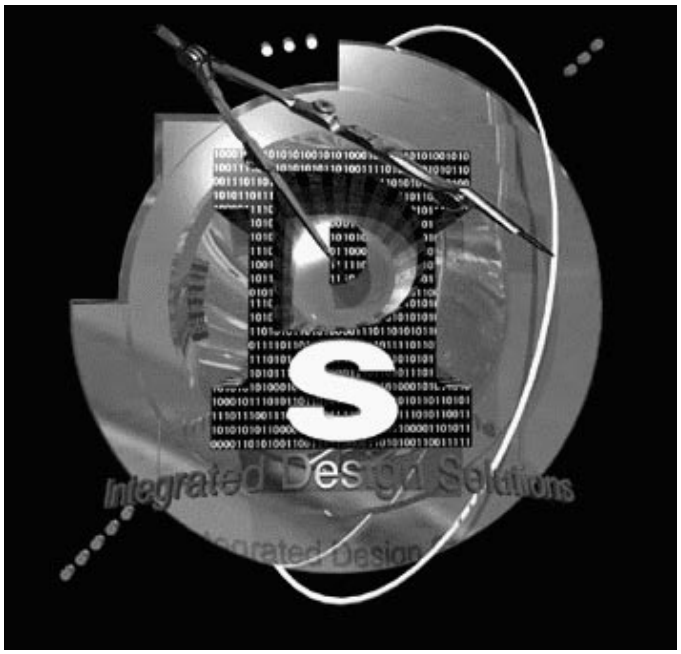

Presents

Integrated Blocks and Layers

Legal

Integrated Design Solutions License Agreement
for
Integrated Blocks & Layers

BY CLICKING ON THE ACCEPTANCE BUTTON OR INSTALLING THE SOFTWARE YOU ARE CONSENTING TO BE BOUND BY THE TERMS OF THIS AGREEMENT. IF YOU DO NOT AGREE TO ALL OF THE TERMS, CLICK THE "NO" BUTTON TO INDICATE YOU DO NOT ACCEPT THE TERMS AND DO NOT INSTALL THE SOFTWARE. If you have purchased the software and do not accept the license agreement, you should promptly return the software and you will receive a refund of your money.

1. License to Use

Integrated Design Solutions grants you (either an individual or a single entity) a limited, nonexclusive, nontransferable license to install and use Integrated Blocks & Layers on any computer so long as no more persons use the software than the number of licenses purchased by you. As used herein, persons means either: (i) you, or (ii) any employee or agent of the company purchasing the software.

a. If you purchased a User License, Integrated Design Solutions grants to you the right to use this copy of Integrated Blocks & Layers on a single computer (i.e., with a single CPU). You may not network the software or otherwise use it on more than one computer or terminal at the same time.
b. The software is licensed as a single product, and the software programs comprising the software may not be separated for use by more than one user.
c. You may transfer a license from one User to another within the same company, as long as only one copy of the software is installed on any one machine, at any givin time, for that User license. Allowing multiple individuals to share a User's License, or attempts to disable or circumvent any of the licensing mechanisms with the software each constitute a material breach of this Agreement.
d. Software provided for evaluation purposes or as a beta release will become non-functional at the end of thirty (30) days following receipt of your license key. Integrated Design Solutions disclaims all liability and responsibility for any loss of data or other information which may occur as a result thereof. If you have not purchased a User license prior to expiration of the evaluation or beta license, you agree to destroy all copies of the Integrated Blocks & Layers Software and documentation.

2. Other Rights and Limitations

a. No Reverse Engineering: You agree not to reverse engineer, disassemble or decompile the software.

3. Technical Support.

Integrated Design Solutions will provide you support on installing the software for 30 days from receipt of your software key at no charge by e-mail only.

4. Ownership and Right to Transfer

You agree that you have no right, title and interest in and to the software or any copyright or other intellectual property rights therein, other than the rights to use and redistribute as granted by this Agreement and ownership of the physical media. You may transfer Integrated Blocks & Layers with a copy of this Agreement to another party only on a permanent basis and only if the other party accepts the terms and conditions of this Agreement. Upon such transfer, you must transfer all accompanying written materials, and either transfer or destroy all copies of the Software.

5. Termination

This Agreement will immediately and automatically terminate without notice if you fail to comply with any term or condition of this Agreement. You agree upon termination to promptly destroy the software, together with all of its component parts, prior and

replacement versions, and all copies, modifications and merged portions thereof in any form.

6. DISCLAIMER OF WARRANTIES AND LIABILITY

Integrated Design Solutions warrants for a period of 90 days from your receipt of the software that the software will perform substantially in accordance with the accompanying written materials. Integrated Design Solutions' entire liability and your exclusive remedy shall be, at their option, either to repair or replace the software or to return the purchase price paid, if any, for such software.

IN NO EVENT SHALL Integrated Design Solutions BE LIABLE FOR ANY DIRECT, SPECIAL, CONSEQUENTIAL, INCIDENTAL OR INDIRECT DAMAGES OF ANY KIND (INCLUDING WITHOUT LIMITATION, LOSS OF PROFITS OR DATA).

7. Miscellaneous

a. Entire Agreement. This Agreement constitutes the entire Agreement between the parties pertaining to the software, and supersedes any and all prior agreements, whether written or oral between Integrated Design Solutions and you pertaining to the software. Any terms and conditions of any purchase order or other instrument issued by you in connection with the software which are in addition to, inconsistent with or different from the terms and conditions of this Agreement will be of no force or effect.

b. Governing Law. This Agreement shall be governed by California law without regard to the conflict of law provision therein.

c. Cost of Litigation. If any action is brought by either party to this Agreement against the other party regarding the subject matter hereof, the prevailing party shall be entitled to recover, in addition to other relief granted, reasonable attorneys' fees and expense of litigation.

d. Government Use. The software provided under this Agreement is commercial computer software developed exclusively at private expense, and in all respects is proprietary software belonging to Integrated Design Solutions. (a) Department of Defense End users. (1) If the software is acquired by or on behalf of agencies or units of the Department of Defense (DoD), then, pursuant to DoD FAR Supplement Section 227.7202 and its successors (48 C.F.R. 227.7202) the Government's right to use, reproduce or disclose the software acquired under this Agreement is subject to the restrictions of this Agreement. (b) Civilian Agency End Users. (1) If the software is acquired by or on behalf of civilian agencies of the U.S. Government, then, pursuant to FAR Section 12.212 and its successors (48 C.F.R. 12.212), the Government's right to use, reproduce or disclose the software acquired under this Agreement is subject to the restrictions of this Agreement.

Should you have any questions regarding this License Agreement, or if you desire to contact Integrated Design Solutions for any reason, please forward inquiries by email to dsgnsolution@earthlink.net.

TOC

About this document

This user's guide is designed to take you through the various features of IBL in order to help you to familiarize yourself with IBL commands and help you to develop your own strategy for implementing IBL as an AutoCAD assistant.

Unit 1: Introduction

Integrated Blocks and Layers (IBL) is an AutoCAD Extension that is designed to assist in managing blocks and layers. But IBL is more than most layering tools or block libraries. In fact, in its current state, it is not a block library at all. IBL fills the gap where most layering utilities leave off and before most block utilities begin. IBL is designed to integrate the layering and block aspects of AutoCAD.

IBL provides layer managing utilities that facilitate the grouping of large amounts of layers. This allows you to, among other things, quickly freeze and thaw layers, both globally and in viewports. The block utility is designed to allow the user to quickly select blocks from a well designed graphical interface and insert them in an efficient manner. The real strength of IBL is its ability to combine the layering utilities with the block routines. This combination and integration of tools allows for blocks to automatically be inserted on the correct layer with almost any layering configuration.

Any environment where there is more than one individual working on AutoCAD must have an office standard in place to organize drawings so that everyone can work productively. CAD standards go way beyond defining all of the layer names to be used in a drawing. They also need to address what needs to be drawn on those layers, exactly which block to use in a given situation, etc. This tool was developed in response to one of the biggest problems CAD administrators have – getting people to input information correctly and consistently.

IBL has several tools that facilitate this process. IBL uses the concept of modifiers to layer names. This is nothing new to the CAD industry, in fact almost every layering standard that is published uses this concept (see “Modifiers” in the next section for a more complete description). IBL simply makes this an integral part of it’s layer manager. The layer manager uses modifiers to organize layers and to save layer configurations with flexibility that goes beyond just layer names. It uses toolbars to manage modifiers as well as the insertion of blocks to automate the layering whenever possible. This provides a flexible environment for automatically inserting blocks on the correct layer. IBL also provides several other commands that have proven to be essential in working with layers, blocks and modifiers.

The developers of IBL sincerely hope you find it as useful as we do.

Unit 2: Installing IBL and Getting Started

Windows 9x and NT 4.0

From the Start menu, select Run, then type x:\setup (Substitute your CDROM drive letter for "x"). Follow the on-screen instructions.

To uninstall IBL, from the Control Panel double-click on "Add/Remove Programs". Scroll down the list of installed programs to find Integrated Blocks and Layers. Highlight it and click on the Add/Remove button.

Loading IBL in Release 14

During the installation process, IBL configures your current installation of AutoCAD to load IBL automatically upon startup. If you wish to disable this feature then you should remove the following line in the **acad.rx** file (located in your AutoCAD Support directory)

"X:\Program Files\IDS\IBL\IBL.ARX"

If you have more than one version of AutoCAD or have re-installed AutoCAD since installing IBL and would like for IBL to load automatically when you launch AutoCAD R14, then enter the following line in the **acad.rx** file (located in that AutoCAD Support directory)

"X:\Program Files\IDS\IBL\IBL.ARX"

If there is no file currently named acad.rx in the Support directory, create one using notepad or some other text editor and type the above line substituting the drive and directory for where IBL was installed on your machine.

A Quick Tour Through the Sample Files

Launch AutoCAD and IBL should load automatically, if not, see above. Open the SampleHse.dwg file found in the IBL directory. This is a simple, two story, house floor plan used to illustrate the capabilities of IBL. Type LA at the command prompt to open the layer dialog box. Notice the organization of layers into four separate groups:

1	First Floor Layers
2	Second Floor Layers
1em	First Floor Electrical/Mechanical Layers
2em	Second Floor Electrical/Mechanical Layers

These layers are grouped together because they begin with the same characters. IBL calls this the "modifier". This is followed by a hyphen (the "separator"), and finally by the "root" layer name. For a more thorough description of these concepts, see Unit 3: Layer Configurations.

Notice that both the first and second floor layers are thawed and the Electrical/Mechanical layers are frozen. Also note that in the drawing the first and second floors are drawn on top of each other.

At the command prompt, type in "MODIFIERBAR". This will bring up a file dialog box asking you to select a modifier bar. Go to the IBL directory and select "SampleMB.IMB". This will display a sample modifier bar with 10 buttons. By loading this file we have just created 10 modifier objects in this session of IBL. Each of these is used to represent modifiers at the beginning of layer names. We will be using the first four buttons of this toolbar for this example.

Now lets open a layer configuration file. To do this we type "DLCONFIG" at the command prompt. This will bring up a file dialog box asking you to select a layer configuration file. Go to the IBL directory and select the "Laycfg.ILY" file. This will display the layer configuration selection dialog box with 4 layer configurations. Select "First Floor" from the list and click on the "Restore to Model Space" button. Notice that before you even close the dialog box, the second floor layers have been frozen. The only layers being displayed are the first floor layers. Now select "Second Floor" in the list of layer configurations and click on the "Restore to Model Space" button. Notice that the first floor layers are frozen and the second floor is thawed.

Now lets select "First Floor Electrical" in the list of layer configurations and click on the "Restore to Model Space" button. Notice that the first floor layers are thawed along with all of the layers beginning with the "1em" modifier. This is because an electrical plan will need some of the first floor information along with the electrical information.

Let's take a quick look at how a layer configuration is assembled. With "First Floor Electrical" highlighted, click on edit. This brings up the dialog box to edit a layer configuration. In the box in the upper left corner is a list of all of the modifiers for this drawing, one for each button in the modifier bar. Below that is a list of all of the layers currently defined in this drawing. On the right is a list of the modifiers that are included and those that are excluded. Each modifier that is included will be thawed (using a wildcard pattern) and those that are in the excluded list will be frozen. So for the first floor electrical layer configuration, both the first floor modifier and the first floor electrical/mechanical modifiers are included. All of the other modifiers are excluded and consequently their layers are frozen.

Individual layers can be included and excluded as well. This allows us the flexibility to include an entire modifier except for one or two layers. For instance, we may not want to see the text for the first floor in the electrical plan although we do want to see all of the other first floor layers. In this case we would scroll down the list of layers on the left side of the dialog box until we can see "1-txt". Highlight that layer and click on the "exclude->" button. Click on "OK". Now lets select "First Floor Electrical" in the list of layer configurations and click on the "Restore to Model Space" button again. Select "OK". Now bring up the AutoCAD layer dialog box again. Notice that all of the first floor layers

(those beginning with "1-") are thawed except the "1-txt" layer which we excluded from this layer configuration.

Layer configurations that utilize modifiers as well as AutoCAD layers can be used to build very complex configurations beyond the capability of most layer managers.

Now let's discuss integrating blocks into the process. By far, the greatest challenge for most CAD managers today is making sure that the drafting staff draws everything on the correct layers. Most offices have developed standards to maintain consistency. But standards must be adhered to before they are truly useful. The best way to ensure that standards are adhered to is to make it easier to follow the standard than not to follow the standard. The IBL symbol bar is designed specifically for this purpose.

At the command prompt type "SYMBOLBAR". This displays a file dialog box asking us to choose a symbol bar. Select "Electrical.ISB" from the IBL directory. A symbol bar with 27 electrical symbols is displayed. Click on any one of the electrical symbols on the toolbar and IBL will begin the insertion command in AutoCAD and let you place the block. Notice that in this case the block goes to the current layer.

If you have closed the modifier bar, reopen it with the "MODIFIERBAR" command. On the modifier bar, click on the 1EM button. It will depress to show that it is the current modifier. Each symbol bar also has a 4 button toolbar just above the symbol buttons. The left button controls the auto-layering feature of IBL's symbol bar. Click on this button. It will depress to show that auto-layering has been enabled. Now insert another block using the symbol bar. The symbol should have been inserted on the "1em-fixture" layer (magenta). This is because "1em" is the current modifier and "fixture" is the root layer that the electrical symbol bar is set to go to. To change the root layer, right-click on the auto-layering button in the upper-left corner of the symbol toolbar. The second button is used to explode the blocks as soon as they are inserted. The last two buttons can be used to set a default scale and rotation so that these values do not have to be entered with every block insertion.

The electrical symbol bar is an example of a symbol bar where all of the symbols will generally go to the same layer. Therefor IBL provides the ability to define the layer once for the whole template by right-clicking on the auto-layering button. Other symbol bars may not be so convenient. For instance, with a floor plan symbol bar many of the blocks go to different layers. Use the "SYMBOLBAR" command and load "FloorPlan.ISB" from the IBL directory. Click on the "1" button on the modifier bar and click on the auto-layering button in the upper left corner of the floor plan symbol bar. Select the 32x60 bathtub symbol (2nd button, first row). Insert this anywhere into the drawing. Notice that the bathtub is on the "1-plmb" layer (color 11). Now select one of the fireplaces from the third row of the symbol bar and insert this into the drawing. Notice that this block is inserted on the "1-dt2" layer (cyan).

If we right-click on the bathtub button we see the edit button dialog box. Here we can see how the individual parameters of each button on the symbol bar may be edited. The "Automatic Layering" box is where we enter just the root layer name for the symbol. The modifier bar adds the modifier. Symbol name is a short description for the block. Block is the name of the actual AutoCAD block to be inserted. Icon is the bitmap file to be displayed on the button. If any changes are made, the current button can be "Modified", a new button can be "Appended" to the end of the modifier bar, a new button can also be "Inserted" in front of the button that was right-clicked. The button that was right-clicked can also be "Deleted". This does not delete any blocks in the current drawing, nor does it delete any files from the hard drive. It simply removes the button from the symbol bar.

Unit 3: Layer Configurations

Modifiers

A key aspect of working with IBL is understanding modifiers and how they work. Modifiers are a key aspect to almost every layering standard that is published. If you already have a layering standard implemented, chances are that you are using modifiers in one form or another. In IBL a modifier is simply a prefix added to what we will call the root layer name. For instance, if you are an architect, it is natural for you to begin all of the layers for the first floor of your building with a "1" and the second floor with a "2" and so on. These are modifiers to the root layer names. Modifiers are most helpful when combined with a separator. A separator is a single character that separates the modifier from the root layer name. A separator is either a "-" (dash), "_" (underscore) or "|" (pipe symbol). Figure 1 shows a breakdown of a layer name constructed with a modifier.

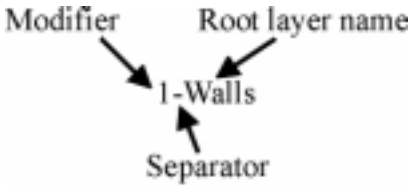

Figure 1

A modifier's greatest strength is that it can be used in combination with wildcards for freezing and thawing layers. AutoCAD uses an asterisk as a wildcard for pattern matching. Therefore, using the above example, all of the first floor layers can be frozen by running the Layer – Freeze command and typing "*1-*" for the layers to freeze. It is important to use the separator when using modifiers because this makes the pattern unique. Imagine if there were no separator. The pattern would then become "*1*" which would then match any layer with a "1" in it. While the asterisk in front can be removed to make it only layers that begin with a "1", this becomes a problem when working with multiple modifiers. Therefore, it is highly recommended that a separator be used. The hyphen or underscore characters tend to work the best, but if you work with a system that uses many xrefs, it may be strategic to use a pipe symbol as the separator. If a separator is used it is important to realize that the character chosen as a separator can only be used as a separator. If the separator is contained in a root layer name it may confuse some program operations.

Layer Configurations

A layer configuration is primarily a tool to save and restore layer settings for any number of layers. Once a configuration has been created, it can be restored at any time with a few clicks of the mouse. IBL will then Freeze and Thaw layers in order to return to the selected configuration. This can be done either globally or within a viewport. Any

number of configurations can be created and any number of layers can be included. Imagine the time savings of automatically restoring 50 layers from a preset configuration versus using the layer dialog box to accomplish the same task. Even typing in the necessary information using wildcards would not be quicker. Now imagine 250, 500 or 800+ layers - all can be restored with a click of a button.

Layer configurations work hand-in-hand with modifiers. As mentioned earlier, a modifier's greatest strength is that it can be used in combination with wildcards for freezing and thawing layers. IBL uses this characteristic to enhance its layer management solution. By using modifiers, IBL can move beyond the static snapshot that most other layer management utilities use. For example, any layer that is created after a typical layer snapshot is taken, will not be included in the snapshot because it was not defined at the time the snapshot was taken. But by using modifiers in conjunction with layer configurations, IBL can determine that new layers belong to a group of layers based on their modifier and should therefor be frozen and thawed with their group (modifier). While this does not completely automate the task of layer management, it can save a great deal of time, plotting paper and frustration.

Managing Layer Configurations

The DLCONFIG command will display the layer configuration selection dialog box (Figure 2). The first time this command is run within a drawing, IBL will ask the user to select a layer configuration file to save the layer configuration information. If one wishes to create a new file, simply type in a new name and IBL will create the new file. This dialog box displays all of the layer configurations that are currently defined in the layer configuration file. From this dialog box layer configurations can be created, edited, deleted and copied. This is also how we assign a layer configuration to either a viewport or to model space (see Restoring a Layer Configuration later in this Unit).

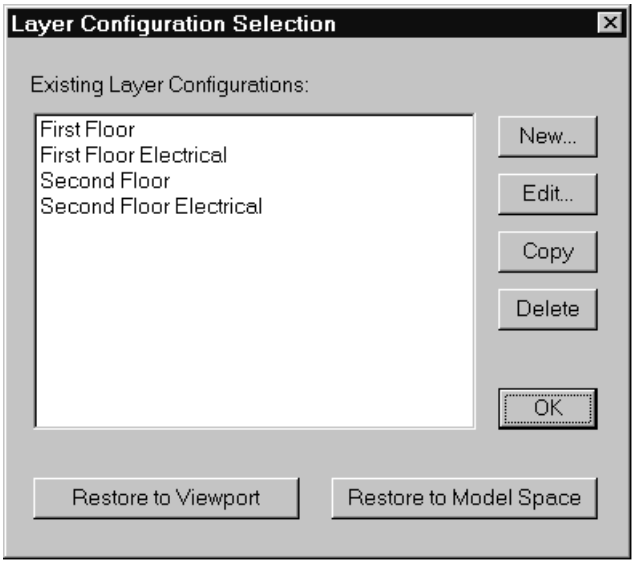

Figure 2 – Layer Configurations

If new layer configurations are created they are saved to the layer configuration file that was selected when the command was first executed. If a file was not chosen at that time then the user is prompted again to select a file to save the layer configuration information. Picking the OK button automatically saves the information to the layer configuration file.

Creating new layer configurations

Picking on NEW from the layer configuration selection dialog box brings up the layer configuration editing dialog box with the name field empty. Type in a unique name in the name field and select the layers and modifiers to be included or excluded from the configuration. Click on OK to create the layer configuration.

Editing layer configurations

From within the layer configuration selection dialog box clicking on NEW or selecting an existing layer configuration and clicking on EDIT will bring up the layer configuration dialog box. This is shown in Figure 3. The name for the layer configuration is entered at the top of the dialog box and can be any alpha-numeric string of characters.

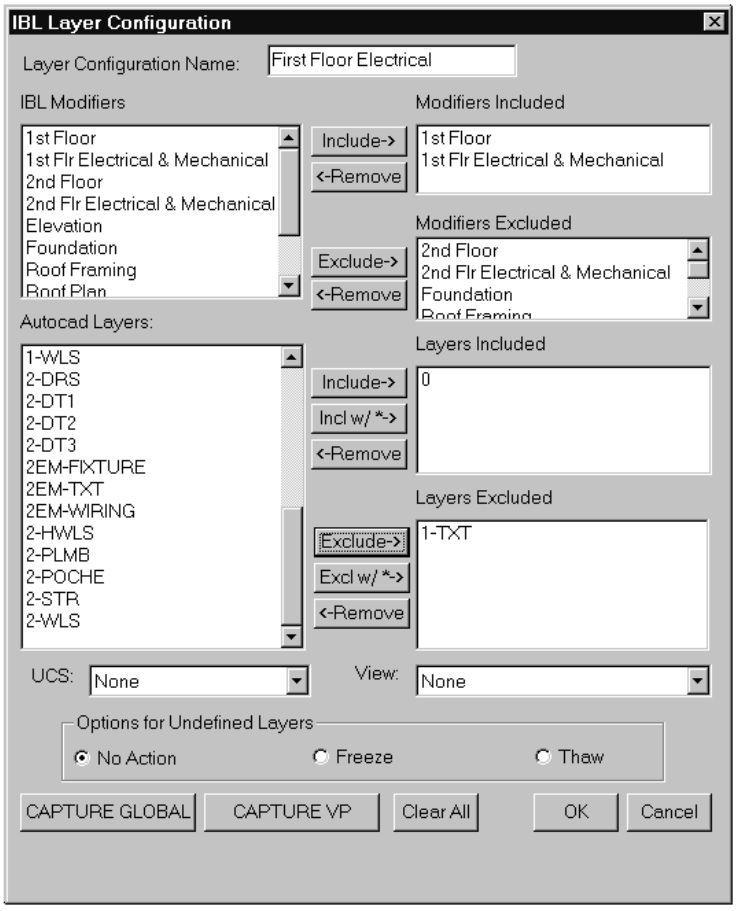

Figure 3 – Editing Layer Configurations

The left side of the dialog box shows all of the currently defined IBL modifiers and AutoCAD layers. The right side of the dialog box shows all of the included and excluded modifiers as well as the included and excluded layers.

There are also two drop down lists which show all of the UCS's and Views that are currently defined in AutoCAD. Each layer configuration can have a View and/or a UCS assigned to it which will be restored when a layer configuration is restored to model space. The UCS or View must exist at the time the layer configuration is edited to appear in the list.

Below the UCS and View selection boxes are the options for undefined layers. The user can choose to take no action, freeze or thaw all undefined layers. Undefined layers include any layers that do not belong to a level or are not specifically included or excluded. The following section explains the significance of this option.

Finally, below the undefined layers option, are the buttons for capturing layer configurations from a viewport as well as model space (See Capturing Layer Configurations later in this Unit). The "Clear All" button will clear all the settings from the right-hand side of the dialog box. The "OK" button will save any changes and close the dialog box. And the "Cancel" button will discard any changes and close the dialog box.

Restoring Layer Configurations

Once a layer configuration is created it can be restored at any time. To restore a layer configuration the user must bring up the layer configuration selection dialog box with the DLCONFIG command. Pick a layer configuration from the list and click on "Restore to Model Space" or "Restore to Viewport". Restoring to model space will run a standard "layer" command in AutoCAD and freeze and thaw the appropriate layers. When restoring a layer configuration to a viewport, IBL will prompt the user to select a viewport and run a "vplayer" command to freeze and thaw layers within that viewport.

Modifiers and layers that are <u>included</u> will be <u>thawed</u> when the layer configuration is restored. Modifiers and layers that are <u>excluded</u> will be <u>frozen</u> when the layer configuration is restored. When a layer configuration is restored IBL takes the following actions. First the undefined layers option is evaluated and if either freeze or thaw is selected then all the layers in the drawing (except layer 0) are either frozen or thawed. Then IBL builds patterns based on the modifiers that are excluded and the separator that is chosen and freezes those layers using wildcards. Patterns are then built for the modifiers that are included and those are thawed. Then the individual layers that are excluded are frozen, followed by the included layers being thawed. If a UCS is selected it is restored along with a view if selected.

There are several key elements to note about this process. First is the order of precedence. At the top is undefined layers, then modifiers, then individual layers. This order is key to gaining a complete understanding of how IBL layer configurations work and taking complete advantage of their power. Since modifiers are evaluated first, an individual layer could be selected as an exception to the more encompassing modifier. For example, let's say an architect wanted to draw an electrical plan for a two story building. When working on the first floor electrical plan, the first floor walls, windows, doors, and all other graphical information should be thawed. This would constitute most but not all first floor layers. Layers that contain dimensions, text and other annotation should not be included. Naturally all of the electrical layers should be included. The layer configuration dialog box might look something like the following:

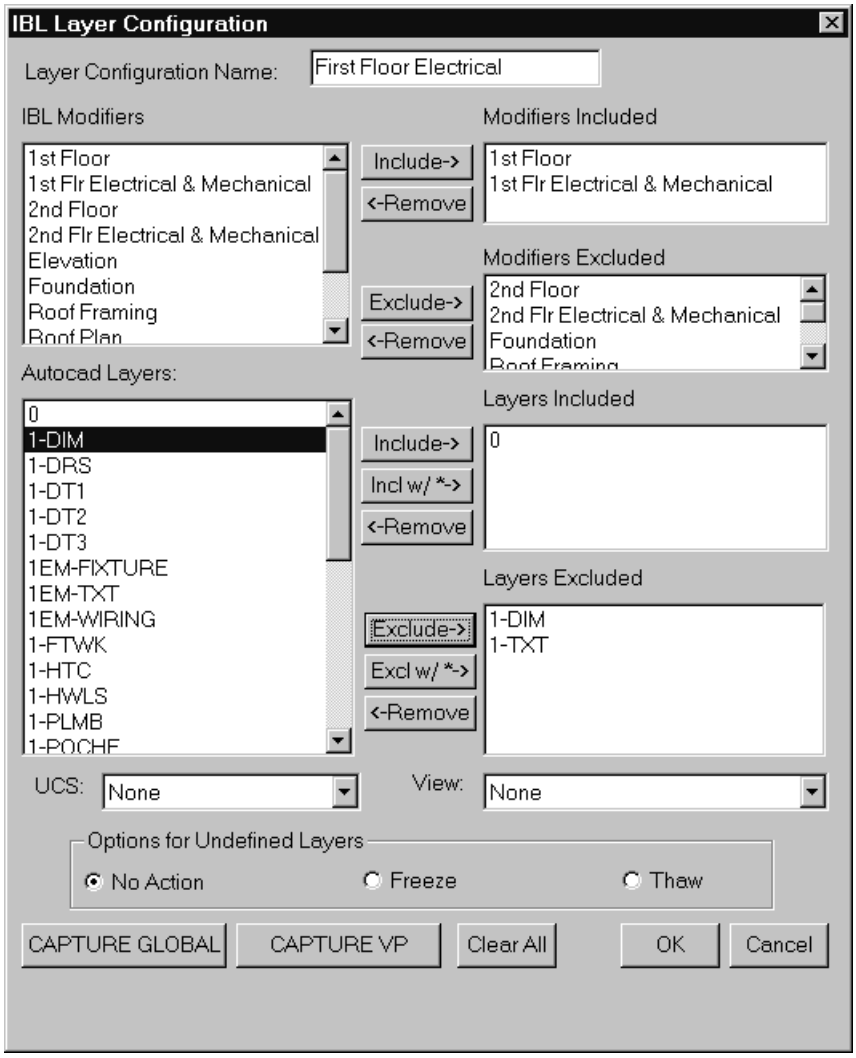

Figure 4

Notice that the first floor modifier is included, as well as the first floor electrical modifier. All other modifiers are excluded. Since the first floor modifier is included, the first floor layers will be thawed, including "1-txt" and "1-dim". But with the "1-txt" and the "1-dim" layers in the excluded box, it will be frozen when the excluded layers are evaluated. In this way we can make exceptions to the more global freezing and thawing of layers with modifiers.

The second key element to notice is that IBL will not freeze layer 0 even if it is an undefined layer and the freeze all undefined layers is selected. Layer 0 has several special properties within AutoCAD and it was felt that it would be more of an inconvenience for the user to constantly have to remember to specifically include layer 0 in all of the layer configurations. If layer 0 is specifically excluded in a layer configuration then it will be frozen.

Capturing layer configurations

Building a layer configuration from scratch can be a tedious process, especially if there are a significant number of layers and/or modifiers involved. The process can be even more challenging when you consider that you can't always see just what is on each layer, nor can you see which layers are currently frozen or thawed. For this reason, the Capture feature was built into IBL. This feature will take a "snap-shot" of the current layer settings in AutoCAD and build a layer configuration from these settings. In this way the user can use standard AutoCAD commands to configure the layers to the correct settings and then capture these settings into a layer configuration which can then be restored at any time.

In order to capture current layer settings from within AutoCAD a layer configuration must already exist. Select the desired layer configuration from the layer configuration selection dialog box and click EDIT or select NEW. This brings up the layer configuration dialog box. Selecting "Capture Global" will capture the global freeze and thaw settings from AutoCAD. Selecting "Capture Viewport" will prompt the user to select a viewport from the AutoCAD window.

NOTE: It is highly recommended that the user click on the "Clear All" button befor selecting a Capture button. This will clear out any modifiers or layers that are included or excluded. If a layer or modifier is included in the current configuration when the Capture button is selected, it cannot be added to the excluded list until it is removed from the included list and therefore the capture will not be completely successful (and vise-versa for the excluded list). If the configuration has been modified beyond what the capture process will detect, it may be best to capture the current settings and take note of any layers that IBL was not able to include or exclude. Or manually configure the latest changes to the configuration.

IBL not only determines the layers that are frozen or thawed when a capture is run, but also evaluates the modifiers that should be included or excluded. If all of the layers that belong to a level are thawed, IBL will include the level. If they are frozen, IBL will exclude the level. But IBL will also attempt to determine if there is a majority (60% or more) of layers that are frozen or thawed. If more than 60% of the layers belonging to a level are thawed, IBL will include the level but exclude the individual layers that did not fit into the majority (frozen). And vise-versa if the majority is frozen. With the use of modifiers, the user does not have to redefine a layer configuration each time a layer is added to the drawing. If the new layers belong to a level that is included or excluded the new layer will follow the behavior of the level. This gives IBL flexibility and a certain amount of intelligence when dealing with layers and configurations.

Layer configurations can be captured using either the global freeze and thaw settings or a viewport's settings. This also provides a convenient method for building layer configurations for drawings with viewports that are already configured.

Unit 4: IBL Templates

IBL templates look similar to AutoCAD Toolbars. They are floating toolbars with rows of buttons on each toolbar. But instead of running an AutoCAD command, template buttons run IBL routines. There are currently two types of IBL templates; Modifier templates and Block templates.

Modifier Templates

A modifier template has one button for each modifier that is currently defined in the modifier file (see Figure 5). There can be only one modifier template assigned to a drawing. The modifier template is stored in an external file on the harddrive and there is usually just one modifier bar per project.

Figure 5 – Modifier Template

Symbol Templates

Symbol templates are a quick and easy way to insert blocks using several IBL features. Each template button represents a block to be inserted. Symbol templates also have a toolbar at the top of the template that has 4 buttons on it. These are the “Auto Layer”, “Explode”, “Scale”, and “Rotate” buttons. When a block is inserted using a template, IBL checks to see if any of the 4 toolbar buttons are selected and will take the appropriate action (See “Working with the Symbol Template’s toolbar” in the next unit).

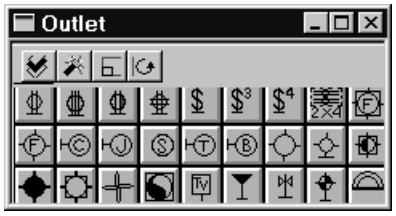

Figure 6 – Block Template

With an IBL template, when the mouse moves over any button, a description for that button is displayed in the template window's header. This enables the user to give a modifier or block a clear description. Often blocks are named with very few letters when they are saved to a file and the template description can be a very helpful tool in deciphering which block to choose.

Creating a Modifier Template from Scratch

If a modifier template has not been defined for the current drawing, run the MODIFIERBAR command. A file selection dialog box appears. Choose the path and file name for the new template. A modifier bar will appear with 3 buttons with the IBL

bitmap in them. Right click on each button to customize the buttons to define new modifiers. See the following section for more details on customizing modifier bars.

Creating a new modifier button or editing an existing button

To create a new modifier, right-click on any button on the modifier template. The Edit Modifier dialog box appears (see Figure 7). Notice that the current settings are those of the button that was right-clicked on. After editing the existing fields, select "Append" to add a new modifier to the end of the template or "Modify" to change the properties of the button that was clicked. The "Insert" button will insert a new button in front of the button that was clicked on and the "Delete" button will delete the button that was clicked.

Enter the full name of the modifier in the "Name" field. This can also be thought of as a description of the modifier since it will appear across the header of the template when the mouse is held over the modifier button. This can be up to 128 characters but may not all display depending on the size of the template. In the "Layer Modifier" field, enter the modifier that will be added to the beginning of the root layer names. In the "Bitmap" field, enter the name of the bitmap to be displayed for this modifier, or click browse and locate the file on the hard drive.

Note: All of the bitmaps for a template must come from the same directory. By default, the browse button will open to the correct directory. To modify that directory just click on the system icon in the upper left corner and choose "Set BMP Dir…"

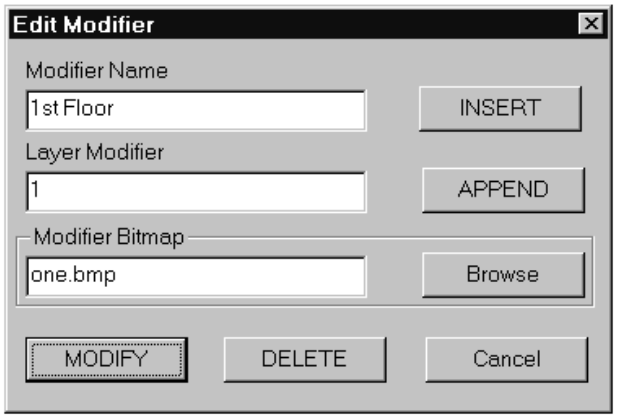

Figure 7 – Edit Modifier Dialog Box

Setting a Modifier Current

To set a modifier current, simply click on the modifier in the modifier bar. The button will become depressed and that modifier is now current. IBL routines that deal with autolayering combine the current modifier with a root layer name to determin which layer to go to. For instance, IBL routines look to the current modifier when symbols are

inserted from a symbol template with the autolayer option selected (see the description of symbol templates in the next section for more information).

Creating a Symbol Template from Scratch

Run the SYMBOLBAR command. A file selection dialog box appears. Choose the path and file name for the new template. A symbol bar will appear with 5 buttons with the IBL bitmap in them. Right click on each button to customize the buttons to define new symbols. See the following section for more details on customizing symbol bars.

Creating a new symbol button or editing an existing button

To create a new symbol button, right-click on any button on the symbol template. The Edit Symbol dialog box appears. Notice that the current settings are those of the button that was right-clicked on. After editing the existing fields, select "Append" to add a new modifier to the end of the template or "Modify" to change the properties of the button that was clicked. The "Insert" button will insert a new button in front of the button that was clicked on and the "Delete" button will delete the button that was clicked.

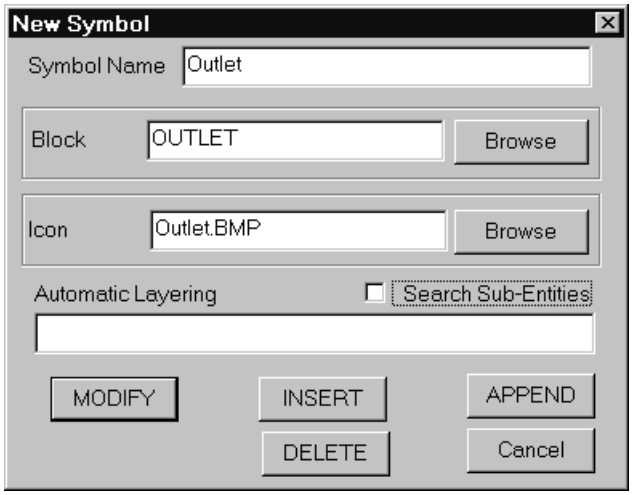

Figure 8 – Edit/New Symbol Dialog Box

Enter the full name of the symbol in the "Name" field. This can also be thought of as a description of the symbol since it will appear across the header of the template when the mouse is held over the button. This can be up to 128 characters but may not all display depending on the width of the template. The "Block" field is the name of the block to be inserted. IBL will search the current drawing and the template directory when trying to insert the block. The "Browse" button can be used to locate the file on the hard drive. The "Icon" field is the name of the bitmap file used to represent the block.

Note: All of the bitmaps for a template must come from the same directory. All of the blocks for a symbol template must also come from within the drawing or one block directory. While the bitmap and block directory can

be different, there must be only one of each. By default, the browse button will open to the correct directory. To modify that directory just click on the system icon in the upper left corner and choose "Set BMP Dir…" or "Set Block Dir…".

If a layer name is entered in the "Automatic Layering" field, the block is inserted onto that layer. The "Auto Layer" button on the toolbar of this template must also be selected. If the user also has a current modifier set on the modifier template, then the modifier is added in front of the layer name when trying to insert the block. If the "Search Sub-Entities" checkbox is checked, then a new block is defined based on the current modifier (see "Another Layer of Layer Integration" in the next Unit).

Other template features

The number of rows that a template uses to display its buttons is set by clicking on the system icon in the upper left corner of the template. This pulls down a menu that lets you set how many rows you would like the template to use for display.

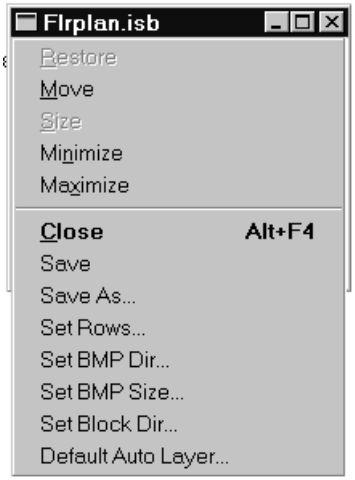

Figure 9 – Pull down menu

Also on this pull-down is a "Save" and "Save As…" option. The Save option simply saves any changes to the template to the file that was used to open the template. The Save As option allows you to save the template to a file other than the one that was used to open the template.

The "Set BMP Dir…" and "Set Block Dir…" allow you to specify which directory IBL will search for bitmaps and blocks. Note, each template can only have one directory for bitmaps and one for blocks. Therefore, all of the blocks for one template must be organized into one directory. Also, all bitmaps for one template must be organized into one directory. This is intended to allow for templates and their respective blocks to be relocated with a minimal effort. The sample templates provided with IBL are 20 pixels by

20 pixels, but if a larger or smaller size bitmap is desired, this can be set with the “Set BMP size…” option.

Standard Symbol Template Rolled-up Symbol Template

Figure 10

Since a template can be built with any number of buttons, some templates can become quite large. Having a large template or a couple of small templates open can begin to crowd the amount of drawing space left for AutoCAD. For this reason IBL uses roll-up templates. Roll-up templates allow you to collapse a template to just the header while not in use. The right side of the header for the template window has three standard windows buttons. The far right button that looks like an "X" closes the template. The left button collapses the template to just the window header and the middle button restores the template window (see Figure 10).

Unit 5: Another Layer of Layer Integration

Using the symbol template we can see the integration of layers, modifiers and blocks come together. For automatic layering to have any effect, the left button “Auto Layer” of the four buttons on the toolbar in the symbol template must be depressed. There is a simple hierarchy for determining which layer a block will be inserted on.

First, the automatic layering field in the Edit Symbol dialog box allows the user to define a layer for the block to go to automatically. This way if a block always goes on the same layer, that layer does not have to be set before inserting the block. For instance, if an electrical symbol for a can light always goes on the "Fixture" layer of an electrical plan, the user would type in "Fixture" in the automatic layering field. If the template's "Auto Layer" button is depressed then the block will automatically be inserted on the "Fixture" layer no matter what layer the user is on when the block is inserted.

Second, it is often the case that although a block belongs on the same root layer name, it often has to be inserted on layers with different modifiers. Therefor, if a modifier is set current on the modifier template, the modifier is added to the automatic layer name to determine the layer to insert the block onto. This allows much greater flexibility to the layer name to assign to a block for auto layering.

Continuing with our previous example, a user might want to put a can light on every floor of a five story building. The user can then create a modifier for every floor of the building along with a "Fixture" layer for each floor (1-Fixture, 2-Fixture, etc.). With the modifier for the first floor selected on the modifier template, clicking on the can light button would automatically insert the can light block on the "1-Fixture" layer.

Third, if a template layer is defined, all blocks which do not have their “Automatic Layering” layer defined, will be inserted on the template layer. This is defined by right clicking on the “Auto Layer” button on the toolbar for the block template. If a modifier is set current on the modifier template, the modifier is added to the template layer name to determine the layer to insert the block onto.

In the previous example, we mentioned setting the "Automatic Layering" field to "Fixture". But it is often the case that some templates have all of the blocks of a template going to the same layer. For instance, the electrical block for a can light is most likely in a template built solely of electrical symbols that all belong on the "Fixture" layer. To set "Fixture" as the default layer for all blocks in the template, right click on the "Auto Layer" button on the toolbar and type in "Fixture". If a block has it's "Automatic Layering" field filled in, then that layer will be used, otherwise all other blocks will be put on the default layer for the template.

What to do with Sub-Entities of a block

It is generally recommended that if all of a block's entities belong on one layer, that they all be drawn on layer 0 with a "BYLAYER" color and linetype. In this way, if you move a block to another layer, the sub-entities will take on the attributes of whatever layer the block is inserted on. For more explanation see your AutoCAD documentation. But what if you create a block with sub-entities that belong on more than one layer? Each sub-entity is on that layer no matter what layer the block is inserted on. For instance, a block with a sink and cabinet could have the sink drawn on the "plumbing" layer and the cabinet drawn on the "cabs" layer. This would work fine for a single story building but what if you had a multi-story building where the floors were drawn on top of each other? Freezing the plumbing layer would freeze both the first and the second floor plumbing. The only way to separate the sub-entities would be to explode the blocks and change the layers of the sub-entities to their respective layers.

IBL has a feature for just this problem. When adding a block to a template, if the "Search Sub-Entities" box is checked, then IBL searches the sub-entities of the block. If any entities are found that are not on layer 0, a new block is created. The new block will match the original block exactly but the layers will be changed to match the current modifier. Continuing our previous example, let's say "Search Sub-Entities" was checked when putting the block into a template. If the current modifier is set to "1" and the separator is "-", IBL would create a new block with the sink on the "1-plumbing" layer and the cabinet on the "1-cabs" layer. If the original block name was "sinkcab" the new block would be called "1-sinkcab". The original block would remain intact.

Working with other features of the Symbol Template's toolbar

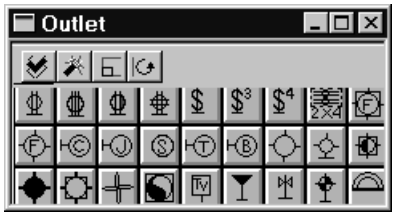

Figure 11 – Symbol Template

We have already talked about the first toolbar button for the symbol bar. The second button on the toolbar is the explode button. If this is depressed the block is inserted and immediately exploded.

The third button is the "Scale" button. Most blocks are inserted with a scale factor of 1.0. So it can be extremely frustrating to constantly have to right-click at the scale prompts during a block insertion. The default scale factor is set to 1.0 and depressing this button will keep you from having to hit return at the prompts during insertion. Occasionally it is necessary to insert some blocks at a set scale factor, such as twice their normal size or half their normal size. To change the scale factor used to insert the blocks, right-click over the

"Scale" button on the template. This will bring up a dialog box which allows you to change the scale factor for that template. The next time an item is selected on the template, the block will be inserted at the new scale.

The fourth button "Rotation" works similar to "Scale". The default rotation is 0.0 degrees. If this button is depressed the user is not even prompted for a rotation. To change the rotation setting, right-click on the button on the tool bar and change the value in the dialog box.

Other tools included in IBL

LAYERVIEW filters the drawing for entities on the current layer and redraws only those entities. This is not a freeze/thaw or on/off command. The other entities in the drawing are still there and can be selected, they just can't be seen. A simple redraw will bring the display back to normal. This is a fast, easy command to see what is on the current layer without having to isolate layers with an on/off or freeze/thaw process.

Note: Only main entities are evaluated. If blocks are on the current layer then the whole block is shown even if the subentities are on other layers. If a block is not inserted on the current layer then it will not be displayed even if some of it's subentities are on the current layer.

LAYERFILTER prompts the user to select objects and then filters the selection for entities on the current layer. LAYERFILTER can either be typed in at the command prompt or run transparently at any "select objects" prompt. If run transparently the prompt will change to "lf select". While in this mode, all selections will be filtered for entities on the current layer only. To exit this mode just enter a single return and the prompt will return to a "select objects" prompt.

Note: LAYERFILTER cannot be run transparently from within another AutoLISP or ADS command. Trying this will result in a "cannot re-enter autolisp" message. In these instances it is easiest to run LAYERFILTER from the command prompt, select the objects you wish to edit, and then run the AutoLISP command. When you are prompted to select objects simply type "p" for the previous selection set.

XREFFREEZE will prompt the user to select a single xref or block object and will freeze the layer of the subentity of the object selected. This can be extremely useful if the exact layer of an entity inside of an xref or block is not known. Instead of having to guess or open the xref, simply run XREFFREEZE and click on the entity. This command makes several assumptions that may not result in the correct layer being chosen every time. For instance it will never freeze layer 0. If the subentity selected is part of a nested block, IBL will trace the entity back to the first layer that is not Layer 0.

VIEWPORTFREEZE is the same command as XREFFREEZE except that it runs the VPLAYER command instead of the LAYER command so that entities are frozen in the current viewport. Again, this will work on the sub-entities of a block or xref.

COPYTOMOD can be thought of as a variation on a layer copy command. This command allows a user to select entities on several different layers and copy them to layers with the same root name but a different modifier. For instance, imagine that an assembly of parts has three different options for one of its components (option A, option B, option C). Let us assume that these three parts are similar but not the same. If option

A were drawn on five different layers all beginning with “opta-“, it would take at least 5 copy commands to copy the entire entity to the same layers beginning with “optb-“. 10 or more commands if a copy to layer lisp routine is not available. Not to mention the time it would take to create the layers as well. COPYTOMOD prompts the user to select objects similar to any editing command. It then prompts for the user to input the modifier to which the entities will be copied. IBL takes each of the entities selected and searches for the root layer name (based on the separator that is chosen). The new modifier is added to the front of the root layer and if the new layer does not exist it is created with the same parameters as the layer of origin. Using COPYTOMOD the component called option A, could be copied in its entirety to the option B layers in one command. IBL would also create the “optb-“ layers if they did not already exist when the command began.

MOVETOMOD is the same command as COPYTOMOD except that entities are moved from one layer to another.

IBLPREF brings up the preferences dialog box for IBL. This shows the name and location of the layer configuration file and the modifier bar file. These are external files that IBL uses to store layer configurations and modifier properties. These files are typically project specific but could be standardized for several projects. It is important to keep in mind that changes to these files will be reflected in all drawings that reference those same files. This dialog box also shows the current separator used to separate the modifiers from the layer names

.

Appendix

Command Reference

Shortcut	Command	Description
MOD	MODIFIERBAR	Displays the modifier bar. If no modifier bar is currently assigned to the drawing, a file dialog box will appear so that one can be chosen.
DLC	DLCONFIG	Display Layer Configurations – This will display a layer configuration dialog box that will show all of the currently defined layer configurations. This dialog box also allows you to create new configurations, edit existing configurations, and make these settings current either in model space or viewports. Important Note: If a file has not had a modifier bar assigned to it, it is recommended that this be done first.
LFF	LAYERFILTER	Filters the selection of objects so that only objects on the current layer are selected, all other entities are filtered out. This command can be used transparently.
MM	MOVETOMOD	Moves entities from the layer they are on, to a corresponding layer with a different modifier. Entities on multiple layers can be selected and will retain their root layer name but will go to their corresponding layer with the new modifier.
CM	COPYTOMOD	Copies entities from the layer they are on, to a corresponding layer with a different modifier. Entities on multiple layers can be selected and will retain their root layer name but will be copied to their corresponding layer with the new modifier.
SB	SYMBOLBAR	Brings up a dialog box that allows you to select a symbol file for loading.
LD	IBLLEADER	Draws line segments until return is entered, then inserts the block called "Arrow" at the end of the last line segment
VF	VIEWPORTFREEZE	Freezes a layer in a viewport (uses vplayer command), even if the entity is in an xref.
XF	XREFFREEZE	Freezes a layer in model space (uses layer command), even if the entity is in an xref.
LV	LAYERVIEW	Displays all entities on the current layer.
IP	IBLPREF	Displays the Preferences Dialog Box of Integrated Blocks and Layers