Figure 8-5

BuildersCAD recognizes *End* edges *perpendicular* to the edge selected for floor framing orientation. *Rim* edges are *parallel* to the baseline.

Select: **Generate Edge Boards** under the **Boards** heading on the **Edge Boards** Application sub-menu.

Prompt: **Generate edge joists? LEVEL PLANE SINGLE CANCEL**

Select: **LEVEL** on the **Choice** menu above the prompt line.

Select: The button under the **Walls** heading on the **Status** menu to toggle the walls to *OFF*.

Select: The **Re-Display** icon on the **View Control Bar** to redisplay the screen.

You should see the edge joists and markers as shown in Figure 8-6.

8. Creating and Framing Floor Planes
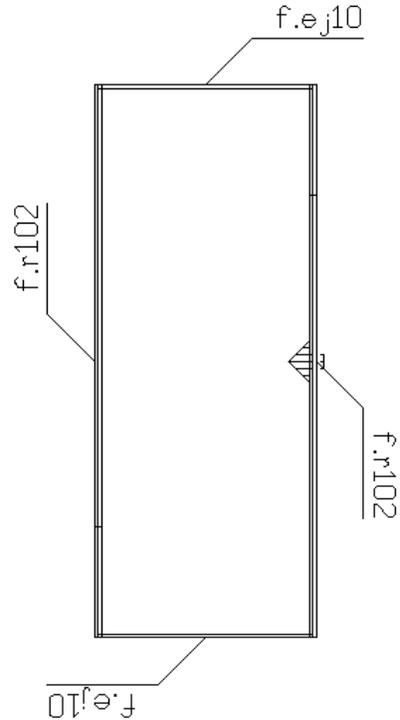
Figure 8-6

The next task is to generate the floor joists.

Select: **Surf's** under the **3D Boards** heading on the **Floors** Application menu. This will display the **Surfaces** Application sub-menu.

Select: The **Assign Markers** button on the **Surfaces** Application sub-menu. This will display the **Floor Surface Marker Specifications** pop-up menu as shown in Figure 8-7 below.

Figure 8-7

Select: **2x10-16** (2x10 floor joists spaced at 16" OC). Joists generated by this *Marker* will "fill" the floor plane.

Select: **Place** under the **Operational Commands** heading on the **Floor Surface Marker Specification** pop-up menu.

Prompt: **Position for surface marker F10 to exit:**

Move the cursor to the middle of the floor plane and pick using the F1 / left mouse button. The edge boards with the surface marker should appear as shown in Figure 8-8.

Prompt: **Position for surface marker F10 to exit:**

Pick: Any point using the F10/middle mouse button to exit the placement command.
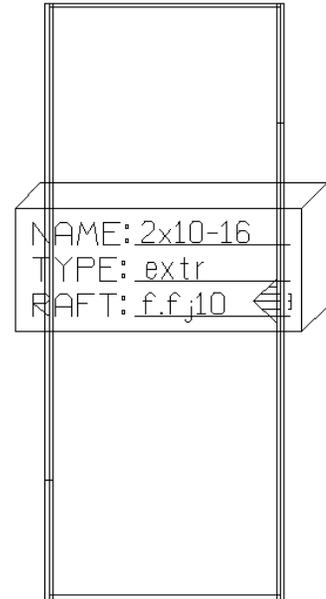
Figure 8-8

Next we will generate the actual floor joists to fill the floor plane.

Select: **Generate Boards** under the **Boards** heading on the **Surfaces** Application sub-menu.

Prompt: **Surfaces to fill? LEVEL   SINGLE   AREA   CANCEL**

Select: **Area** on the **Choice** menu above the prompt line.

Prompt: **Select desired surface marker F10 to exit:**

Pick: The **Surface Marker** on the floor plane with the F1 / left mouse button.

Prompt: **Point within boundary to begin <F10> exit:**

Pick: The *lower left* corner of the edge boards with the F11 / right mouse button.

Prompt: **Beginning offset in inches? DEF:0 3 6 OTHER**

Enter: **16 <cr>**

Prompt: **Point within boundary to end <F10> exit:**

Pick: The *upper left* corner of the edge boards with the F11 / right mouse button.

Prompt: **Ending offset in inches? DEF:0 3 6 OTHER**

Enter: **12 <cr>**

BuildersCAD will now generate the floor joists as shown in Figure 8-9.
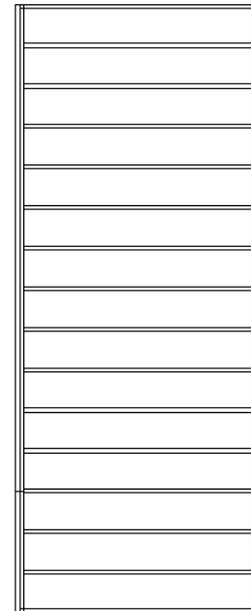
SAVE THE DATABASE.

Figure 8-9

8. Creating and Framing Floor Planes

The Floor Framing Plan

To create a *Floor Framing Plan*, first confirm that the **Floor Level** is **A** on the **Status** menu.

Select: **2D Board Layout** on the **Floors** Application menu to display the **Layout** Application sub-menu and **Status** menu.

Select: **Extract Dashed Walls** at the bottom of the **Layout** Application sub-menu. **BuildersCAD** will display the **Make Dashed Walls** pop-up menu as shown in Figure 8-10.

Make Dashed Walls		Level	A ✕
Color	1	Search	ALL
Pen	1	Level	A
Create Dashed Walls			

Figure 8-10

Select: **Create Dashed Walls** at the bottom of the **Make Dashed Walls** pop-up menu.

2D dashed walls with the floor boards will be displayed and should look like Figure 8-11.
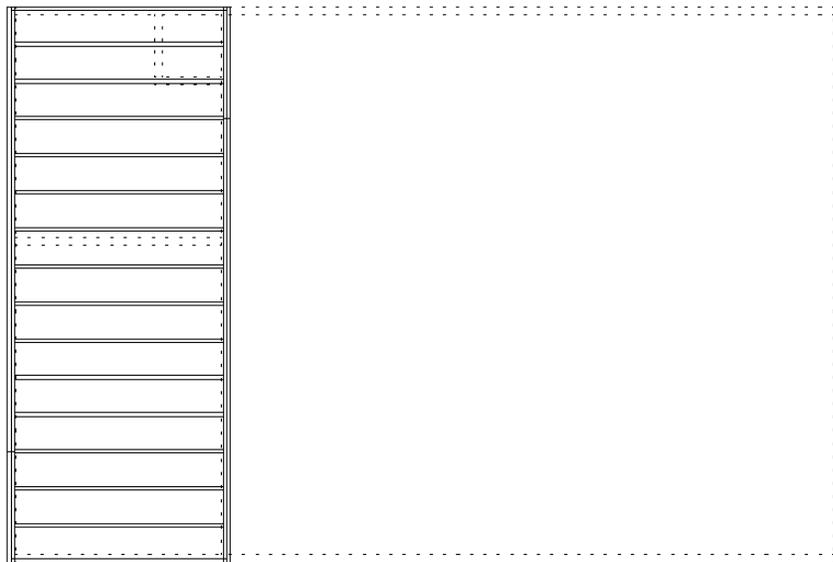
Figure 8-11

SAVE THE DATABASE.

The feature we are about to use will generate piece marks and a cut list for the floor boards.

Select: **Reports** under the **3D Boards** heading of the **Floors** Application menu. This will display the **Reports** Application sub-menu.

Select: **Label Boards** under the **Labeling** heading on the **Reports** Application sub-menu. This will display the **Board Label Setup** pop-up menu as shown in Figure 8-12.

Board Label Setup				✕
Place Board Labels	YES	Label Planes		NO
Place Member List	YES	Pen		1
Print Member List	NO	Text Size		.07
Save Member List	NO	Color		11
		Floor Level		A
Create Board Labels				

Figure 8-12

Toggle or set the following:

Place Board Labels should be set to **YES**.

Place Member List should be set to **YES**.

Print Member List should be set to **NO**.

Save Member List should be set to **NO**.

Label Planes should be set to **NO**.

Pen should be set to **1**.

Text Size should be set to **.07**.

Color should be set to **11**.

Floor Level should be set to **A**.

After completing the setup of parameters on the **Board Label Setup** pop-up menu:

Select: **Create Board Labels** on the **Board Label Setup** pop-up menu.

The **BuildersCAD** Framer will label each of the boards, label the plane, and generate a *Member List* (each board label listed with an exact cut length). When the Framer labels the boards and generates the cut list it turns off all layers except the 2D floor boards. After the boards are labeled, **BuildersCAD** will prompt:

Prompt: **Place member list (F10 to exit):**

Pick: A point to place the list, to the right of the framed floor with the F1 / left mouse button.

Select: The **Layer** button on the **Desktop** menu at the top of the screen to display the **Layer** pop-up menu.

On the left side of the **Layer** pop-up menu, scroll down until you see layer number **1421** (the layer name is **fl_fadw**). Turn this layer on for edit, search, and display by selecting the **E**.

Select: **Exit and Display** at the bottom of the **Layer** menu. The result should be a labeled plan similar to Figure 8-13.

8. Creating and Framing Floor Planes
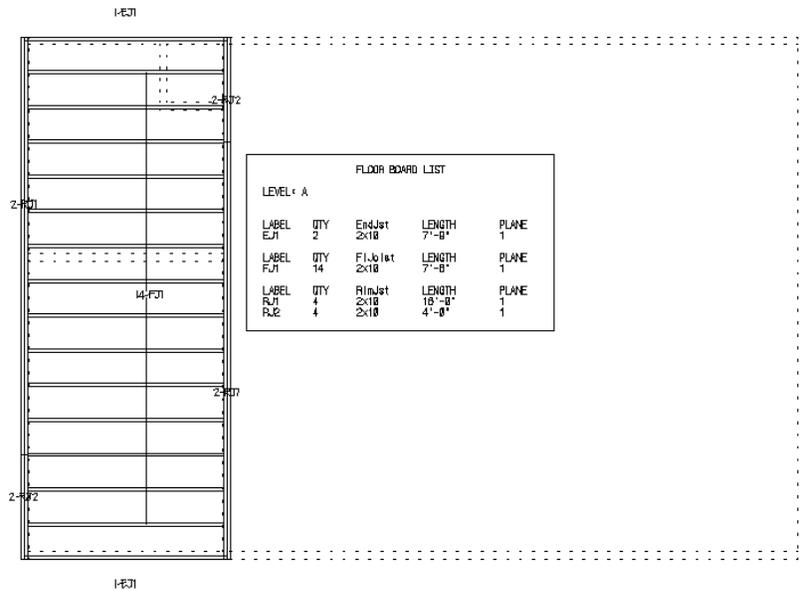
Figure 8-13

To complete the *Floor Framing Plan*, we will add a string of dimensions and a title.

> Select: **Drawing Tools** on the **Floors** Application menu to display the **Drawing Tools** pop-up menu.

> Select: The **Dimension** icon at the bottom of the **Drawing Tools** pop-up menu to display the **Dimension** Application sub-menu and **Status** menu.

Use the **Dimensions** tools to add dimensions to the *Floor Framing Plan*. Also use the **Text** feature from the **Drawing Tools** pop-up menu to add the title *FLOOR FRAMING PLAN* to the plan as shown in Figure 8-14. If you don't remember how to use the **Dimension** and **Text** tools, refer to Chapter 5, **Wall Dimensions and Text**.
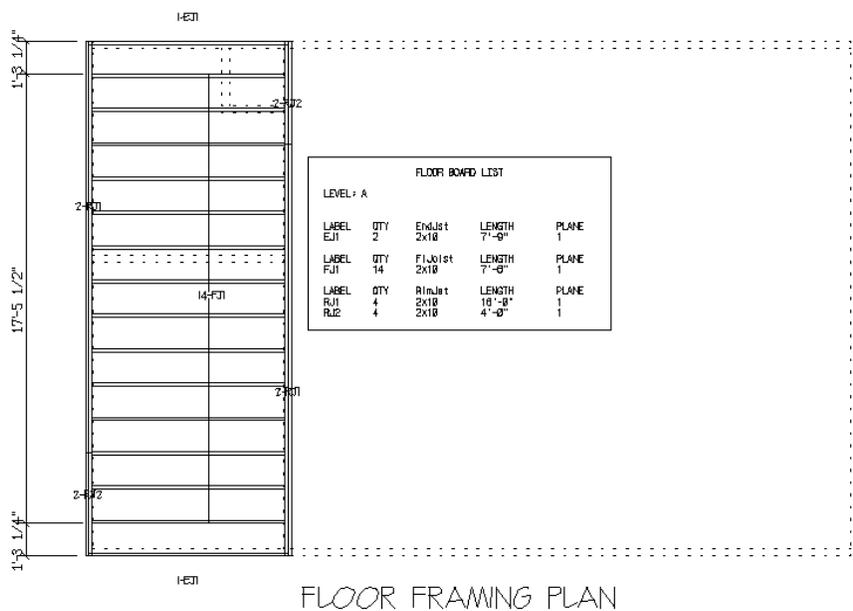
Figure 8-14

SAVE THE DATABASE.

9. Creating and Framing Roof Planes

Introduction to Roofs

When you create a "roof" with **BuildersCAD** you are actually creating a system of roof planes. A *roof plane* is a surface that can be *opaqued* (colored in so that it appears as a solid on the display window), or it can be "framed" by the **BuildersCAD** Framer. A roof plane can also be utilized by the **Materials** Application to generate a material takeoff.

Roof planes are utilized by **BuildersCAD** to generate Elevations. The roof as created in the Roofs Application determines the location of the eave edge, also the height and location of the ridge, hip, and valley edges.

The "framed" roof is utilized in generating a *Roof Framing Plan*. The boards that the **BuildersCAD** Framer creates for a material takeoff can be dimensioned, and notes added to serve as a *Roof Framing Plan*.

Creating a Roof

A Roof is made up of a system of roof planes. To create a roof plane system:

Select: **Roofs** on the **BuildersCAD** Main Application menu. This will display the **Roofs** Application menu, the **Roofs** Application sub-menu, and the Roofs **Status** menu.

Select: The box under the **Roof Level** heading on the **Status** menu. This will display the **Roof Level Creation / Manipulation** pop-up menu.

Select: The first box under the **LVL** heading on the **Roof Level Creation / Manipulation** pop-up menu. This will turn on *Roof Level A*.

Select: The first box under the **Description** heading on the **Roof Level Creation / Manipulation** pop-up menu.

Prompt: **New level description? CANCEL**

Enter: **Garage Roof <cr>** (or any description you would like).

Select: **Re-Display** on the **Roof Level Creation / Manipulation** pop-up menu to clear the menu from the screen.

On the **Status** menu you will see the **Roof Level** (A), the Roof **Elevation**, **Eave Marker**, **Class**, **Roof**, **Soffit**, **Wall Level,** and **Walls** (allows you to toggle Wall display *ON* and *OFF*). **Roof Level** indicates the roof level that is current or the one you are about to create. The **Elevation** is the relative elevation **BuildersCAD** will use for any outline you input. The other settings will be discussed later.

Select: The **Zoom All** icon on the **View Control Bar** to redisplay the screen.

The walls will provide reference points for creating the roof system outline. On the **Roofs** Application menu, the **Roof Geometry** button will be highlighted. The tools to draw or outline the area you will cover with the roof are under the **Perimeter** heading on the **Roofs** Application sub-menu.

Select: The **Box** icon under the **Perimeter** heading on the **Roofs** Application sub-menu.

Prompt: **First point of box (F10) Cancel:**

9. Creating and Framing Roof Planes

On the message line: **Outline will be added to roof a - 8'-1 1/8" elevation will be used**

Note: On the **Status** menu the **Elevation** displayed is the elevation of the outline you are about to create. Since you selected *Walls Level A* and the default wall height on *Level A* is 8'-1 1/8" in height, the elevation default elevation is 8'-1 1/8".

If the elevation displayed is different, select **Elevation** on the **Status** menu. **BuildersCAD** will prompt for the new value. Type **8'1 1/8" <cr>** to set the elevation.

Since the building we want to put a roof on is a simple box, pick the lower left, outside corner of the wall layout with the F11 / right mouse button, as shown by **Point 1** in Figure 9-1.

Prompt: **Second point of box (F10) Cancel:**

Pick: The *upper right outside* corner of the wall layout as shown by **Point 2** in Figure 9-1 using the F11 / right mouse button.
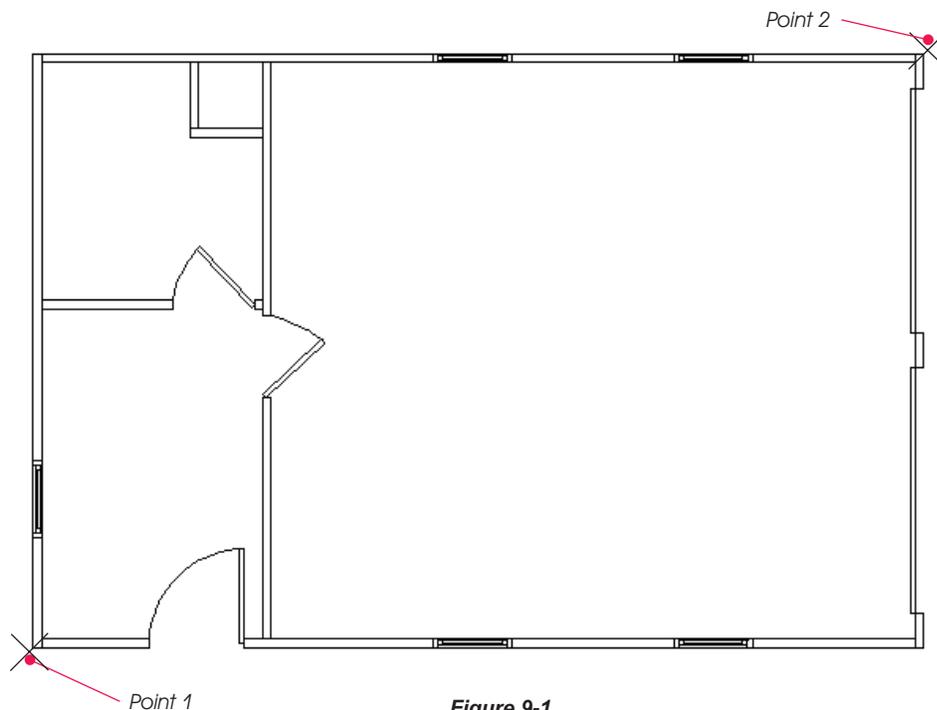
Figure 9-1

Prompt: **Add another box? Yes No**

Select: **No** on the **Choice** menu above the prompt line.

You will see the outline around the outside edge of the wall layout.

Select: **Setup** under the **Eave Properties** heading on the **Roof** Application sub-menu. This will display the **Define Eave** pop-up menu as shown in Figure 9-2.

Under the **Eave Styles** heading on the **Define Eave** pop-up menu, scroll down until the **8/12-6** eave style is displayed.

Select: **8/12-6** under the **Eave Styles** heading on the **Define Eave** pop-up menu. **8/12-6** will display in the left portion of the pop-up menu as the **Name** of the current **Eave Marker** and on the **Status** menu under **Eave Marker**. The parameters for this marker will display on the left side of the **Define Eave** pop-up menu.

Figure 9-2

Select: The **Single Eave** button along the bottom of the **Define Eave** pop-up menu.

Prompt: **Select outline for marker (F10 to Cancel):**

Pick: Each of the two horizontal outline lines using the F1 / left mouse button.

Note: On the display window, all layers will turn *off* except the roof outline.

Roof Markers will appear as shown in figure 9-3.

Figure 9-3

9. Creating and Framing Roof Planes

Select: **Setup** under the **Eave Properties** heading of the **Roofs** Application sub-menu to display the **Define Eave** pop-up menu.

On the **Define Eave** pop-up menu, under the **Eave Styles** heading, scroll to the bottom of the list.

Select: **gable** under the **Eave Styles** heading on the **Define Eave** pop-up menu.

Select: **Single Eave** on the **Define Eave** pop-up menu.

Prompt: **Select outline for marker (F10 to Cancel):**

Pick: Each of the two vertical outline lines using the F1 / left mouse button.

Prompt: **Select outline for marker (F10 to Cancel):**

Pick: Any point using the F10 / middle mouse button to exit the routine.

The outline with Markers assigned will look like Figure 9-4.
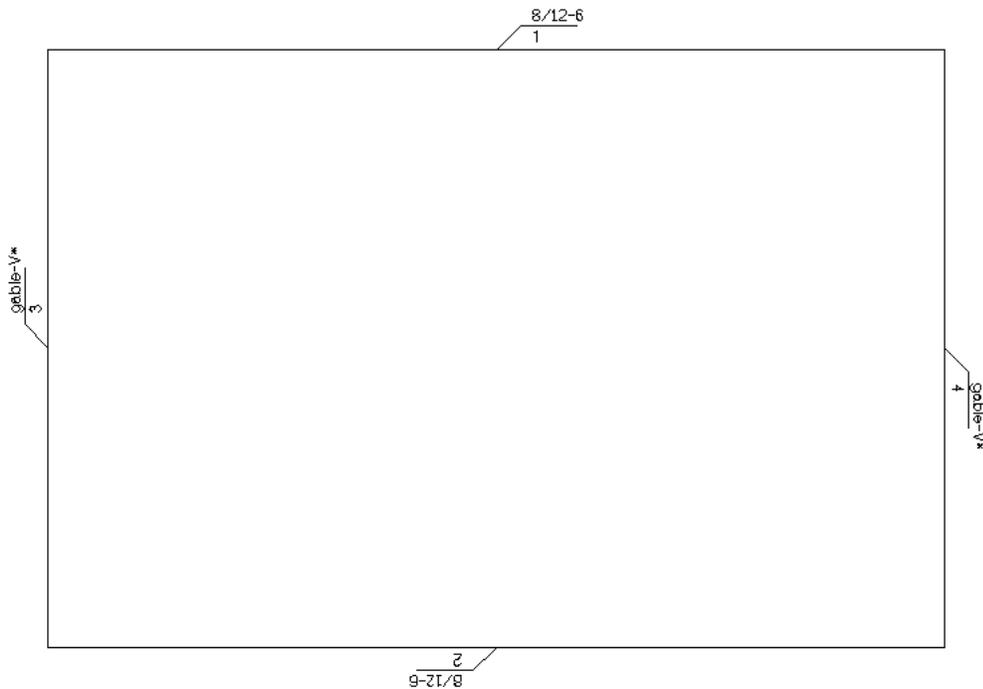
Figure 9-4

The perimeter of the roof has been defined and each edge now has a *Marker* to define the roof plane which projects up from it. To actually generate the roof planes:

Select: **3D** under the **Generate Roof** heading on the **Roofs** Application sub-menu.

Prompt: **Make planes? def: all roof cancel**

Select: **all** on the **Choice** menu above the prompt line.

BuildersCAD will "make" the roof planes based on the information in the Markers. Your screen should now look like Figure 9-5.
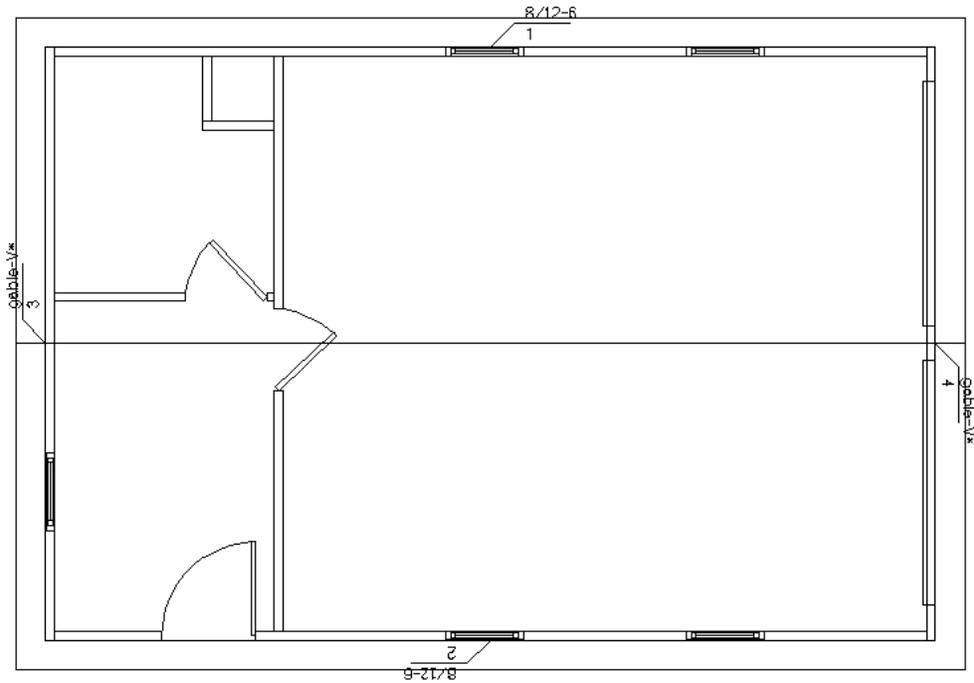
Figure 9-5

To look at an *isometric view* of the 3D roof you just created:

Select: The **Isometric View** icon on the **View Control Bar**. The isometric view of the roof you just created should look like Figure 9-6.
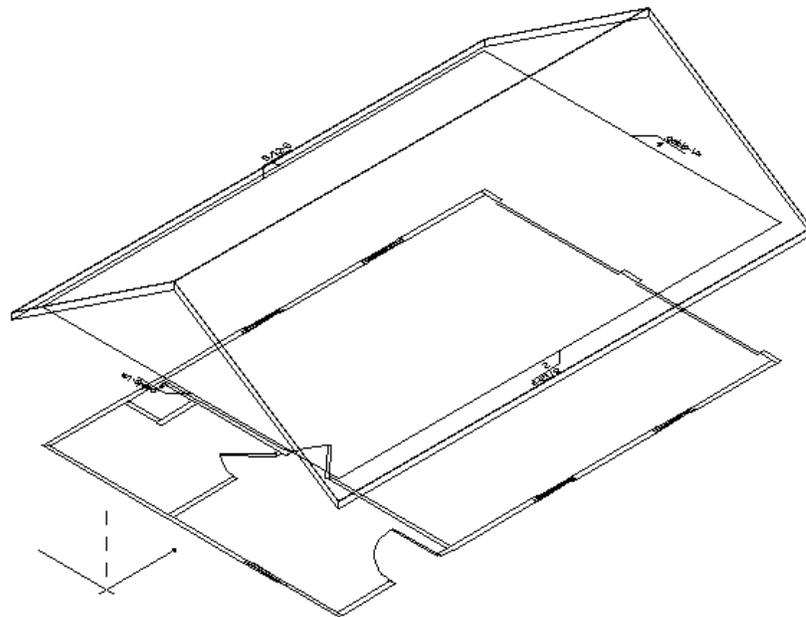
Figure 9-6

9. Creating and Framing Roof Planes

The roof geometry is now complete and you are ready to frame the roof.

Select: The **Plan View** icon on the **View Control Bar** to return the display to plan view.

SAVE THE DATABASE.

Quick Roof

In the first part of this chapter we manually outlined the roof and assigned Eave Markers, then generated the roof planes to create the roof. We wanted to show you how to use these features of the **Roofs** Application. There is however another easier way to create this roof using the **Quick Roof** tool. **Quick Roof** is especially useful if all of the roof edges use the same Marker (all roof planes have the same parameters).

With **BuildersCAD** you can generate an alternate roof plane system for your floor plan. Each one resides on a different Level. We just created a roof on level A and now we will use the Quick Roof tool to create a roof on Level B.

Select: The **Roof Level** box on the **Status** menu to display the **Roof Level Creation / Manipulation** menu. This menu is shown in Figure 9-7.
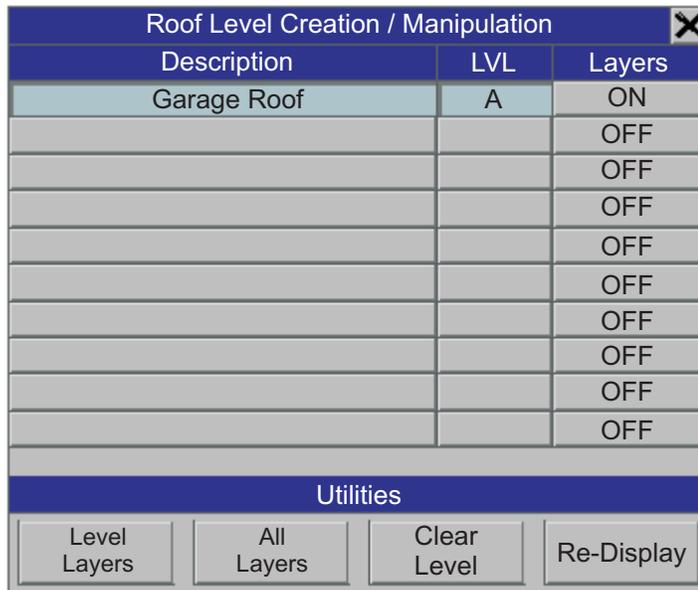
Roof Level Creation / Manipulation		
Description	LVL	Layers
Garage Roof	A	ON
		OFF
		OFF
		OFF
		OFF
		OFF
		OFF
		OFF
		OFF
		OFF
Utilities		
Level Layers	All Layers	Clear Level	Re-Display

Figure 9-7

Select: The box under **A** in the **LVL** column on the **Roof Level Creation / Manipulation** menu.

Prompt: **New level description?**

Enter: **Quick Roof <cr>**

Select: **Re-Display** at the bottom of the **Roof Level Creation / Manipulation** menu to clear the menu from the screen.

Select: The **Roof Geometry** button at the top of the **Roofs** Application menu if it is not highlighted already.

Select: The **Quick Roof** button on the **Roofs** Application sub-menu. This will display the **Quick Roof** pop-up menu as shown in Figure 9-8. Set the roof parameters as shown in Figure 9-8 and as listed below.

Quick Roof	
No. of Slopes	1
Pitch (Rise/12)	8/12
Pitch (Deg)	33.7
Method	Rafter
Seat Cut	3 1/2"
Heel Height	4 1/4"
Rafter Depth	5 1/2"
Overhang	1'-0"
Soffit Offset	6"
Elevation	8'-1 1/8"
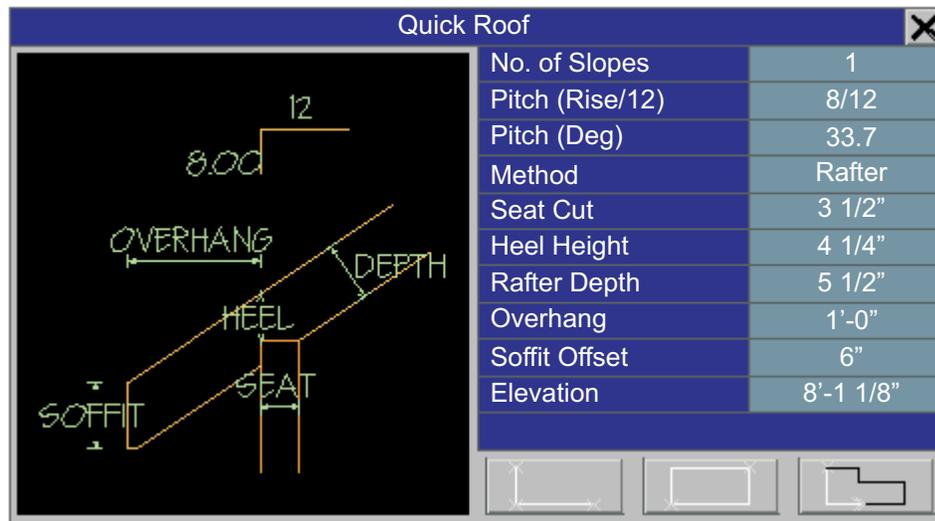
Figure 9-8

No. of Slopes should be set to **1**.

Pitch (Rise/12) should be set to **8/12**.

Pitch (Deg) will adjust automatically.

Method should be set to **Rafter**.

Seat Cut should be set to **3 1/2"**.

Heel Height will adjust automatically.

Rafter Depth should be set to **5 1/2"**.

Overhang should be set to **12" (1'-0")**.

Soffit Offset should be set to **6"**.

Elevation should remain at the default of **8'-1 1/8"**.

Select: The **Wall Trace** button at the bottom of the **Quick Roof** pop-up menu.

Prompt: **Clear current roof level? Yes No**

Select: **Yes** on the **Choice** menu above the prompt line.

BuildersCAD will outline the walls, assign the markers, and generate the roof planes.

The Wall Trace button told **BuildersCAD** to find the exterior load bearing walls and use them to define the roof outline. Also **BuildersCAD** will use them to set the elevation of the outline and if the walls are raked (Remember we raked the end walls when we entered them in Chapter 4) **BuildersCAD** will generate a gable on that wall.

9. Creating and Framing Roof Planes

This is a very quick and easy method to generate a roof plane system. Keep in mind that the **Wall Trace** only works if you want the walls to define the roof outline (no porch overhangs) and if you rake the walls where you want gables.

> Select: The **Roof Level** box on the **Status** menu to display the **Roof Level Creation / Manipulation** menu.

> Select: The box containing **A** under the **LVL** column on the **Roof Level Creation / Manipulation** menu.

> Select: The **Re-Display** box at the bottom of the **Roof Level Creation / Manipulation** menu to clear the menu from the screen.

SAVE THE DATABASE.

Framing the Roof

We will now generate the framing for the roof A we have created.

> Select: **Edges** under the **3D Boards** heading on the **Roofs** Application menu. This will display the **Edge Boards** Application sub-menu.

> Select: **Assign Markers** under the **Markers** heading on the **Edge Boards** Application sub-menu. This will display the **Roof-Board Specification** pop-up menu as shown in Figure 9-9 below.

Roof - Board Specification		Level	A	

Parameters / **Available Boards**

Parameters			Entry	Description
Text Size	.2		r.br06	2x6 Barge Rafter
Pen	3		r.cj06	2x6 Ceiling Joist
Color	5		r.cr06	2x6 Common Rafter
Piece Specification			r.cr08	2x8 Common Rafter
			r.ct04	2x4 Collar Tie
Overrides			r.ef06	1x6 Eave Fascia
Behavior	DEFAULT		r.gf06	1x6 Gable Fascia
End 1 CT B	DEFAULT		r.hd08	2x8 Header
End 2 CT B	DEFAULT			

Clear

Any Type	Fascia	Ridge	King	Hip	Valley	Rough Opening	Tier	Gable

Selected Boards

1								
2								
3								
4								

Edit Function				Execute	
Level	Plane	Area	Single	Erase	Place

Figure 9-9

The *Markers* you assign to the plane edges contain information ("framing rules") about the boards to generate on each plane edge (size of board, number of board[s], location of board relative to plane edge).

In the upper right corner of the pop-up menu you see a list of the **Available Boards** (all of the "framing rules" that determine board parameters) and below the list of boards you see a heading **Roof Edge Type for Selected Boards**. Below this heading is a row of the various types of roof plane edge types: **Any Type**, **Fascia**, **Ridge**, **King**, **Hip**, **Valley**, **Rough Opening**, **Tier** and **Gable**. Below each edge type is a blank column.

> Select: **Ridge** under the **Roof Edge Type for Selected Boards** heading on the **Roof-Board Specification** pop-up menu. The box will highlight.

> Select: The Down Arrow under the **Available Boards** list to scroll down the list until you see the **2x8 Ridge Board**.

> Select: **2x8 Ridge Board** from the **Available Boards** list.

> Select: **Fascia** under the **Roof Edge Type for Selected Boards** heading on the **Roof-Board Specification** pop-up menu. The box will highlight.

> Select: The Up Arrow under the **Available Boards** list to scroll up the list until you see the **1x6 Eave Fascia**.

> Select: **1x6 Eave Fascia** from the **Available Boards** list.

> Select: **Gable** under the **Roof Edge Type for Selected Boards** heading on the **Roof-Board Specification** pop-up menu. The box will highlight.

> Select: **1x6 Gable Fascia** from the **Available Boards** list.

> Select: **Level** under the **Edit Function** heading on the **Roof-Board Specification** pop-up menu.

> Select: **Place** under the **Execute** heading on the **Roof-Board Specification** pop-up menu. The edges of the roof will highlight.

> Prompt: **Add/Change roof line markers? DEF: yes no**

> Select: **yes** on the **Choice** menu above the prompt line.

A *Marker* will be assigned to the Ridge, Eave Fascias, and Gable Fascias as shown in Figure 9-10.
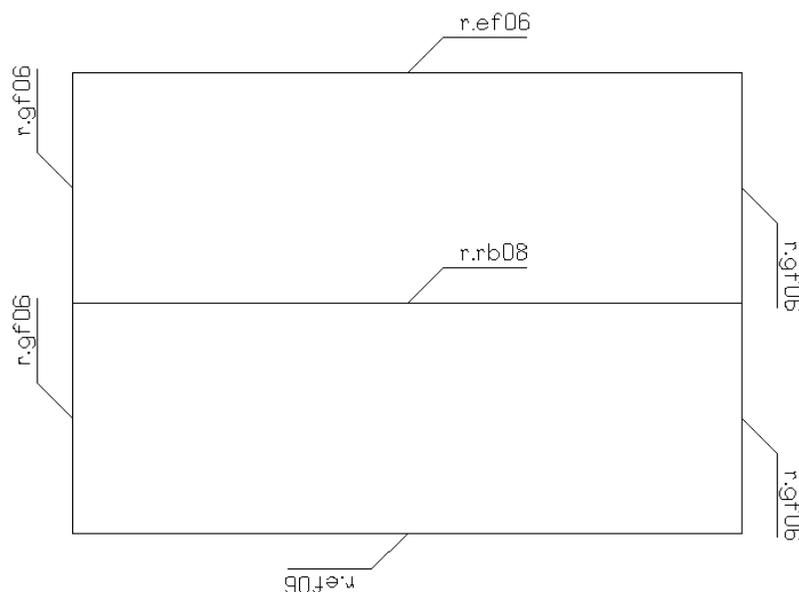
Figure 9-10

9. Creating and Framing Roof Planes

Select: **Generate Edge Boards** under the **Boards** heading near the bottom of the **Edge Boards** Application sub-menu to create the edge boards.

Prompt: **Generate edge joists? Level Roof Single Cancel**

Select: **Level** on the **Choice** menu above the prompt line. **BuildersCAD** will generate the 2D edge boards.

SAVE THE DATABASE.

To complete the roof framing:

Select: **Surf's** under the **3D Boards** heading on the **Roofs** Application menu. This will display the **Surfaces** Application sub-menu.

Select: **Assign Markers** on the **Surfaces** Application sub-menu. This will display the **Roof Surface Marker Specification** pop-up menu as shown in Figure 9-11 below.

Roof Surface Marker Specification		Level	A
Name	2x6 - 16	**Marker Specifications**	
Desc	2x6 RAFTERS 16" OC	Entry	Description
Joist to use	r.cr06	2x4-OUTLK	2x4 OUTLOOKER
Spacing	1'-4"	2x6-16	2x6 RAFTERS 16"OC
Joist Offset	AUTO	2x6-16CJ	2x6 CEILING JOISTS 16"O
Boards Offset	0	2x6-24	2x6 RAFTERS 24"OC
Sheathing Spec	r.rd12	2x8-12	2x8 RAFTERS 12"OC
Text Size	0.8	2x8-16	2x8 RAFTERS 16"OC
Color	13	2x8-24	2x8 RAFTERS 24"OC
Pen	4	CT-16	COLLAR TIE 16"OC
Operational Commands				**Place**	
New	Save	Clear	Remove	Place	Place

Figure 9-11

Select: **2x6-16** under the **Surface Marker Specifications** heading on the **Roof Surface Marker Specification** pop-up menu.

Select: **Single** under the **Place** heading on the **Roof Surface Marker Specification** pop-up menu.

Prompt: **Position for surface marker F10 exit:**

Pick: A point in the middle of each roof plane using the F1 / left mouse button. *Markers* will appear and your roof will look like Figure 9-12.

Pick: Any point using the F10 / middle mouse button to exit the Marker placement command.
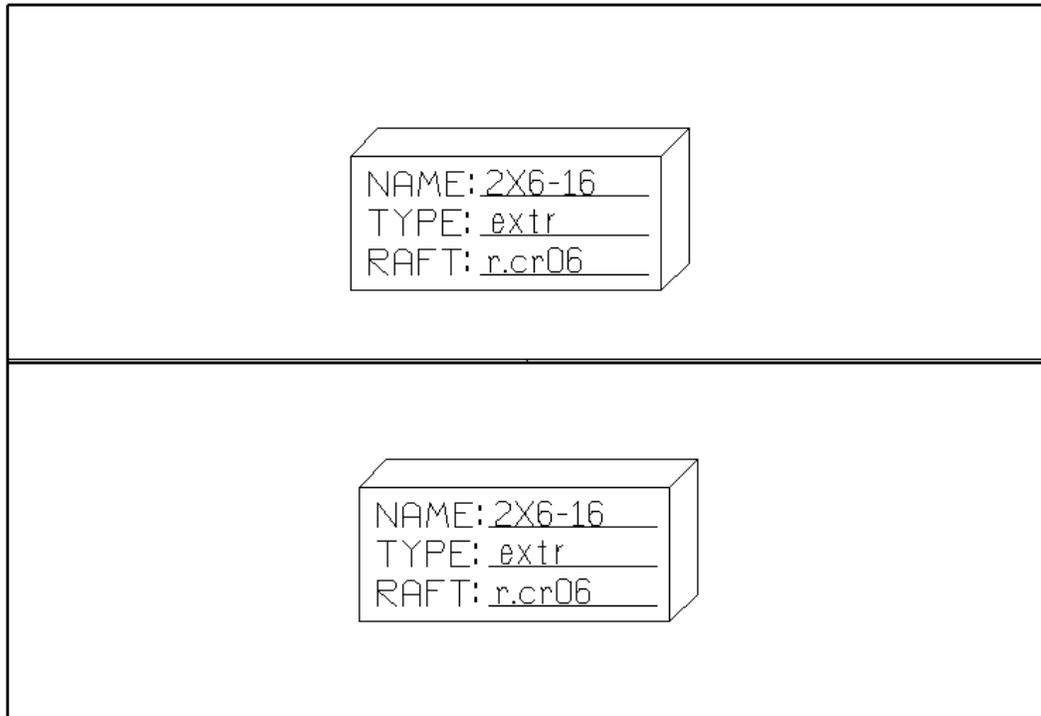
Figure 9-12

Select: **Generate Rafters** under the **Boards** heading on the **Surfaces** Application sub-menu to create the rafters.

Prompt: **Surface to fill? LEVEL MODULE SINGLE AREA CANCEL**

Select: **Area** on the **Choice** menu above the prompt line.

Prompt: **Select the desired surface marker F10 to exit:**

Pick: The *Surface Marker* inside the roof plane on the lower half of the display window.

Prompt: **Point within boundary to begin (F10) exit:**

Pick: The lower left outside corner of the edge boards with the F11 / right mouse button.

Prompt: **Beginning offset in inches? DEF: 0 3 6 OTHER**

Enter: **12.75" <cr>**

Prompt: **Point within boundary to end (F10) exit:**

Pick: The lower right outside corner of the edge boards using the F11 / right mouse button.

Prompt: **Ending offset in inches? DEF: 0 3 6 OTHER**

Enter: **12.75" <cr>**

The **BuildersCAD** Framer will generate rafters as shown in Figure 9-13.

# 9. Creating and Framing Roof Planes
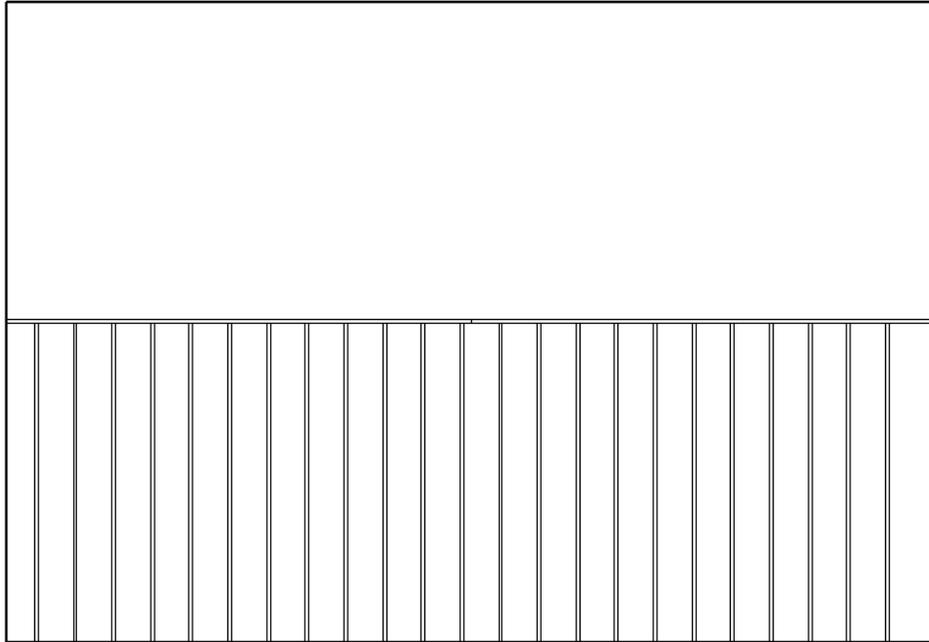
Figure 9-13

Follow the same procedure starting by selecting **Generate Rafters** under the **Boards** heading on the **Surfaces** Application sub-menu, and generate the rafters for the roof plane in the upper half of the screen. Rafters should appear as in Figure 9-14
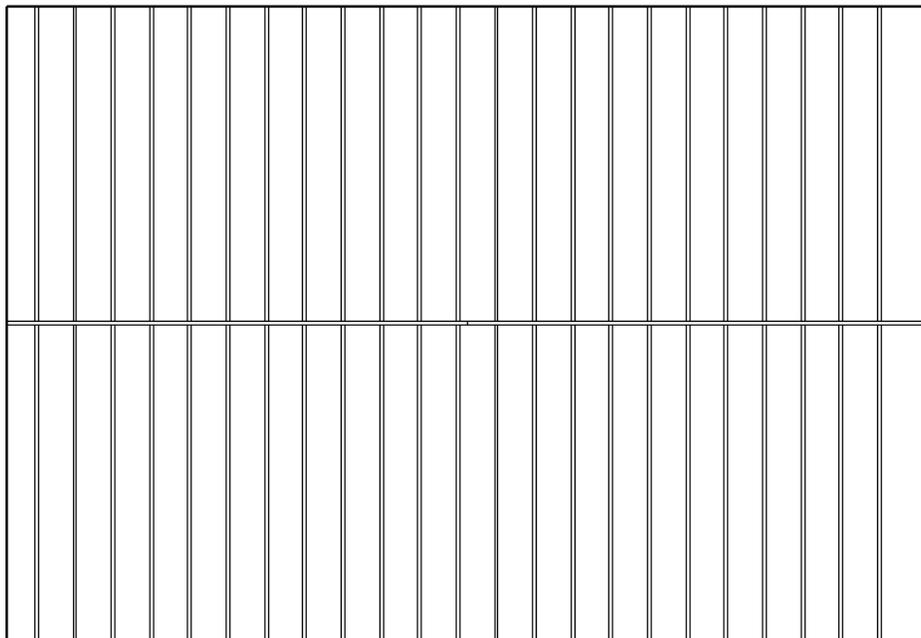
Figure 9-14

SAVE THE DATABASE.

We will now generate the roof decking.

> Select: **Generate Sheathing** under the **Sheathing** heading on the **Surfaces** Application sub-menu.
>
> Prompt: **Surface fill method? EDGE LOCATION SINGLE ROOF LEVEL CANCEL**
>
> Select: **Edge Location** on the **Choice** menu above the prompt line.
>
> Prompt: **Select desired surface marker F10 exit:**
>
> Pick: The surface marker of one of the roof planes using the F1 / left mouse button.
>
> Prompt: **Board to locate edge (F10 to Cancel):**
>
> Pick: The third board from the left edge.

BuildersCAD will generate the 4x8 roof decking to cover the roof plane. Repeat the steps to generate the sheathing in a similar way on the other roof plane. When finished, your roof should look like Figure 9-15.
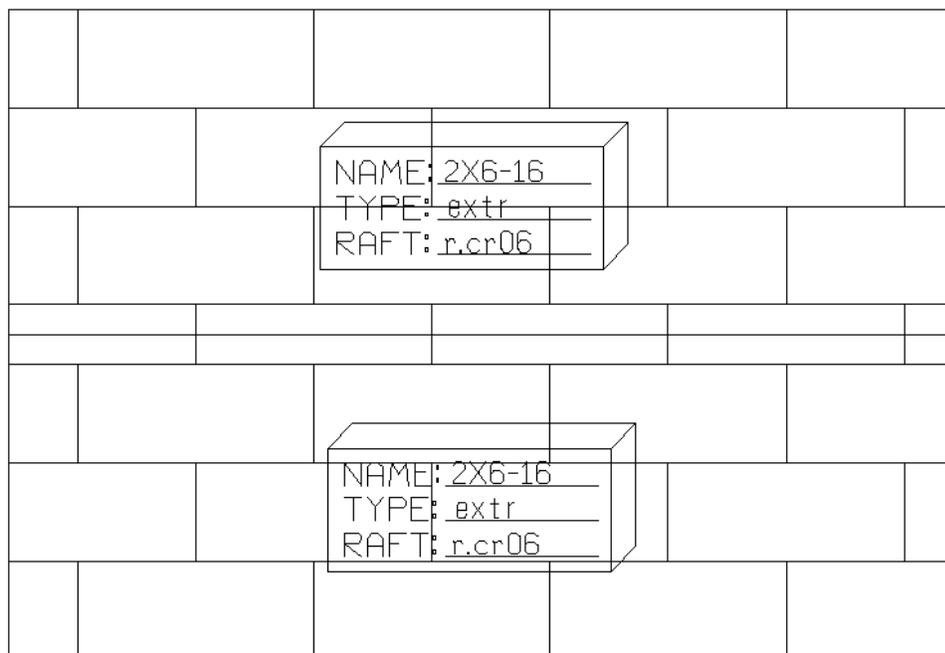
Figure 9-15

SAVE THE DATABASE.

The Roof Framing Plan

We will now create a *Roof Framing Plan*.

> Select: **2D Board Layout** on the **Roofs** Application menu. This will display the **Layout 2D Framing** Application sub-menu.
>
> Select: **Extract Dashed Walls** near the bottom of the **Layout 2D Framing** Application sub-menu. **BuildersCAD** will display the **Create Dashed Walls** pop-up menu as shown in Figure 9-16.

---

9. Creating and Framing Roof Planes

Create Dashed Walls		Level	A ✕
Color	1	Search	ALL
Pen	1	Level	A
Create			
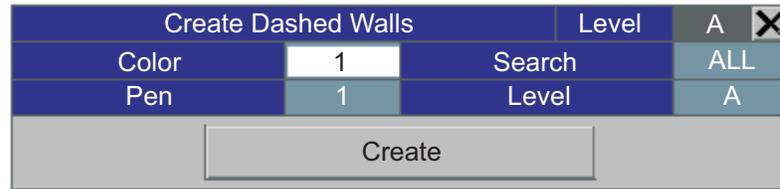
Figure 9-16

Select: **Create** on the **Create Dashed Walls** pop-up menu.

Select: **Layer** on the **Desktop** menu at the top of the screen. This will display the **Layer** pop-up menu.

Turn *on* layers **1407** edge joists 2D (rf_raej), **1408** roof joists 2D (rf_rarj), and **1414** 2D dashed walls (rf_radw) for Edit, Search, and Display. All other layers should be turned *off*.

Select: **Exit & Display** at the bottom of the **Layer** menu to clear the menu and redisplay the screen.

The 2D dashed walls with the roof boards displayed should look like Figure 9-17.
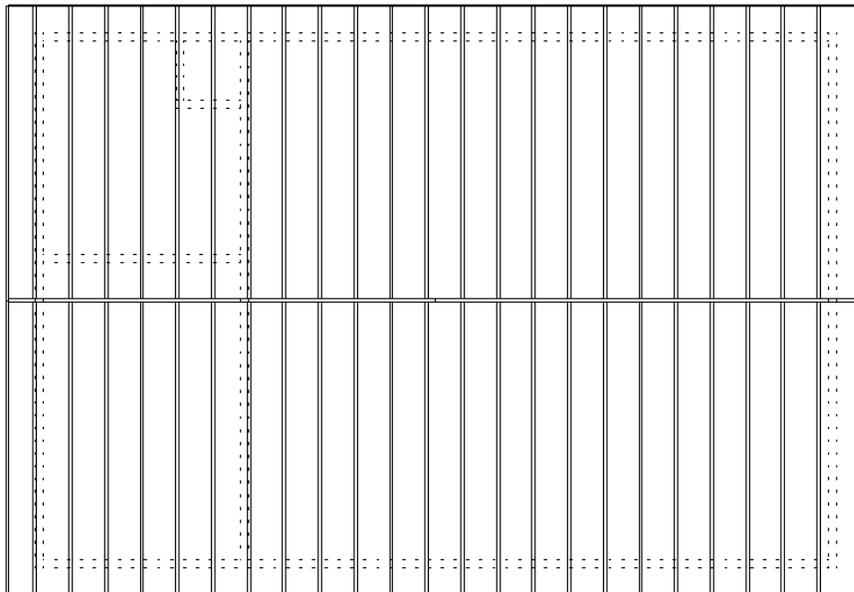
Figure 9-17

Now we will generate piece marks and a cut list for the roof boards.

Select: **Reports** under the **3D Boards** heading on the **Roofs** Application menu. This will display the **Reports** Application sub-menu.

Select: **Label Boards** under the **Labeling** heading on the **Reports** Application sub-menu. This will display the **Board Label Setup** pop-up menu as shown in Figure 9-18.

Board Label Setup				✖
Place Board Labels	YES	Label Planes		YES
Place Member List	YES	Pen		1
Print Member List	NO	Text Size		.09
Save Member List	NO	Color		11
		Floor Level		A
Create Board Labels				

Figure 9-18

Toggle or set the following:

Place Board Labels should be set to **YES**.

Place Member List should be set to **YES**.

Print Member List should be set to **NO**.

Save Member List should be set to **NO**.

Label Planes should be set to **YES**.

Pen should be set to **1**.

Text Size should be set to **.09**.

Color should be set to **11**.

Floor Level should be set to **A**.

After completing the setup of parameters on the **Board Label Setup** pop-up menu:

Select: **Create Board Labels** on the **Board Label Setup** pop-up menu.

The **BuildersCAD** Framer will label each of the boards, label the plane, and generate a *Member List* (each board label listed with an exact cut length). When the Framer labels the boards and generates the cut list it turns off all layers except the 2D roof boards. After the boards are labeled, **BuildersCAD** will prompt:

Prompt: **Place member list (F10 to exit):**

Pick: A point to place the list, to the right of the framed floor with the F1 / left mouse button.

Tip: You might want to use the Zoom Out feature so you will be able to see the Member List.

Select: The **Layer** button on the **Desktop** menu at the top of the screen to display the **Layer** pop-up menu.

On the left side of the **Layer** pop-up menu, scroll down until you see layer number **1414** (the layer name is rf**_radw**). Turn this layer on for edit, search, and display by selecting the **E**.

Select: **Exit and Display** at the bottom of the **Layer** menu. The result should be a labeled plan similar to Figure 9-19 on the next page.

SAVE THE DATABASE.

9. Creating and Framing Roof Planes
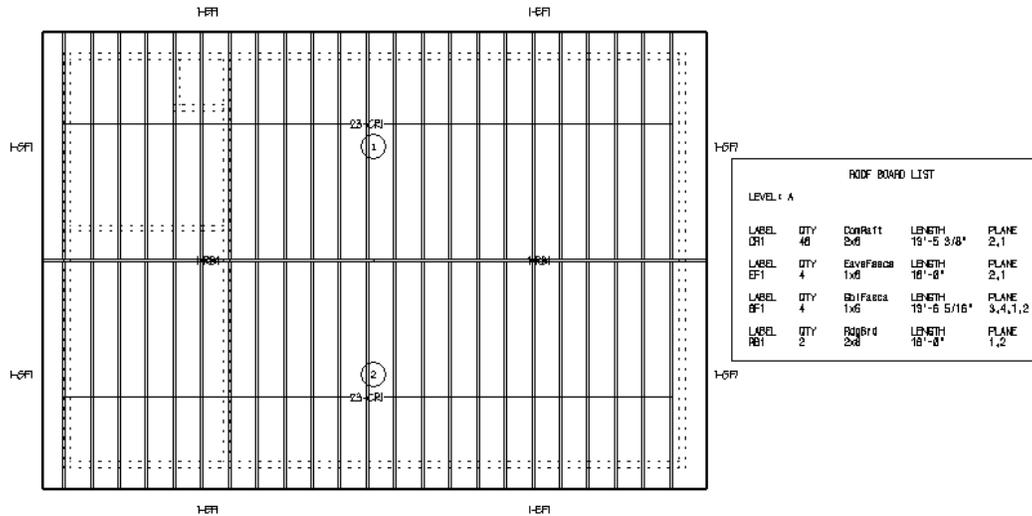
Figure 9-19

To complete the *Roof Framing Plan*, we will add a few dimensions and a title.

Select: **Drawing Tools** on the **Roofs** Application menu to display the **Drawing Tools** pop-up menu.

Select: The **Dimension** icon at the bottom of the **Drawing Tools** pop-up menu to display the **Dimension** Application sub-menu and **Status** menu.

Use the **Dimensions** tools to add dimensions to the *Roof Framing Plan*. Also use the **Text** feature from the **Drawing Tools** pop-up menu to add the title *ROOF FRAMING PLAN* to the plan as shown in Figure 9-20. If you don't remember how to use the **Dimension** and **Text** tools, refer to Chapter 5, **Wall Dimensions and Text**.
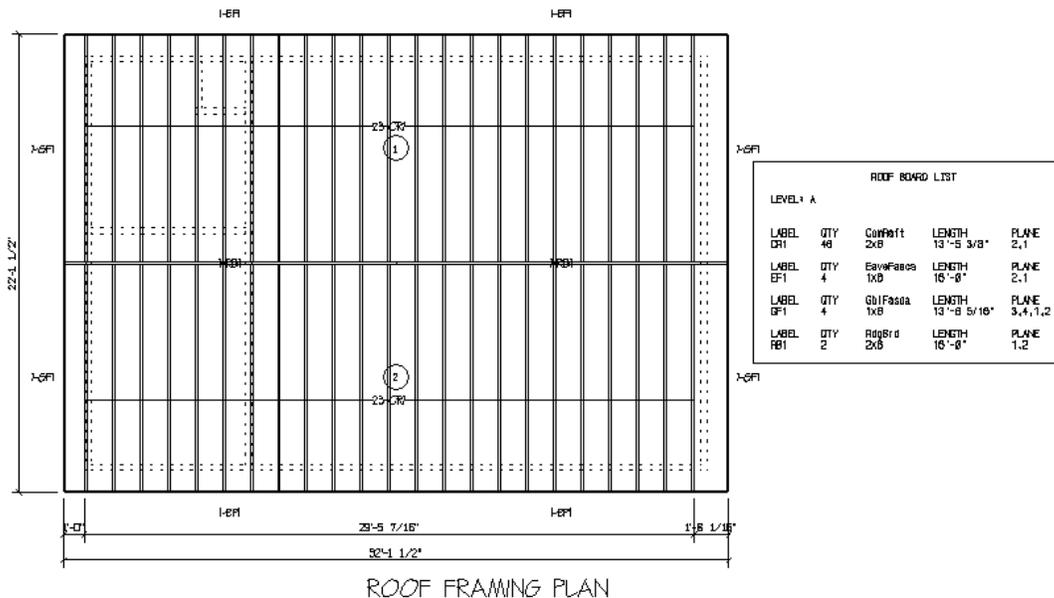
Figure 9-20

SAVE THE DATABASE.

10. Creating Elevations

Introduction

BuildersCAD utilizes the walls (with openings) you have entered and the roof you have created when an *Elevation* is generated. The first step in creating an Elevation is to let **BuildersCAD** generate the "construction lines". Then you use crosshatch patterns (that look like shingles or siding), notes, and dimensions to detail out the Elevation drawing.

Create the Front Elevation

To create a Front Elevation of the tutorial building:

Select: **Elevations** on the **BuildersCAD** Main Application menu. This will display the **Elevations** Application menu, the Elevation **Setup** Application sub-menu, and the Elevation **Status** menu.

Select: **Front** on the **Elevations** Application menu. This will display the **Elevation** Application sub-menu.

Select: **Level Select** on the **Elevation** Application sub-menu. This will display the **Elevation Creation** pop-up menu as shown in Figure 10-1 below.

Features	Builders CAD Levels										
Wall Surfaces	All	A	B	C	D	E	F	G	H	I	J
Wall Openings	All	A	B	C	D	E	F	G	H	I	J
Roof Surfaces	All	A	B	C	D	E	F	G	H	I	J
Roof Framing	All	A	B	C	D	E	F	G	H	I	J
Floor Framing	All	A	B	C	D	E	F	G	H	I	J
Stairs	All	A	B	C	D	E	F	G	H	I	J
Railing	All	A	B	C	D	E	F	G	H	I	J

All Levels: ON   OFF   Substitute Opening Library   Create Elevation
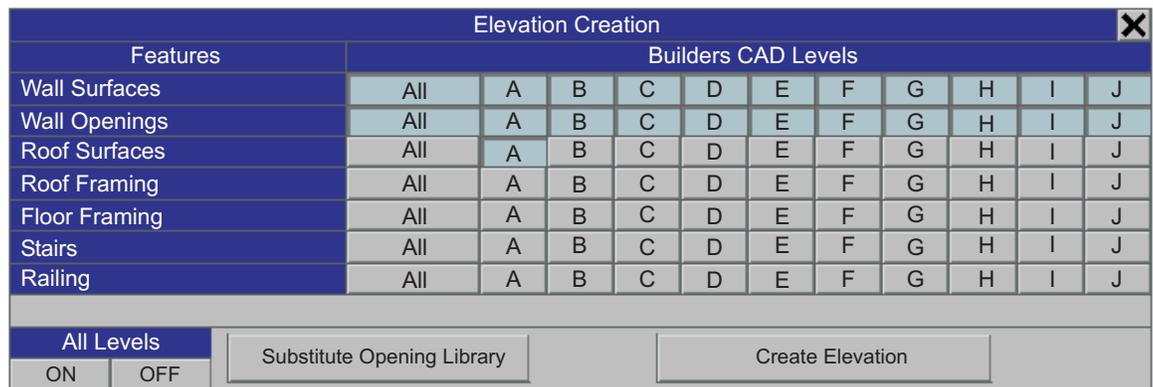
Figure 10-1

On the **Elevation Creation** pop-up menu, be sure the boxes for Level **A** next to the **Wall Surface** and **Wall Opening** features are highlighted. The box for **All** (Levels) as well as the box for each individual Level A-J may be highlighted as shown in Figure 10-1.

The box for Level **A** *only* should be highlighted for the Roof Surfaces feature as shown in Figure 10-1 above. The settings for the individual Levels or **All** for the various features may be toggled on and off by selecting the box on the grid for the **Feature** and **Level** desired.

Select: **Create Elevation** at the bottom of the **Elevation Creation** menu.

The walls will appear on the display window, then the wall display will change to an isometric view of the 2D walls. The exterior surface of the walls will extrude in 3D. When the program finishes this step you will be looking at a *front* view of the "wire frame" model with door and window symbols.

Prompt: **Option? Create FRONT Elevation   Create ALL Elevations   Add Additional Surface Layer**

10. Creating Elevations

Select: **Create FRONT Elevation** on the **Choice** menu above the prompt line.

The system will create the *Front Elevation*. When finished, the *Front Elevation* construction lines will be as shown in Figure 10-2.
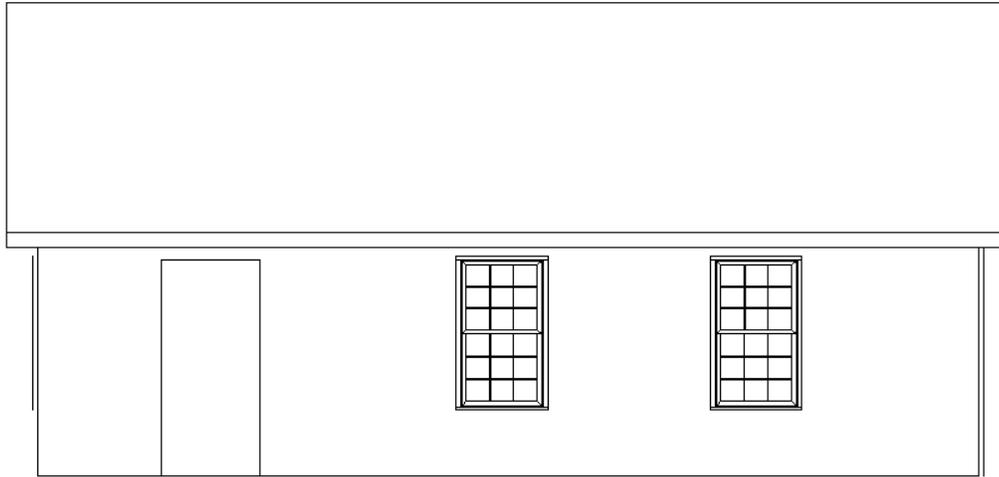
Figure 10-2

To add the opening (door) symbol,

Select: **Doors** under the **Custom Tools** heading of the **Elevations** Application menu to display the **Door / Window** Application sub-menu.

Select: The **Select** button on the **Doors / Windows** Application sub-menu. This will display the **Repeated Item Select** pop-up menu as shown in Figure 10-3 below.

Select: The door symbol you wish to use. We are going to use the symbol **ie_d11**.
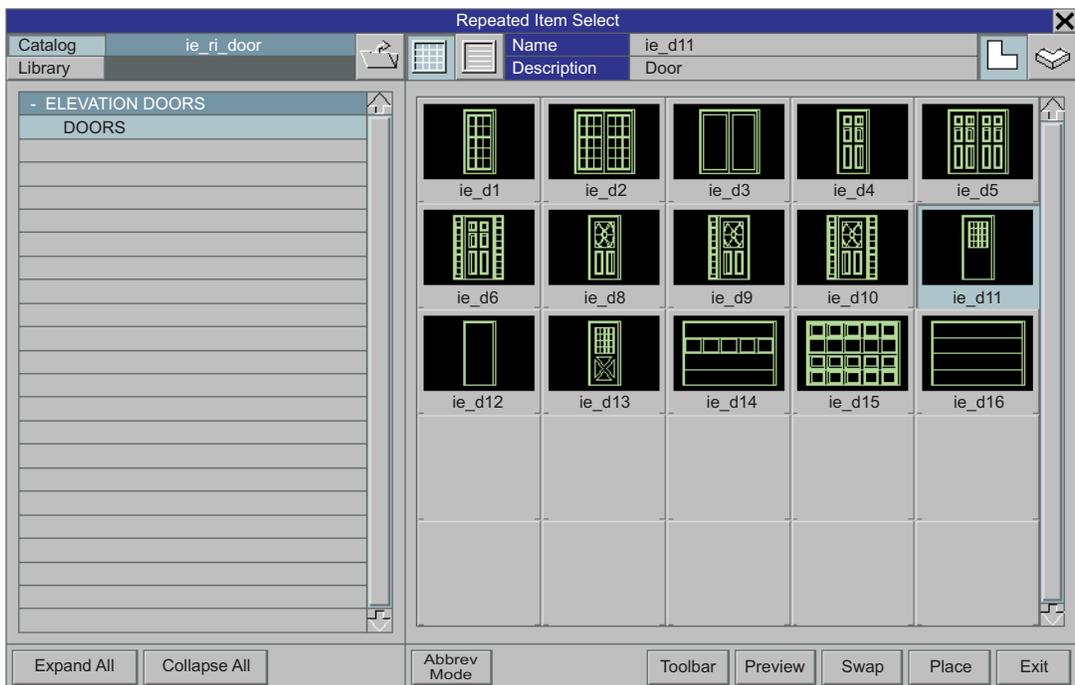
Figure 10-3

Select: The **Place** button at the bottom right of the **Repeated Item Select** pop-up menu.

Prompt: **Lower left corner (F10 Cancel):**

Pick: The *lower left* corner of the door opening on the elevation using the F11 / right mouse button.

Prompt: **Upper right corner (F10 Cancel):**

Pick: The *upper right* corner of the door opening on the elevation using the F11 / right mouse button. The door symbol will be added as shown in Figure 10-4.
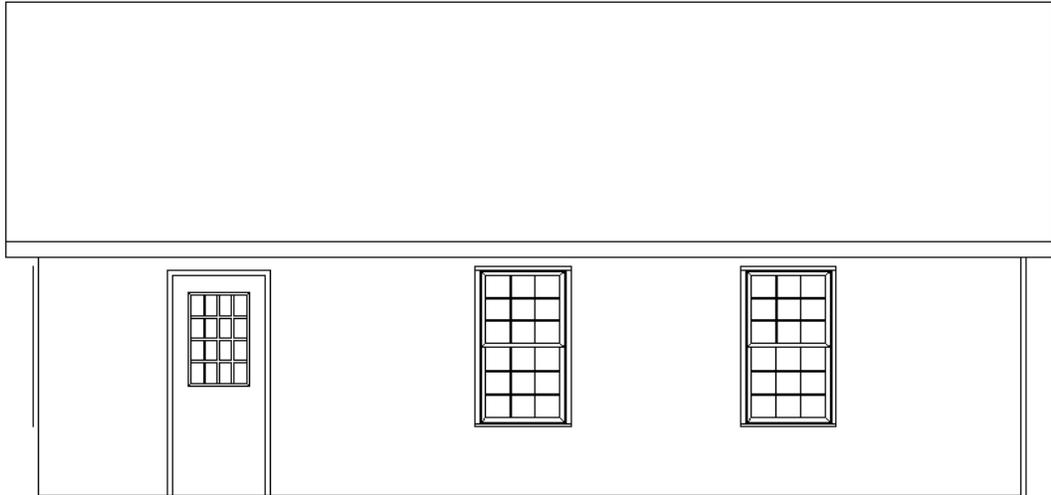
Figure 10-4

Select: The F10 key or the **Stop** sign button on the **User Tool Bar** to terminate the RI placement routine.

We will use *Drawing Tools* to add "siding trim" such as corner boards.

Select: **Drawing Tools** at the bottom of the **Elevations** Application menu to display the **Drawing Tools Elevation** pop-up menu.

Select: The **Lines** icon in the upper left corner under the **Draw** heading on the **Drawing Tools Elevation** to display the **Lines** Application sub-menu.

Select: The **Lines / Curves Tools** icon in the bottom left corner of the **Lines** Application sub-menu to display the **Lines / Curves Tools** pop-up menu.

Select: The **Offset Line / Curves** icon on the **Lines / Curves Tools** pop-up menu. This tool will create a parallel line a specific distance (or *offset*) from a selected line.

Prompt: **Offset Distance: cur: 1'-0" EXIT**

Enter: **4" <cr>**

Prompt: **Point on correct side of line/wall/curve (F10: restart):**

Pick: The "wall line" on the left side of the elevation using the F1 / left mouse button. Be sure to pick with the cursor slightly to the right (inside) side of this line as shown by Point 1 in Figure 10-5.

10. Creating Elevations
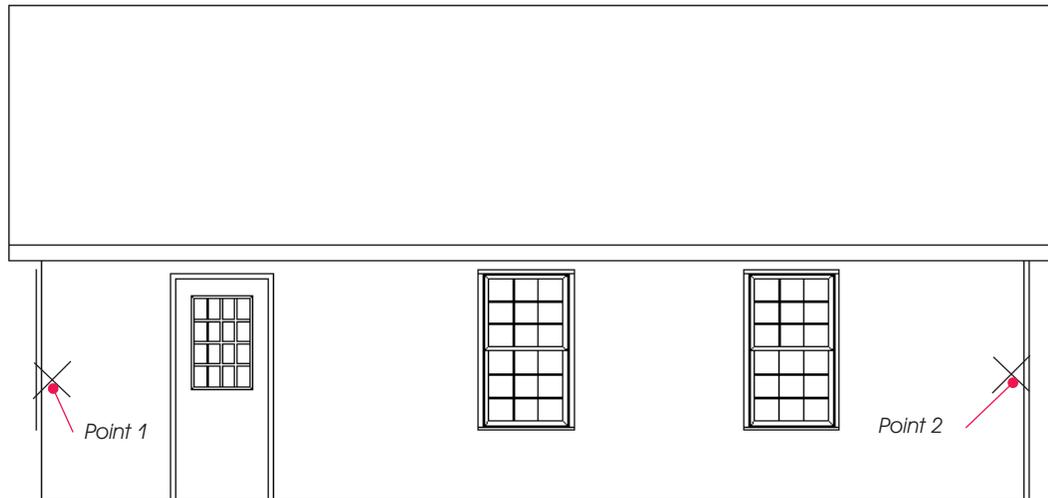
Figure 10-5

Prompt: **Point on correct side of line/wall/curve (F10: restart):**

Pick: The "wall line" on the right side of the elevation using the F1 / left mouse button. Be sure to pick with the cursor slightly to the left (inside) side of this line as shown by Point 2 in Figure 10-5.

We have now added "corner boards" to the Front Elevation.

You may have noticed a vertical line just to the left and right of both ends of the building. These are lines created by an end view of the 2D opening symbols of the openings on each end of the building. To erase these lines:

Select: The **Edit** icon on the **Desktop** menu at the top of the screen. This will display the **Edit** pop-up menu.

The **Entity Filter** should be set to **LINES** (The "L" icon to the left of the Circle icon).

The **Search Method** should be set to **Area In**.

Select: The **Erase** icon (The icon with the red X) under the **Edit Actions** heading on the **Edit** pop-up menu as shown in Figure 10-6.

Prompt: **1st fence point for erase of lines (F10: options):**

To erase the lines, carefully window around the vertical lines outside the building at each end. If you inadvertently include other lines and they are erase, select the **Undo** button on the desktop menu at the top of the screen and try again.

Select Erase to erase lines in the drawing.
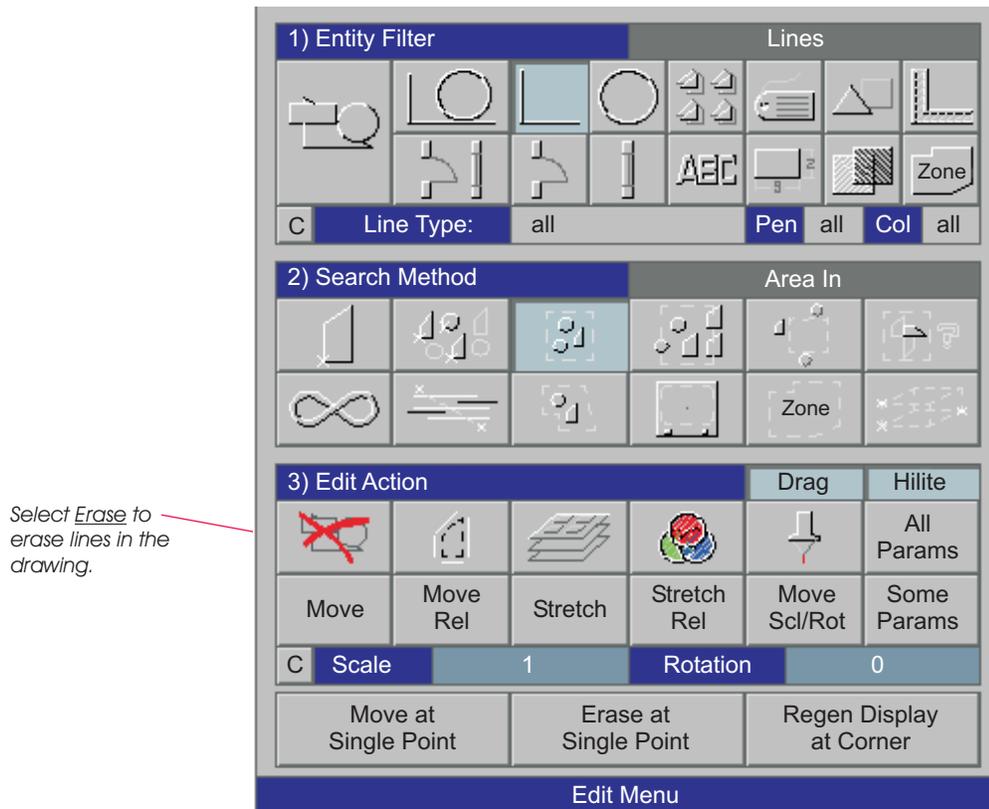
Figure 10-6

To add siding to the Front Elevation,

Select: **Surface** under the **Custom Tools** heading on the **Elevation** Application menu. This will display the **Surfaces - Siding Group 1** Application sub-menu.

Select: The **Siding** box on the **Surfaces - Siding Group 1** Application sub-menu.

Prompt: **Width? 4" 5" 7" 10" OTHER**

Select: **5"** on the **Choice** menu just above the prompt line.

Prompt: **Boundary method? Def: end box point to point end**

Select: **box** on the **Choice** menu just above the prompt line.

Prompt: **First box point:**

Pick: The lower left inside corner of the corner board on the left side of the elevation using the F11 / right mouse button (Point 1 in Figure 10-7).

Prompt: **Second box point:**

Pick: The upper right inside corner of the corner board on the right side of the elevation using the F11 / right mouse button (Point 2 in Figure 10-7).

Figure 10-7

Prompt: **Boundary method? Def: end box point to point end**

Do Not select **end**.

Select: **box** on the **Choice** menu just above the prompt line. You will now be defining areas within the area you just defined where you *Do Not* want the siding to go.

Prompt: **First box point**

Pick: The lower left corner of the door using the F11 / right mouse button as shown by Point 1 in Figure 10-8 below.

Prompt: **Second box point**

Pick: The upper right corner of the door using the F11 / right mouse button as shown by Point 2 in Figure 10-8 below.
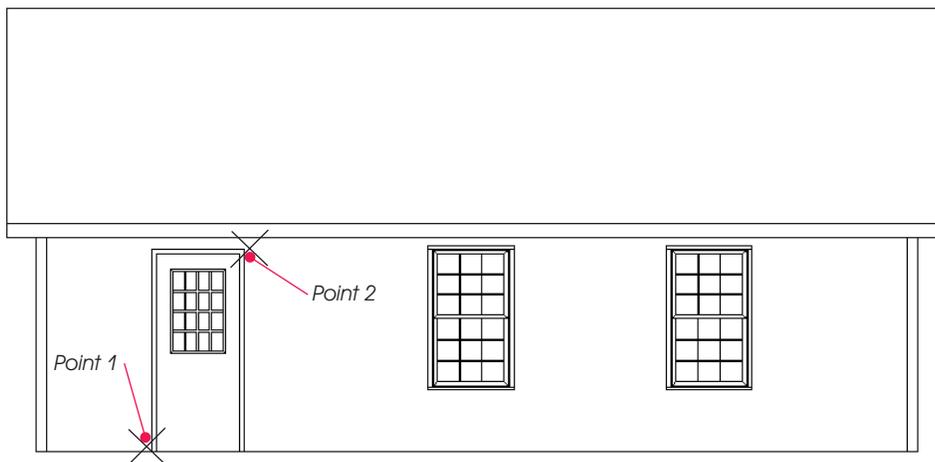
Figure 10-8

Follow the same procedure to box around the windows to exclude the windows from being covered with siding. After you have boxed around both windows:

> Prompt: **Boundary method? Def: end box point to point end**

> Select: **end** on the **Choice** menu just above the prompt line.

Siding (pattern) will fill the wall area excluding the door and windows. Your drawing should now look like Figure 10-9.
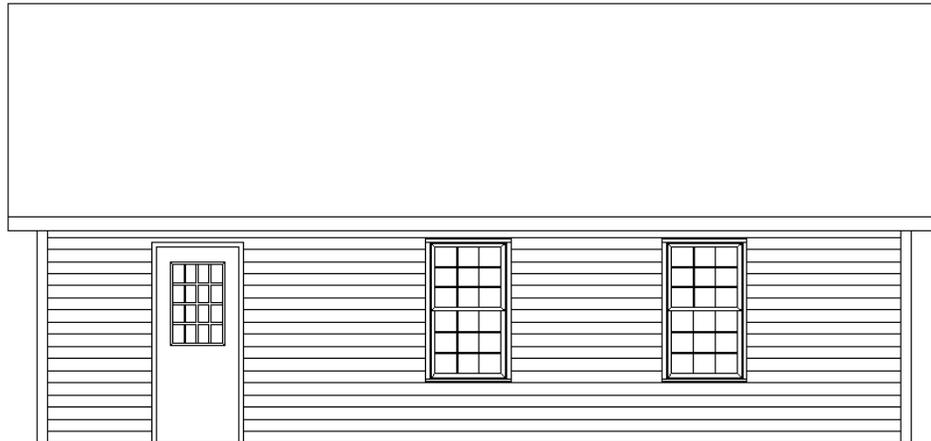
Figure 10-9

SAVE THE DATABASE.

To add shingles to the roof:

> Select: **Roof** on the **Surfaces - Siding Group 1** Application sub-menu to display the **Surfaces - Roof Surfaces** Application sub-menu.

> Select: **Shingle** under the **Roof Surfaces** heading on the **Surface - Roof Surfaces** Application sub-menu.

> Prompt: **Roof Slope? 3/12 4/12 5/12 6/12 7/12 8/12 OTHER**

> Select: **8/12** on the **Choice** menu just above the prompt line.

> Prompt: **Boundary method? Def: end box point to point end**

> Select: **box** on the **Choice** menu just above the prompt line.

> Prompt: **First box point:**

> Pick: The *lower left* corner of the roof surface (not the bottom of the fascia board) with the F11 / right mouse button.

> Prompt: **Second box point:**

> Pick: The *upper right* corner of the roof surface with the F11 / right mouse button.

10. Creating Elevations
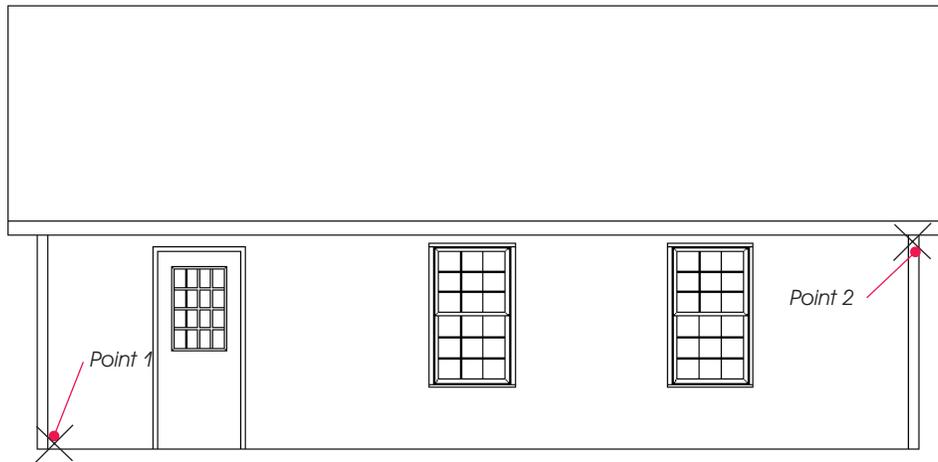
Prompt: **Boundary method? Def: end box point to point end**

Select: **end** on the **Choice** menu just above the prompt line.

A shingle pattern will fill the roof surface as shown in Figure 10-10.
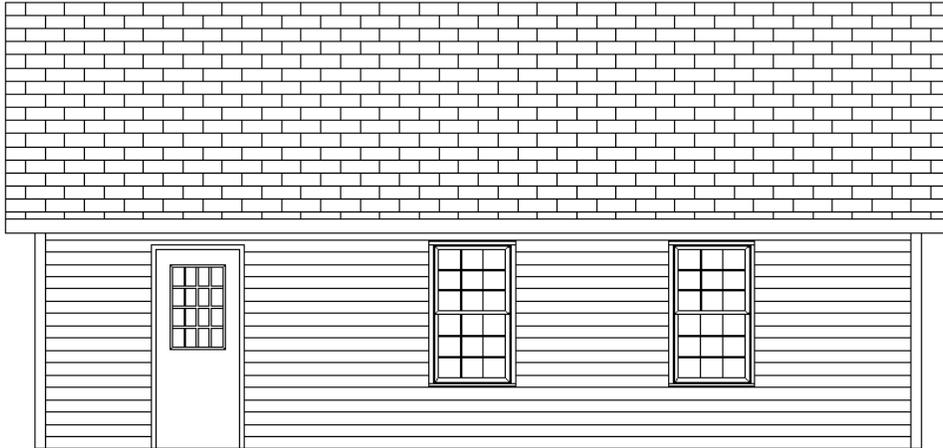
Figure 10-10

SAVE THE DATABASE.

We will now add a few notes to the elevation.

Select: **Drawing Tools** at the bottom of the **Elevations** Application menu to display the **Drawing Tools** pop-up menu.

Select: The **NOTE** icon under the **Notation** heading on the **Drawing Tools** pop-up menu to display the **Notes** Application sub-menu and **Status** menu.

Select: The **Select** icon on the **Notes** Application Sub-menu. The **Catalog Note Placement** pop-up menu will display.

Select: The BuildersCAD Tutorial Notes category on the left side of the **Catalog Note Placement** pop-up menu.

Select: The note "SHINGLES" on the right side of the **Catalog Note Placement** pop-up menu.

Select: The Place Note button at the bottom of the **Catalog Note Placement** pop-up menu. The menu will clear from the screen and the cursor will form boxes the size of the note.

Select: The 2 Segment button under the Left Leader heading on the **Status** menu at the bottom of the screen.

Pick: A point above the roof in the drawing using the F1 key. The selected note will be placed in this location. **BuildersCAD** will prompt for a bend point for the leader. Pick a point to the left of the note text. Next pick a point on the roof for the arrow point.

Repeat the above process to add the note "4" CORNER BOARDS".

Select: The **Text** icon under the **Notation** heading on the **Drawing Tools** pop-up menu to display the **Text** Application sub-menu and **Status** menu.

Select: The **Single Text** icon under the <u>Place</u> heading on the **Text** Application Sub-menu.

Select: **Size** on the **Status** menu.

Select: **.20** on the **Sizes (Paper Units)** pop-up menu.

Prompt: **Location for text (F10:exit):**

Pick: A point approximately in the middle and below the elevation with the F1 / left mouse button.

Enter: **FRONT ELEVATION <cr>**.

Select: The **Stop** sign icon on the **User Toolbar** to exit this routine.

The elevation should now look like Figure 10-11.

FRONT ELEVATION
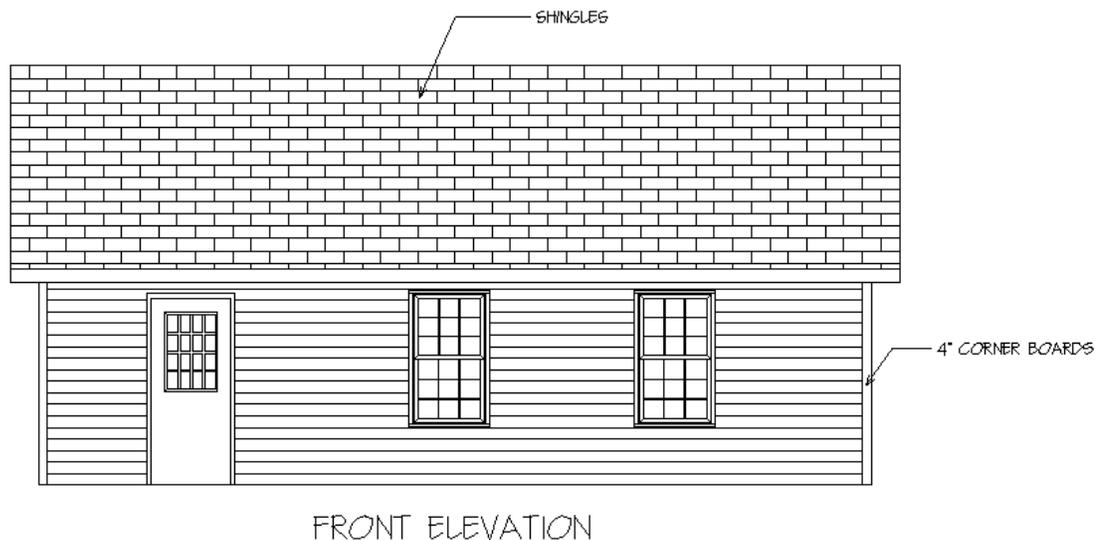
Figure 10-11

Select: **Drawing Tools** on the **Elevations** Application menu to display the **Drawing Tools** pop-up menu.

Select: The **Dimension** icon at the bottom of the **Drawing Tools** pop-up menu to display the **Dimension** Application sub-menu and **Status** menu.

Use the **Single Dimension** tool to add a dimension from the bottom of the wall to the bottom of the roof overhang. Your elevation drawing should look like Figure 10-12.

10. Creating Elevations
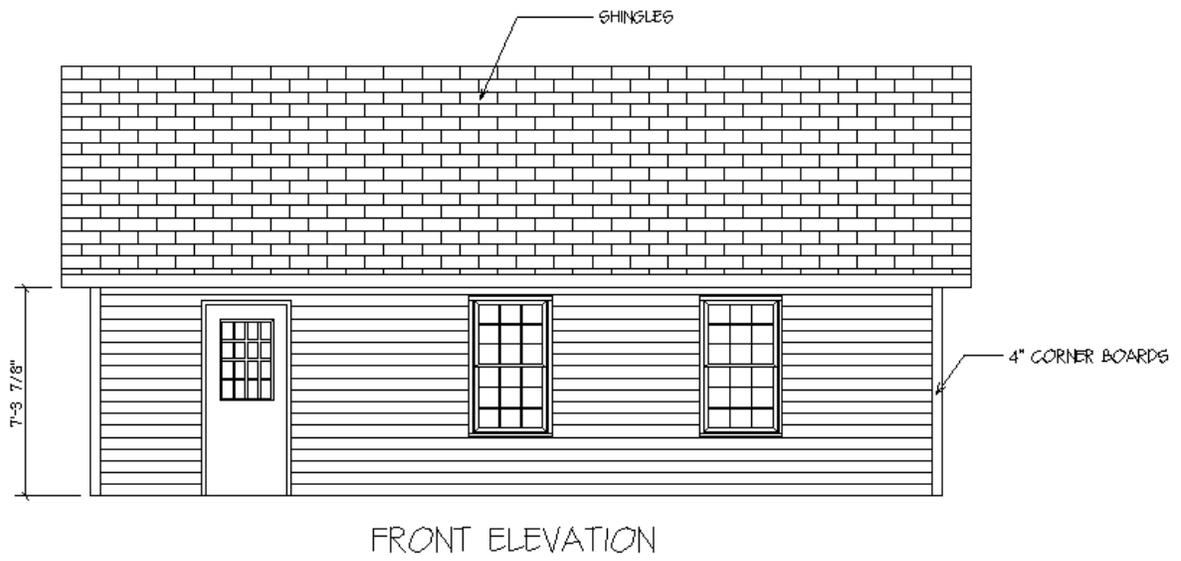
Figure 10-12

The Front Elevation is now complete.

SAVE THE DATABASE.

11. Materials Application

Introduction

Materials in a **BuildersCAD** *Material Report* may include *framing lumber* generated by the **BuildersCAD** Framer in the **Walls**, **Roofs**, or **Floors** Applications. It may include a list of stock items attached to a **BuildersCAD** **Part** (graphic symbols), i.e. when you place a bath tub you could cause the **Materials** Application to take off a bath tub, shower valve, and towel bar. Finally materials on a *Materials Report* may include material "applied" to the **BuildersCAD** database by the **Materials** Application.

In this Tutorial you will have material from all three sources. In this chapter we will first go through the process of running a *Pull List*, on the Walls, Floor, and Roof you have already framed. This is a list of the nominal lengths of lumber you need to frame the Tutorial structure.

Next you will "apply" materials to the walls, roof, floor, etc. using the default material setups.

Finally you will run a report that includes the *framing lumber*, the materials that you applied and materials linked to the *Parts* you placed earlier when creating the floor plan.

Running a Pull List

Select: **Materials** on the **BuildersCAD** Main Application menu. This will display the **Materials** Application menu.

Select: **Materials** under the **Reports** heading on the **Materials** Application menu to display the **Reports Materials** Application sub-menu as shown in Figure 11-1.

Select: **Pull List** on the **Reports Materials** Application sub-menu.

Prompt: **Destination? SCREEN EXTERNAL EDITOR DISK FILE PRINTER CANCEL**

Pick: **SCREEN** on the **Choice** menu just above the prompt line as the destination for the *Pull List* data.
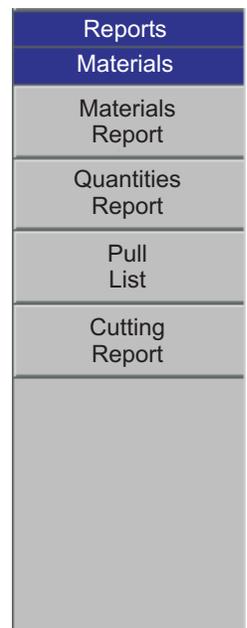
BuildersCAD will generate a *Pull List* and display the data in a pop-up menu as shown in Figure 11-2 on the next page. The **Slide Bar** to the right side of the menu as well as the **Half Page Down** and **Half Page Up** buttons will allow you to page through the data on the pop-up menu display. Select the **Exit** button to clear the pop-up menu from the screen.

Figure 11-1

Note: The *Pieces with no usage rules* was generated for the Header Shims for the garage doors because the **BuildersCAD** Framer could not cut 9 foot long header shims out of 8 foot long sheets of plywood. For more information, see the *Wall Framing* portion of the *Walls* topic and the *Materials* topic of the **BuildersCAD Encyclopedia**.

11. Materials Application

```
************************************************************************
*                        PULL LIST - WALLS LEVEL A                    *
*  RUN: 04/22/2002                                         PAGE: 1 *
*  REVISED: 05/27/94                                    JOB: tutorial *
*  RUN: 16:30:27                                   USER: C:\bcad\jlb\ *
************************************************************************


PART #      DESCR       SIZE          QTY USED  QTY/COST   COST/UNIT  COST
=========   ==========  =============  ========  ==========  =========  ========
065084      #2 SYP      2X6 8'            5/EA     0.0/MBF   0.00/MBF      0.00
065093      #2 SYP      2X8 8'            1/EA     0.0/MBF   0.00/MBF      0.00
065098      #3 SYP      2X10 10'          2/EA    20.0/LFT   0.00/LFT      0.00
065107      #3 SYP      2X12 10'          4/EA     0.1/MBF   0.00/MBF      0.00
069901      DRYWALL     01/2X48 8'       44/SHE   44.0/SHE   0.00/SHE      0.00
060078      PLYWOOD     01/2X48 8'        1/SHE    1.0/SHE   0.00/SHE      0.00
060080      SHEATHING   01/2X48 8'       31/SHE    1.0/SHE   0.00/SHE      0.00
065201      SPF         2X4 10'          30/MBF    0.2/EA    0.00/EA       0.00
065203      SPF         2X4 12'           2/EA     0.0/MBF   0.00/MBF      0.00
065221      SPF         2X4 14'          19/EA     0.2/MBF   0.00/MBF      0.00
065229      STUD GRD S  2X4 7' 8-5/8"    84/EA     0.4/MBF   0.00/MBF      0.00
065228      STUD GRD S  2X4 8'           36/EA     0.2/MBF   0.00/MBF      0.00
065222      STUD GRD S  2X4 10'           6/EA     0.0/MBF   0.00/MBF      0.00
065224      STUD GRD S  2X4 12'           3/EA     0.0/MBF   0.00/MBF      0.00
065225      STUD GRD S  2X4 14'          10/EA     0.1/MBF   0.00/MBF      0.00
065226      STUD GRD S  2X4 16'           4/EA     0.0/MBF   0.00/MBF      0.00
                                                                       --------
                                                                           0.00
```

Figure 11-2

How Materials Works

Every piece of material that **BuildersCAD** can include in a *Material Report* exists in a ***Stock File*** in the **Materials** Application. All of the *Estimating Formulas* used to generate a *Material Report* exist in an ***Estimating Formula File***. Every line in an *Estimating Formula* takes a *stock item* (from the *Stock File*) and calculates an application rate. **BuildersCAD** uses ***Templates*** to link *Estimating Formulas* (that are applying specific materials) to the **BuildersCAD** model (the database you just created).

For example if you look in the *Stock File* you will find a *stock item* called ***8" Hardboard Siding*** with a unique *stock item number*. In the *Estimating Formula File* is a formula called ***8" HB SIDING 7" REVEAL*** that calculates how many linear feet of siding are needed to cover a square foot of wall surface area. There is a *Template* called ***SURFACE 1st*** that you can use to "apply" this *Estimating Formula* to the **BuildersCAD** database. When you run a *Material Report* the **Material** Application calculates the total linear footage of siding needed for the building, based on the total square footage of exterior wall surface area.

Applying Materials

Select: **Quick Apply** near the top of the **Materials** Application menu to display the **Quick Application** pop-up menu as shown in Figure 11-3.

Quick Application			
Templates			
Wall			
Surface			
Corner			
Opening			
Roof			
Ceiling			
Floor			
Misc.			
Markers		Schedule	
Color	5	Color	6
Pen	1	Pen	1
Text Size	0.06	Text Size	0.15
Show Length	NO	Placement	AUTO
Create Markers and Schedules			
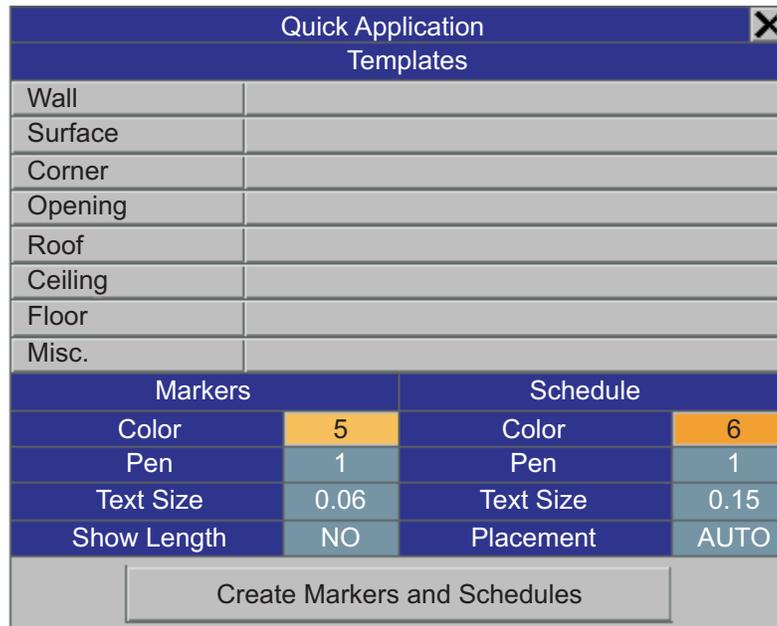
Figure 11-3

Select: **Surface** on the **Quick Application** pop-up menu.

Prompt: **Template to use? CUR: MENU NONE**

Select: **MENU** on the **Choice** menu above the prompt line to display the **Templates** pop-up menu.

Select: **SURFACE 1st** on the **Templates** pop-up menu. The **Quick Application** pop-up menu will return with **SURFACE 1st** filled in the box next to **Surface**.

Select: **Opening** on the **Quick Application** pop-up menu.

Prompt: **Template to use? CUR: MENU NONE**

Select: **MENU** on the **Choice** menu above the prompt line to display the **Templates** pop-up menu.

Select: **OPENINGS** on the **Templates** pop-up menu. The **Quick Application** pop-up menu will return with **OPENINGS** filled in the box next to **Opening**.

Select: **Roof** on the **Quick Application** pop-up menu.

Prompt: **Template to use? CUR: MENU NONE**

Select: **MENU** on the **Choice** menu above the prompt line to display the **Templates** pop-up menu.

Select: **ROOF/CORN** on the **Templates** pop-up menu. The **Quick Application** pop-up menu will return with **ROOF/CORN** filled in the box next to **Roof**.

11. Materials Application

Select: **Floor** on the **Quick Application** pop-up menu.

Prompt: **Template to use? CUR: MENU NONE**

Select: **MENU** on the **Choice** menu above the prompt line to display the **Templates** pop-up menu.

Select: **FLOOR 1st** on the **Templates** pop-up menu. The **Quick Application** pop-up menu will return with **FLOOR 1st** filled in the box next to **Floor**.

Select: **Create Markers and Schedules** on the **Quick Application** pop-up menu.

You will see *Markers* being applied to the wall surfaces (Figure 11-4), to the openings (Figure 11-5), to the roof you created (Figure 11-6), and to the floor (Figure 11-7). The *Markers* will only appear momentarily as the **Materials** Application applies the estimating formulas to the building. If you want to see the labels you can turn them on through the **Layer** menu.
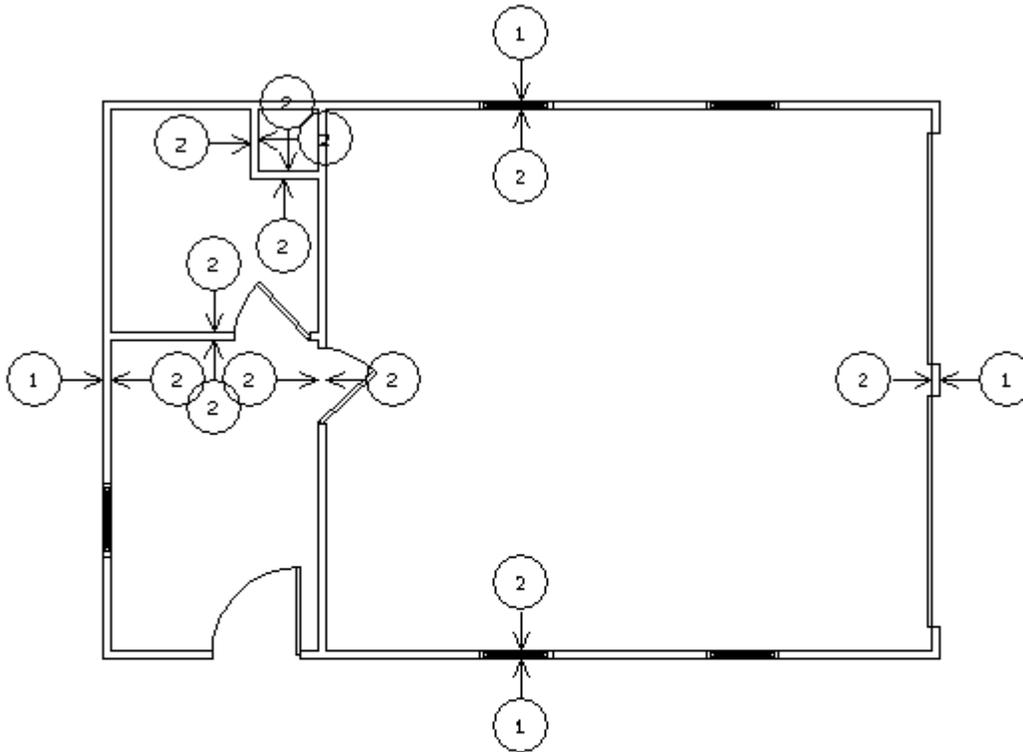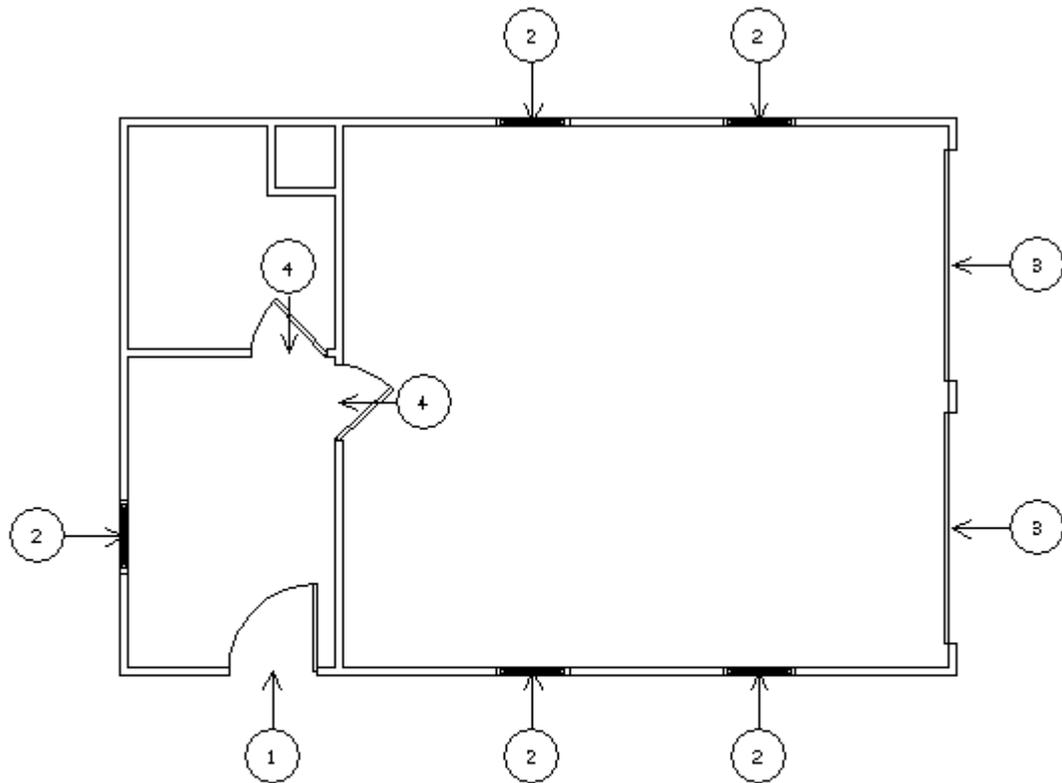
Figure 11-4

OPENING SCHEDULE	
1	3068 EXTERIOR DOOR RIGHT
2	2648 WOOD DH WINDOW
3	80 OH GARAGE DOOR
4	2868 INTER DOOR RIGHT

Figure 11-5
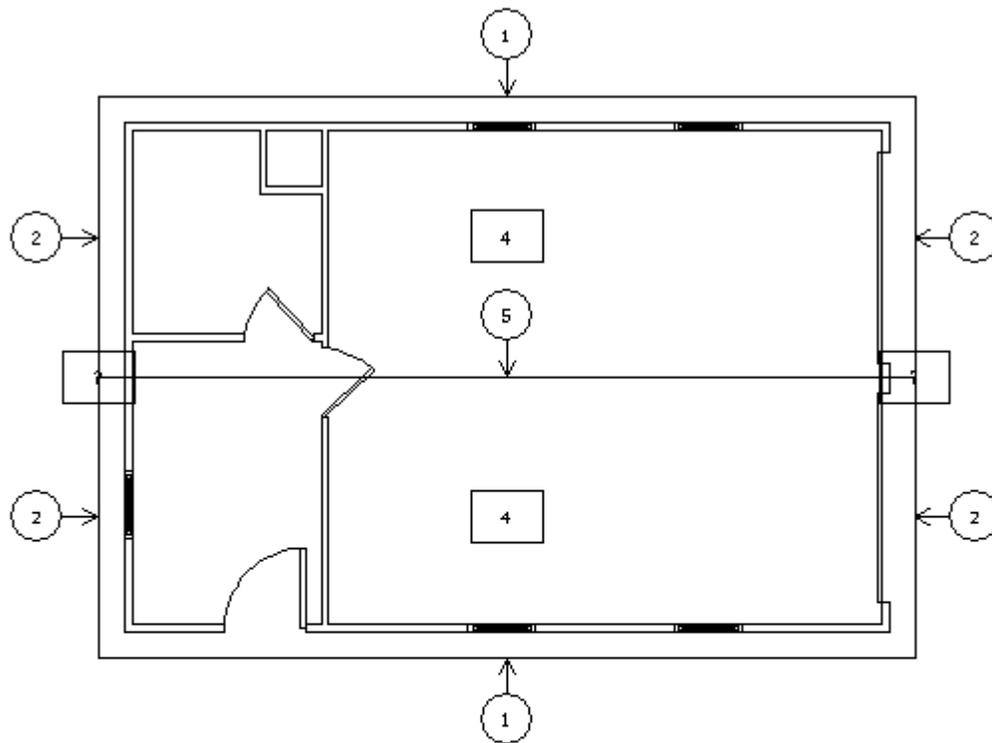
```
ROOF SCHEDULE
1 EVE CORN 6' FASCIA-12" OH
2 GABLE CORN 6" FASCIA-12' OH
3 HIP & RIDGE CAP
4 ROOF DECK, FELT, SHINGLES
5 HIP & RIDGE CAP
6 VALLEY FLASHING
```

Figure 11-6
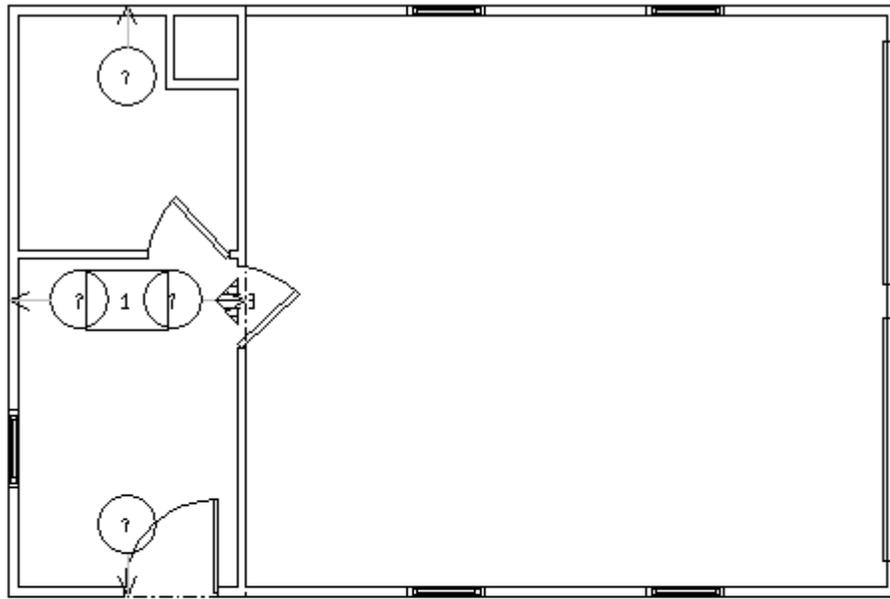
```
FLOOR1 SCHEDULE
1 | 3/4" WD SUBFLR(W/INSL 10")1ST
2 | 3/4" WD SUBFLR(N/INSL) 1ST
3 | 4" CONC SLAB
4 | CARPET
5 | CERAMIC TILE CUSTOM - L&M
6 | 2-1/4" STAINED WOOD FLOOR
7 | VINYL
8 | FRAMING LABOR 1ST
```

Figure 11-7

Run a Material Report

Now you have boards generated by the **BuildersCAD** Framer in the **Walls**, **Roofs**, and **Floors** Applications, materials attached to *Parts* already placed in the Floor Plan and Electrical Plan, and *materials applied* to the Tutorial database in the **Materials** Application.

To run a *Material Report*:

Select: **Materials** under the **Reports** heading on the **Materials** Application menu to display the **Reports Materials** Application sub-menu.

Select: **Materials Report** on the **Reports Materials** Application sub-menu. This will display the **Materials Report** pop-up menu and the **Template Names** pop-up menu.

11. Materials Application

Note: In this case the word *Template* refers to a *Material Report Style*. Templates here have no connection to Templates that link Estimating Formulas to the **BuildersCAD** model (database).

Select: **Purchase_Order** on the **Template Names** pop-up menu. **PURCHASE_ORDER** will appear as the **Report Template** in the **Materials Report** pop-up menu as shown in Figure 11-8.

Materials Report	✕

Report Template	PURCHASE_ORDER

Field Sort

1.	Package	
2.	Item Number	
3.	Item Description	
4.	QTY of Purchased Unit	
5.	Cost / Unit	
6.	Extension	
-	Category	
-	QTY of Costed Unit	
-	QTY of Used Unit	
-	Subcategory	
-	Subpackage	

Output Options

Sort	PACKAGE
Include Levels	ALL
Part Rounding	ROUNDED
Page Breaks	NONE
Display Subtotals	BOTH
Title Block	YES
Quantity Rounding	2
Include Boards	YES
Include Parts	YES
Include Stairs	

Include QTY Unit Fields

Costed Unit Field	N/A
Purchased Unit Field	N/A
Used Unit Field	N/A
User Defined Field	N/A
Insert After Field	N/A

Output

Destination	Screen
File Name	N/A
Field Delimiter	N/A

Template Commands

Save	Save As	Delete

Create Report	Cancel

Figure 11-8

Notice that under the **Output Options** heading, near the bottom of the column on the right side of the menu, you see entries **Include Boards** and **Include Parts**. Both are set to **YES** which indicates that when you run this "style" report (use this *Template* name) boards from the **BuildersCAD** Framer and materials attached to *Parts* that are placed in the database will be included in the *Material Report*.

Under the **Output** heading, set the **Destination** to **Screen** to review the report in a menu on the screen, **External Editor** to review the report in the default external text editor such as *Notepad* or *Wordpad*, or **Printer** to send the report to your default printer.

Select: **Create Report** at the bottom of the **Materials Report** pop-up menu. **BuildersCAD** will generate the *Materials Report*. In our example, we have set the **Destination** under the **Output** heading on the **Materials Report** pop-up menu to **Screen** to generate the report output to an on-screen menu as shown in Figure 11-9.

```
┌──────────────────────────────────────────────────────────────────────────┐
│  MATERIALS REPORT              │ Half Page Down │ Half Page Back │ Exit    │
├──────────────────────────────────────────────────────────────────────────┤
│ ****************************************************************** ⌂        │
│ *                PURCHASE_ORDER - WALLS LEVEL A                  *          │
│ * RUN: 04/22/2002                                   PAGE: 1 *               │
│ * REVISED: 05/27/94                               JOB: tutorial *           │
│ * RUN: 16:30:27                              USER: C:\bcad\jlb\ *           │
│ ****************************************************************** │
│ LEVEL:  ALL                                                                 │
│ PACKAGE:  ITEM #      DESCRIPTION                    # PURCHASED            │
│ -------   ------      ---------------------------------  ---------------    │
│           COST/UNIT          COST                                          │
│           ------------       --------                                       │
│ 0999      111330     24" VANITY BASE (CENTER BOWL)        1.00 EA          │
│              0.00 EA           0.00                                         │
│ 0999      150032     22" END SPLASH                       1.00 EA          │
│              0.00 EA           0.00                                         │
│ Subpackage (CABINET) total:   0.00                                         │
│ Package (0999) total:     0.00                                             │
│                                                                            │
│ 2005      060084     3/4" T&G PLYWOOD                     5.00 SHEET       │
│              0.00 SHEET         0.00                                        │
│ 2005      070028     1/2" DOW FOAM BOARD                 26.00 SHEET       │
│              0.00 SHEET         0.00                                        │
│ Subpackage (1FRM) total:     0.00                                          │
│ Package (2005) total:   0.00                                               │
│                                                                            │
│ 2100      060088     7/16"X4X8 OSB                       27.00 SHEET       │
│              0.00 SHEET         0.00                                ⌄       │
└──────────────────────────────────────────────────────────────────────────┘
```

Figure 11-9

Use the **Slide Bar** on the right side of the pop-up menu or the **Half Page Down** and **Half Page Up** buttons to scroll through the *Material Report*.

As you review the *Material Report* you will notice that **BuildersCAD** groups material by a *Package* and *Sub-Package* number. *Package* and *sub-package* for each material item is set in the *Estimating Formula* for applied materials and materials attached to *Parts*. Lumber or boards generated by the **BuildersCAD** Framer are automatically set to package *BOARDS*. The sub-package is determined by whether the boards came from the Walls, Roofs, or Floors Application and what Level the boards came from. For example boards generated by framing the Walls on Level A would report in sub-package **WALLS - LEVEL A**.

There is a message at the very end of the report: **WARNING: Some pieces are not accounted for - Run pull list for details**. This message is generated when some pieces on the *Pull List* have been reported under the *Pieces with no piece rules* message. Remember the 1/2" thick by 9 foot long header shims (for the garage door headers) were reported under *Pieces with no piece usage rules*.

We have now completed generating a *Pull List* and a *Materials Report* using the **Materials** Application.

SAVE THE DATABASE.

Notes