Chapter 4 - New Features

Visual 2.7 incorporates new features to increase productivity and allow for easier use with the most complex *models*:

The **Sidebar** provides convenient access to three *tabs* of information that also allow for the modification of *model* object parameters and the display of calculation results.

The **Layers** *tab* is located in the **Sidebar** and contains the **Layer Manager**. The **Layer Manager** shows **System Layers** and user-defined **Layers** and allows control of **Layer** behavior to provide lighting *model* organization based on what is appropriate for a project or useful for a user.

The **Design Manager** provides quick access to all objects in the lighting *model* in a floating *dialog* window. The *dialog* lists all objects in a treed fashion based on object type. Objects can be selected and identified or modified.

An **Audit** is performed before each **Calculation** and provides feedback related to known and possible problems with the lighting *model*. **Audits** can be done at any point to verify *model* components. The Audit window *dialog* sits on top of the **Design Environment**.

The **Properties** *tab* is located in the **Sidebar**. The *tab* is dynamic in that the content will change depending on which of the four object types is chosen in the selection process.

Several videos have been produced to illustrate features. The currently available videos can be found at:

http://www.visual-3d.com/support/TrainingVideos/2012.aspx

4.1 Audit

The **Audit** command is located on the **File** menu. An **Audit** is performed before each **Calculation** and provides feedback related to known and possible problems with the lighting *model*. **Audit** results do not preclude a calculation from being performed; results are an alert that the calculation result may not be what was expected.

An **Audit** can be performed without a calculation by executing the command from the **File** menu.
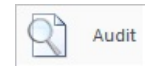
If Visual finds no issues, a pop-up is displayed.
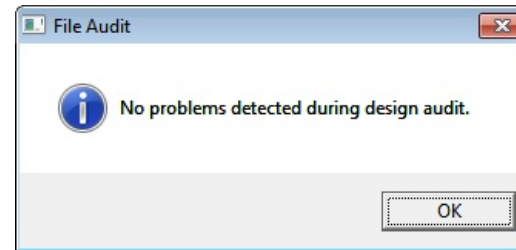
If issues are found, Visual displays a notification bar at the top of the **Design Window**. Clicking the **View Audit Results** button initiates the **Audit Results** *dialog*. Clicking an entry will highlight the objects related to the issue in the **Design Environment**.
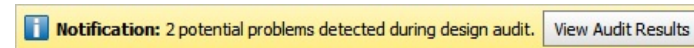
To identify an element in the **Audit**, left-click the name of an object. Visual will highlight the object in red in the **Design Environment**, just as in any other selection process.
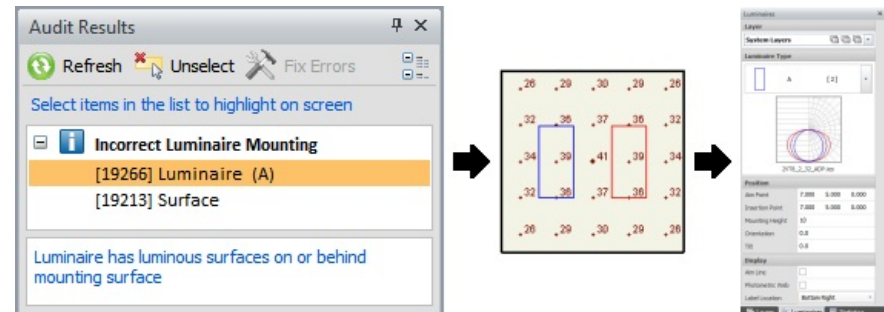
The **Properties** *tab* of the **Sidebar** will be populated with the parameters for the selected object for verification or modification.

The **Audit Results** *dialog* is closed by clicking the "X" in the upper right corner of the *dialog*.

Visual provides different symbols for the various issues that can be analyzed.

Possible **Problem** issues:

Audit Message	Description
Luminous Dimensions Conflict	A *luminaire symbol* and its luminous dimensions are different
Luminaires Intersect	Multiple *luminaires* are detected to overlap
Luminaire Intersects a Surface	A *luminaire* intersects a surface
Incorrect *Luminaire* Mounting	A *luminaire* has luminous surfaces on or behind the mounting surface

Possible **Information** issues:

Audit Message	**Description**
Invisible Objects	Objects that participate in the lighting calculation are on invisible layers
Objects Intersect	A closed room or object intersects or overlaps another closed room or object
Luminaire Outside Project Extents	A *luminaire* may be outside of the project extents
Calculation Zone Not Illuminated	A calculation zone is inside an unilluminated closed room or object
Surfaces Intersect	A surface is intersecting another surface
Identical Surface	A surface is identical to another surface

Possible **Critical** issues:

| **Audit Message**	**Description**
Duplicate *Luminaires*	Multiple *luminaires* are detected at the same location
Large *Drawing Coordinates*	*Drawing coordinates* are too large to perform a calculation. Move the entire *drawing* closer to 0,0.

The **Audit** tool does not ensure that the lighting *model* is free of errors or that the resultant calculation is "correct" given the many possible intents of user input. It is ultimately the responsibility of the user to ensure the lighting *model* approximates reality in an appropriate way.

4.2 Design Manager

The **Design Manager** provides quick access to all objects in the lighting *model* in a floating *dialog*.

The **Design Manager** is opened by clicking the button in the **Tools** *panel* of the **Home** *tab* of the **Ribbonbar** the button in the **Windows** sub-menu of the **Tools** *tab*.
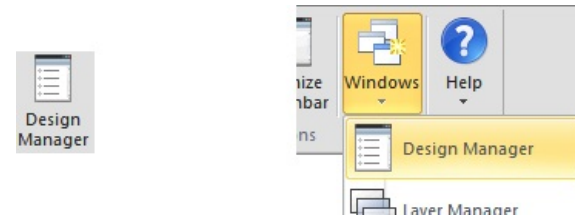
The **Design Manager** *dialog* is always on top of the **Design Environment** window and can be repositioned with a left-click-drag motion of the title bar as with all Windows applications.

The number after each main entry is the quantity of that type currently placed in the *model*.

Each section (branch of the tree structure) is opened and closed by either double-left-clicking the branch names or clicking the "+" and "-" buttons.

The **Design Manager** is closed by clicking the "X" in the upper right corner of the *dialog*.
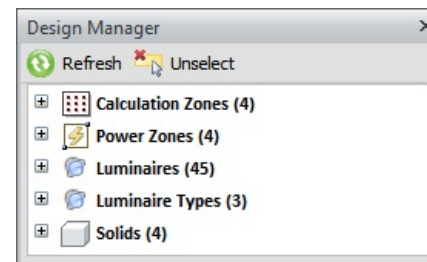
To identify an element in the *model*, left-click the name of an object. Visual will highlight the object in red in the **Design Environment**, just as in any other selection process.

The **Properties** *tab* of the **Sidebar** will be populated with the parameters for the selected object for verification or modification.
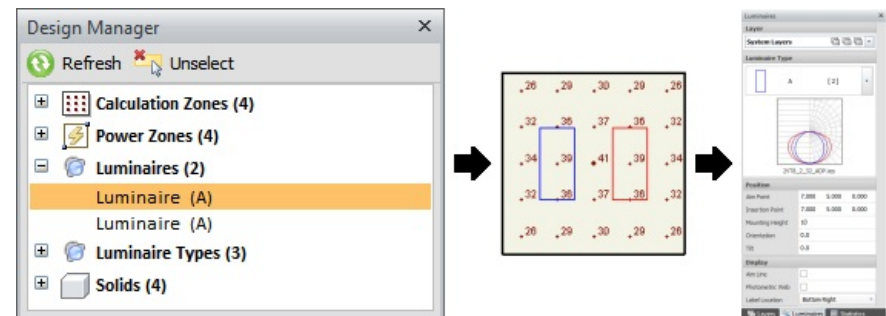
Clicking a **Calculation Zone** name will highlight the zone in the **Design Environment**.
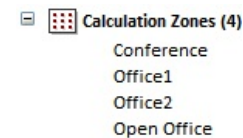
Power Zones involve both *luminaire* and an attributed area, so both are included. This allows for easy verification of the *luminaires* included in a **Power Zone** calculation. Clicking the zone name highlights the attributed area in the **Design Environment**. Clicking the *Luminaire* name highlights the *Luminaire* in the **Design Environment**.

```
⊟ ⚡ Power Zones (4)
     ⊞   Conference
     ⊟   Office1
              Luminaire (D)
              Luminaire (D)
     ⊞   Office2
     ⊞   Open Office
```

The *Luminaires* section includes all *Luminaires* placed in the **Design Environment**. Clicking a *Luminaire* name highlights the *Luminaire* in the **Design Environment**.

```
⊟ 🟦 Luminaires (4)
         Luminaire (A)
         Luminaire (B)
         Luminaire (C)
         Luminaire (D)
```

The *Luminaire* **Types** section shows all *Luminaires* defined in the *Luminaire* **Schedule** and the sub-branch shows each *Luminaire* placed in the **Design Environment**. This provides the same functionality as the *Luminaires* branch but with different organization. Clicking a *Luminaire* **Type** name has no function. Clicking a *Luminaire* name highlights the *Luminaire* in the **Design Environment**.

```
⊟ 🟦 Luminaire Types (4)
     ⊞   Luminaire Type A (35)
     ⊞   Luminaire Type B (6)
     ⊟   Luminaire Type C (2)
              Luminaire (C)
              Luminaire (C)
     ⊞   Luminaire Type D (2)
```

Solids are grouped in the **Design Manager** if they are grouped in the **Design Environment**; i.e. **Rooms** and **Structures** will be shown by the names given to them upon creation and **Solids** will be shown below that object name.

Clicking a **Solid** name highlights that **Solid** in the **Design Environment.**

Individually created **Solids** will be shown without a **Collapse**/**Expand** button since it is a single entity and has no sub-branches in the tree; e.g. "Divider" shown at right.

The number of **Solids** in each **Group** is shown after the **Group** name.

```
⊟ ☐ Solids (5)
     ⊞   Conference (6)
          Divider
     ⊟   Office1 (6)
          Floor
          Wall 1
          Wall 2
          Wall 3
          Wall 4
          Ceiling
     ⊞   Office2 (6)
     ⊞   Open Office (6)
```

Since **Background** objects are for reference, they are not displayed in the **Design Manager**.

4.3 Layers

Layers can be used for complex projects to organize as well as control display and calculatability.

All Visual *models* have the default **System Layers Group** in the **Layer Manager** and therefore in the *model*. The **Group** and its associated **Object Layers** cannot be deleted. A complete and complex *model* can be constructed without using **Layers**; Visual uses **Layers** as necessary in a transparent fashion if the user doesn't need or want to use the feature.
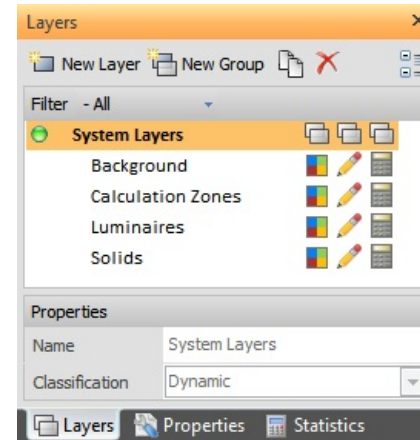
Layers are controlled in the **Layer Manager** discussed in this section.

4.3.1 Calculation State

The **Layer Calculation State** is controlled in the **Layer Manager** found in the **Layers** *tab* of the **Sidebar**.

The **Calculation State** button controls whether or not objects associated to that **Group** or **Layer** are included in calculations.

The **Calculation State** button has different states than can be assigned and therefore different symbols will appear indicating the different states. The position of the **Calculation State** button remains constant.

The default state for all **Layers** is **Calculated**. This means objects on that **Layer** will be included in calculations.

The **Inactive** state tells Visual to not include objects associated to that **Layer** or **Group** when performing calculations.

The default state for all **Groups** is **By Layer**. This means that the **Calculation State** for each **Layer** in the **Group** is set individually.

Choosing an **Calculation State** at the **Group** level means that all **Layers** in that **Group** will have the same state.

Individual **Layer Calculation State** cannot be modified in this case, which Visual indicates with lock symbols on top of each **Layer Calculation State** button.

To modify **Layer Calculation** in this situation, set the **Group Calculation State** to **By Layer**, and then modify the **Layer Calculation State(s)** as desired.

There are two methods for changing **Calculation State:**

Left-clicking the **Calculation State** button will change to the next state type. Continually left-clicking will cycle through the four **Calculation States.**

Note that **By Layer** is not a valid state for **Layers**; it only applies to **Groups.**

Alternately, right-clicking the **Calculation State** button for a **Layer** or **Group** will pop-up a menu showing the three states and a choice can be made by left-clicking the desired state.
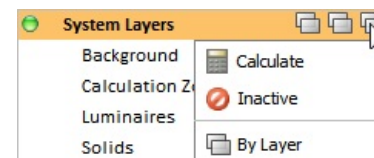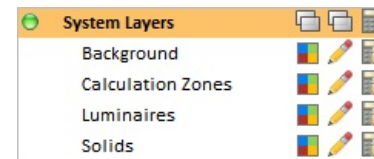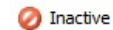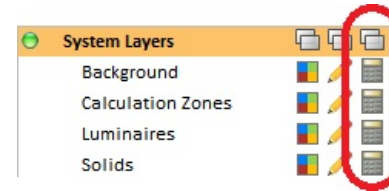
The ability to control the **Calculation State** for **Background** objects is included for completeness. It is of course the case that **Background** objects do not contribute to calculations.

4.3.2 Colors

Layer Colors are controlled in the **Layer Manager** located in the **Layers** *tab* of the **Sidebar**.

The **Color** of each **Group** or **Layer** is controlled with the **Color** button.

The **Color** button has different states than can be assigned and therefore different symbols will appear indicating the different states. The position of the **Color** button remains constant.

Clicking the **Color** button opens the **Color** *Dialog* for selection. See Using the Color Dialog for more information.

The default state of the **Color** button for all **Layers** is "**By Entity**"; **Properties** of the **Object** control the **Color**.

Assigning a **Color** to a **Layer** will override Object Properties **Color** choices; the **Color** of **Objects** will be the **Color** of the **Layer**.

The default state of the **Color** button for all Groups is "**ByLayer**"; each **Layer** has a separate **Color** and can be assigned

The **Group Color** can be chosen by clicking the By **Group Color** button, which opens the **Color** *Dialog*. Assigning a **Group Color** overrides **Color** selection for all **Layers** and Visual will show a lock *symbol* on the **Group** member **Color** buttons indicating this.

In the example at right, the **Group Color** is set to blue and the **Color** of the **Layers** in the **Group** are locked due to that choice.

Layer Colors can be assigned (unlocked) by choosing "**By Layer**" as the **Color** for the **Group**.
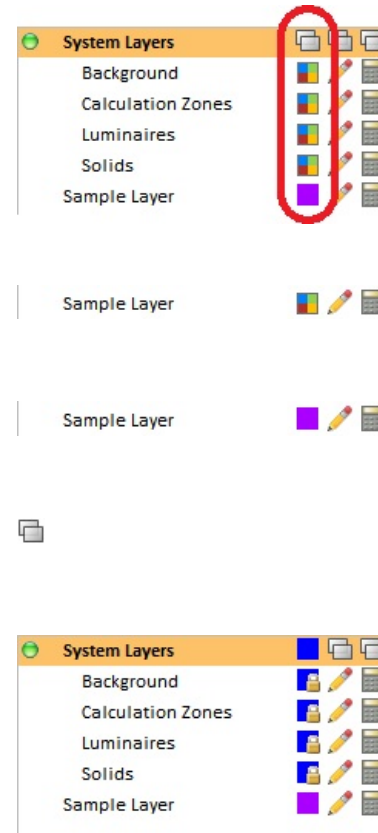
4.3.3 Editability

The **Layer Editability State** is controlled in the **Layer Manager** found in the **Layers** *tab* of the **Sidebar**.

The **Editability** of each **Group** or **Layer** is controlled with the **Editability State** button.

The **Editability State** button has different states than can be assigned and therefore different symbols will appear indicating the different states. The position of the **Editability State** button remains constant.

The default state for all **Layers** is **Editable**. This means objects on that **Layer** can be selected and are of course visible.

The **Uneditable** state makes objects gray in color, and they cannot be selected.

The **Invisible** state makes objects on that **Layer** Invisible.

The **By Layer** state is applicable only to **Groups** and means that the **Editability State** of **Layers** in the **Group** is set for each **Layer**.

Choosing an **Editability State** at the **Group** level means that all **Layers** in that **Group** will have the same state.

Individual **Layer Editability State** cannot be modified in this case, which Visual indicates with lock symbols on top of each **Layer Editability State** button.
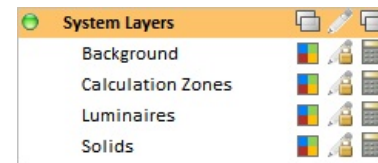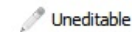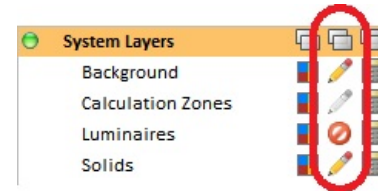
To modify **Layer Editability** in this situation, set the **Group Editability State** to **By Layer**, and then modify the **Layer Editability State(s)** as desired.

There are two methods for changing **Editability State**:

Left-clicking the **Editability State** button will change to the next state type. Continually left-clicking will cycle through the four **Editability States.**

Note that **By Layer** is not a valid state for **Layers**; it only applies to **Groups.**

Alternately, right-clicking the **Editability State** button for a **Layer** or **Group** will pop-up a menu showing the four states and a choice can be made by left-clicking the

desired state.

Calculation Zor
Luminaires
Solids

Editable
Uneditable
Invisible

By Layer
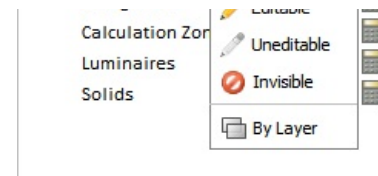
4.3.4 Groups

Layer Groups are controlled in the **Layer Manager** found in the **Layers** *tab* of the **Sidebar**. **Groups** provide many ways to organize a project but the use of **Groups** is not required for even complex projects.

A **New Group** can be created to organize **Layers**. The **Group** type can be selected as **Static** or **Dynamic** in the **Properties** *panel* at the bottom of the **Layer Manager**.
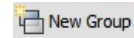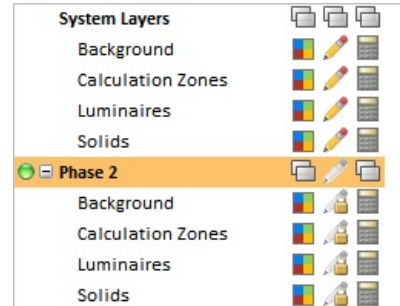
All Visual files contain the **Dynamic System Layers Group**.
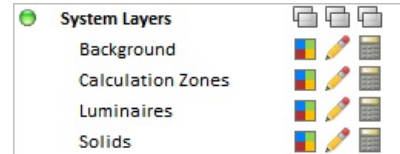
Dynamic Groups are those that have the four **Object Layers** : **Background**, **Calculation Zones**, *Luminaires*, and **Solids**.

Objects created when a **Dynamic Group** is active are automatically associated to the appropriate **Object Layer**; i.e. **Solids** will be associated to the "**Solids** " **Layer** of the **System Layers Group** .

Example1: a future phase of a project could be placed in a **Dynamic Group** , and then removed from the first phase presentation very easily at printing by turning off the entire **Group**. At right, the Phase 2 **Layer** is made **Uneditable**.
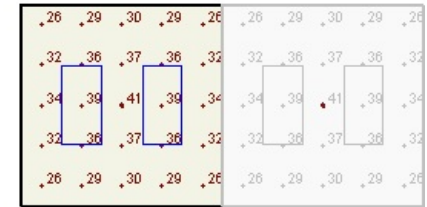
Static Groups are those where **Layers** can be clustered in a logical fashion. **Layers** can be associated to **Static Groups** and controlled collectively. Any of the four **Object** types can be created on a layer and may then be part of a **Static Group**.

Example2: in a conference room, the **Background** and **Solid Objects** for the "meeting" and "audiovisual" schemes would be the same and could be created on the **System Layers** . Different lighting systems (and possibly different **Calculation Zones**) could then be created on different **Layers** and made visible individually in the **Print Editor** to clearly illustrate the lighting in both schemes.
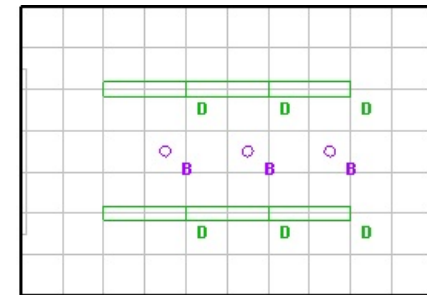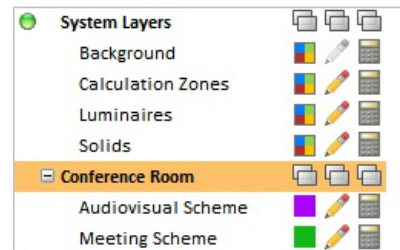
Note that in the two above examples that it is possible to achieve the same or similar results using **Static Groups**, **Dynamic Groups**, and **Layers** in many different ways. **Layer Groups** are provided to allow the user to segment a project in the way that is most logical for a project or is favored by the user.

When *CAD* files are **Imported**, Visual automatically creates a **Static Group** and all **Background Objects** will be placed on **Layers** just as they are in the *CAD* file otherwise.

The **Static Group** will have the name of the *CAD* file.

Layer Color is set to **By Entity** to then further preserve the look of the file as it was last saved in the creating program.

Note that some **Layers** may be set to Inactive based on the **Layer State** in the creating program.
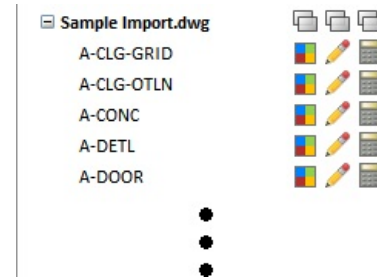
Layers can be associated to a **Static Group** by clicking the **Layer** name to make it active and then editing the **Classification Properties** at the bottom of the **Layer Manager** to assign it to the desired **Group**. The process is undone by assigning the **Layer** to the "None" **Group**.

Layers can also be converted to a **Dynamic Group** such that all **Objects** on the selected **Layer** will be separated into the four Visual **Object** types.
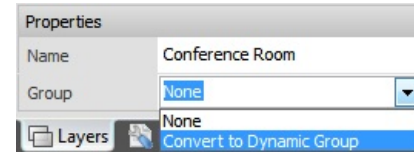
The use of **Static** and **Dynamic Groups** is largely one of user preference in that to a large degree either can be used to achieve an efficient design process, clear lighting model construction, and clear presentation.

4.3.5 Manager

The **Layer Manager** is located in the [**Sidebar**](#) and synonymous with the **Layers** *tab*. The **Layer Manager** shows **System Layers** and user-defined **Layers** and allows control of **Layer** behavior to provide lighting *model* organization based on what is appropriate for a project or useful for a user.

If it is not visible, the **Layer Manager** (**Sidebar** with **Layers** *tab* focus) can be shown by clicking in one of two places:

- **Home** *tab*, **Tools** *panel*, **Layers** sub-menu, **Layer Manager**

- **Tools** *tab*, **Options** *panel*, **Windows** sub-menu, **Layer Manager**

After clicking **Group** and **Layer** names, **Properties** can be edited in the **Properties** *panel* at the bottom of the **Layer Manager**.

The **Layer Manager** also contains a toolbar at the top with several buttons to add and manipulate **Layers** and **Groups**.
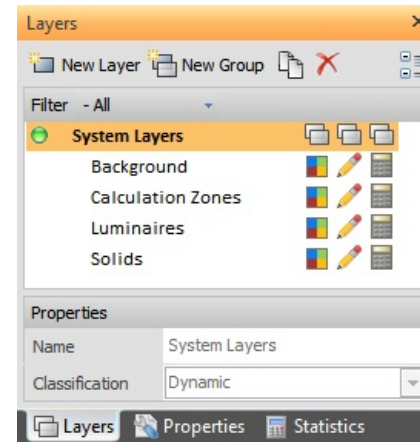
To make a **Layer** or **Group** active, and therefore have new **Objects** associated with it, double-click the **Layer** or **Group** name. Alternately, right-click and select "**Active Layer**" from the menu; see information below.

The active **Layer** or **Group** is signified by the green *icon* next to the name. This is separate from the yellow highlight.

Layers that are part of a **Dynamic Group** cannot be made active; the **Dynamic Group** is what is active and Visual places **Objects** on the appropriate Object **Layer** as they are created. Conversely, a **Static Group** cannot be made active; **Layers** that are part of a **Static Group** are made active.
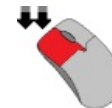
A **New Group** can be created to organize **Layers**. The **Group** type can be selected as **Static** or **Dynamic** in the **Properties** *panel* at the bottom of the **Layer Manager**. See [Layer Groups](#) for more information.

Layers can be created by clicking the **New Layer** button at the top of the **Layer Manager**. Visual creates the new **Layer** temporarily and populates the **Properties** *panel* at the bottom of the **Layer Manager** with the preliminary name "New Layer". Focus is placed on this preliminary name so it can be easily renamed to something more meaningful to the current project.
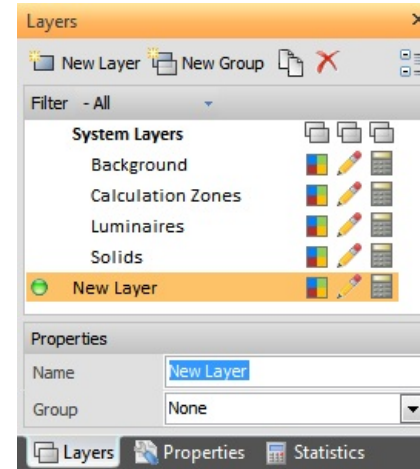
Layers can be associated to a **Static Group** by clicking the **Layer** name to make it active and then editing the **Classification Properties** at the bottom of the **Layer Manager** to assign it to the desired **Group**. The process is undone by assigning the **Layer** to the "None" **Group**.

Layers can also be converted to a **Dynamic Group** such that all **Objects** on the selected **Layer** will be separated into the four Visual **Object** types.
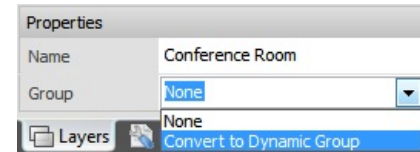

To **Copy** a **Layer** or **Group**, select the desired items and click the **Copy** button at the top of the **Layer Manager**.

To **Delete** a **Layer** or **Group**, select the desired items and click the **Delete** button at the top of the **Layer Manager**.

Visual presents a *dialog* to determine if the deleted objects are to be removed or kept after the **Layer** is **Deleted. Delete Layers Only** will move the associated **Objects** to the appropriate **Layers** in the **System Layers Group** (i.e. *Luminaires* are placed on the *Luminaires* **System Layer**, etc.). Alternately, **Delete Layers and Entities** removes all entities on the **Deleted Layer** and the selected **Layer**.
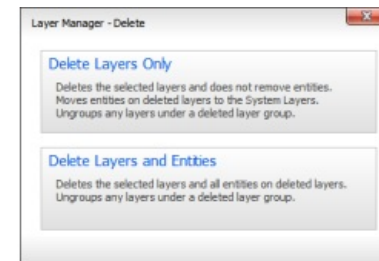
Display of **Layer Groups** can be compacted by pressing the **Collapse** button in the upper right corner of the **Layers** *tab* to then only show **Layer Group** names. After the button is pressed it changes to the **Expand** button and will be highlighted in yellow. Pressing the **Expand** button reverts to the original state of showing all **Layer** names.

Groups can also **Collapse** and **Expand** by clicking (alternately) on the "-" and "+" next to the **Group** name.

Right-clicking a **Layer** name will pop-up a menu showing multiple command shortcuts:

Left-clicking a choice operates on the selected **Layer**. **Active Layer** changes the **Layer** on which the right-click was initiated to the current **Layer**.

For more information on these and other **Layer** commands, see Layers Tools.

●	Active Layer
	Identify
	Isolate
	Unisolate
✕	Delete Layer
✕	Delete Entities
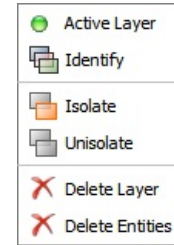
4.3.6 Tools

Visual includes several **Layers Tools** to aid in working with **Layers** in complex projects. The **Layers** sub-menu button is located on the **Home** *tab* of the **Ribbonbar**, although the commands are also found in the **Layer Manager** (**Layers** *tab* of the **Sidebar**).

Layers Tools are found in the submenu initiated with the **Layers** button on the **Tools** *tab* of the **Ribbonbar**.
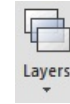
The **Layer Manager** command in the sub-menu activates the **Layer Manager** in the **Sidebar** (the **Layers** *tab*) if it has been closed or switches to that *tab* in the **Sidebar** if it is not currently active. See Layers or more information.

Identify Layers allows for selection of an object to determine the **Layer** on which it resides. Select an object and then right-click to end the command. Visual will highlight the **Layer** in the **Layer Manager**. If objects on multiple **Layers** are selected, Visual will identify all **Layers**.

Isolate Layers allows for the selection of a on object, and the **Layer** on which it resides will be left **Visible** while all other **Layers** will be made **Invisible**. **Unisolate Layers** makes all **Layers Visible**.
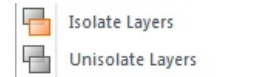
Deactivate Layers allows for selection of an object, and the **Layer** on which the object resides will be made **Inactive**. "Inactive" in this context is a coupling of both the **Inactive Calculation State** and being **Invisible**.

Purge Empty Layers removes all **Layers** that have no associated objects. This is particularly useful after a *CAD* Import to allow for more clarity since *CAD* software add-ins can be elaborate. This operation cannot be undone, so Visual displays a warning message as a reminder.
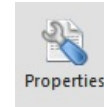
4.4 Properties

The **Properties** *tab* is located in the [**Sidebar**](). The *tab* is dynamic in that the content will change depending on which of the four object types is chosen in the selection process.

Object properties can be accessed and modified by executing the **Properties** command in one of four ways:
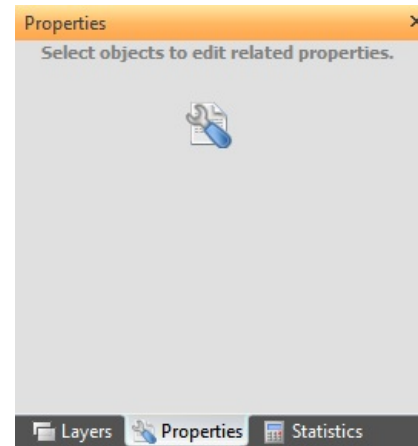
1) Left-click the **Properties** button in the **Tools** *panel* on the **Home** *tab* of the **Ribbonbar**.

2) Select the menu item from the **Windows** sub-menu in the **Options** *panel* of the **Tools** *tab* in the **Ribbonbar**. Note that the letter "P" next to the command indicates that the *hotkey* for the command is the "P" key.
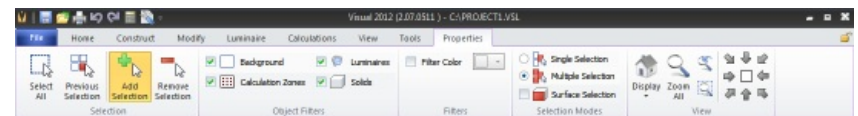

3) Left-click the **Properties** button is located on the **Properties** *tab* of the **Sidebar**.

4) The Visual *hotkey* "P" can be pressed on the keyboard to execute the command.

Executing the **Properties** command causes Visual to display the **Properties** *tab* in the **Ribbonbar** discussed in the next sub-section.

After **Properties** have been suitably modified, click the right mouse button to end the

command and apply parameter modifications.

4.4.1 Ribbonbar Properties Tab

Properties of various entities are modified in the **Sidebar** as described in subsequent sections. Selecting objects to modify is done in the **Properties** *tab* in the **Ribbonbar** after the command has been executed.

Executing the **Properties** command causes Visual to display the **Properties** *tab* in the **Ribbonbar**. The *tab* includes a variety of ways to aid in selecting objects.

The **Properties** *tab* will include the **Selection** *panel* to assist in selecting objects for **Modify** *tab* commands. Visual defaults to adding clicked objects to the selection set, signified by the **Add Selection** button being highlighted in yellow.

The **Properties** *tab* will include the **Object Filters** *panel* to assist in selecting objects for **Modify** *tab* commands and other times when objection selection is required; e.g. specifying a surface on which to place a **Calculation Zone**. A checkbox is present for each of the four object types. Unchecking a box tells Visual to ignore objects of that type when selecting objects.

Placing a check in the **Surface Color** checkbox allows a **Color** to be chosen. When selecting **Solid** objects with one of the various methods described here, Visual will then filter the objects to include only those having the color specified. This selection refinement (filter) works only with **Solid** objects.

Selection Modes allows for fine-tuning of how objects are selected.

Single Selection - Left-clicking an object makes that object the only member of the selection set.

Multiple Selection - Each left-click of an object adds to the selection set. See Selecting Objects for information on selecting objects that are "stacked".

Turning **Surface Selection** on by checking the box will select individual surfaces that are part of **Rooms**, **Structures**, or **Grouped Solid** objects.

See Display Modes and Basic Viewing for information on the **View** *panel*.
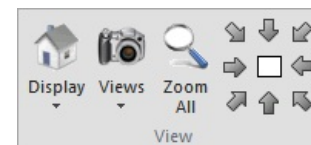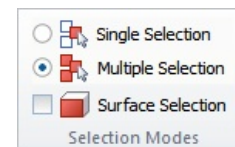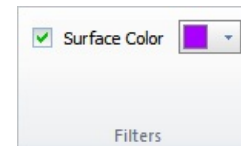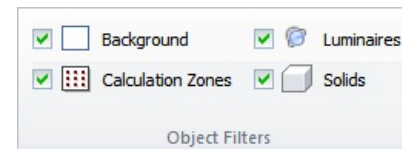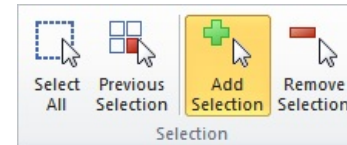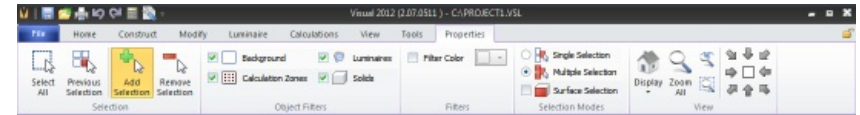
Note that many selection and filtering methods can be combined to quickly select desired objects. Discussion of the use the **Properties** *tab* in the **Sidebar** for each of the four object types follows in this chapter.

4.4.2 Background Properties

Background properties are shown in the **Sidebar** when the **Properties** command is active and **Background** objects are selected.

To activate the **Properties** command, click the **Properties** button on the **Home** *tab* of the **Ribbon Bar** or in the **Sidebar**, or press the "P" *hotkey*. When a **Background** object is selected, Visual displays the properties for that object in the **Sidebar**.
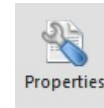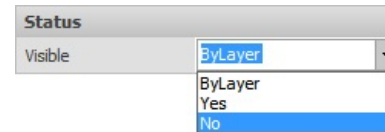
For *Polyline* objects Visual displays the following *panels*:

The **Layer** *panel* indicating on which layer the object resides. The layer may be changed by clicking the *drop-down menu* arrow on the right. "**System Layers**" is the default and is in fact a **Layer Group**, which indicates the object is on the **Background** layer of the **System Layers** group. See Layers for more information.

The **Status** *panel* contains a **Visible** menu that allows control of individual objects. Selecting "Yes" means the object(s) will be visible. Selecting "No" means the object(s) will not be visible. "ByLayer" indicates that control of object visibility is controlled by selections made in the Layer Manager for Editability.

Once an object has been made not visible with this *dialog*, the only way to get access to the object is through the Design Manager where the object can be selected and made visible again, for example.

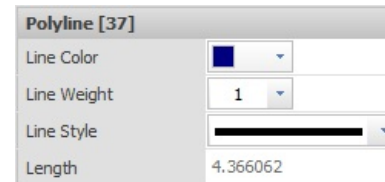For *Polyline* objects, Visual displays the *Polyline* panel, which contains:

Line Color showing the currently selected **Color** and allows for modification with the **Color** *dialog*.

Line Weight showing the current width in pixels and allows for modification with the drop-down menu and the associated *text box*.

Line Style showing the currently selected style and the menu allows selection of one of the 9 styles.

Length is the sum of all segments in feet or meters.

Since **Background** objects cannot be named, a reference number for identification is displayed in square brackets in the *panel* title. This reference number is indexed for **Polylines** and **Polygons** together.

For *Polygon* objects, Visual displays the *Polygon* panel, which adds the following:

Area is shown in square feet or square meters inside the *polygonal* solid boundary.

Center is the X,Y,Z triplet *coordinates* for the centroid of the ***Polygon***. See
http://en.wikipedia.org/wiki/Centroid for more information.

Normal is the direction the perpendicular to the surface points in a unit *vector*. i.e.
(0,0,1) would indicate the front surface is in the positive Z direction. See
http://en.wikipedia.org/wiki/Surface_normal for more information.

Line Style	▬▬▬▬ ▾
Area	11.25
Center	
Length	13.5
Normal	

The ***Coordinates*** *panel* shows the *coordinates* of each *vertex* in X,Y,Z triplets.
These are not editable.

Coordinates

	X	Y	Z
1	17.750	10.000	0.000
2	16.000	9.250	0.000
3	15.750	7.500	0.000
4	17.000	6.500	0.000
5	19.250	6.750	0.000
6	19.000	9.000	0.000
7	17.000	7.750	0.000

Multiple objects can be selected and modified. **Properties** that do not have the same
value will have an ellipsis entry indicating multiple values. The ellipsis can be clicked
and parameters modified as normal, thus setting that value to all objects; for example,
color or layer.

(...)

After **Properties** have been suitably modified, click the right mouse button to end the
command and apply parameter modifications.

Drop-down menus in the **Properties** *tab* allow for parameter selection just as in the commands that create objects. Reference specific commands for detailed information on parameters.

4.4.3 Calculation Zone Properties

Calculation Zone properties are shown in the **Sidebar** when the **Properties** command is active and **Calculation Zone** objects are selected.

To activate the **Properties** command, click the **Properties** button on the **Home** *tab* of the **Ribbon Bar** or in the **Sidebar**, or press the "P" *hotkey*. When a **Calculation Zone** object is selected, Visual displays the properties for that object in the **Sidebar**.
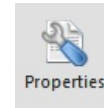
For **Calculation Zone** objects, Visual displays:

The **Status** *panel* contains **Calculate** and **Visible** menus that allow control of individual objects. Selecting "Yes" means the object(s) will be used in calculations or will be visible. Selecting "No" means the object(s) will not be used in calculations and will not be visible. "ByLayer" indicates that control of object visibility and use in calculations is controlled by selections made in the Layer Manager for Editability and Calculation State.

Once an object has been made not visible with this *dialog*, the only way to get access to the object is through the Design Manager where the object can be selected and made visible again, for example.

The **Layer** *panel* indicating on which layer the object resides. The layer may be changed by clicking the *drop-down menu* arrow on the right. "**System Layers**" is the default and is in fact a **Layer Group**, which indicates the object is on the **Background** layer of the **System Layers** group. See Layers for more information.

The **General** *panel* contains:

**Name** is the user-specified name or the Visual default.

Area is shown in square feet or square meters inside the *polygonal* solid boundary.

Center is the X,Y,Z triplet *coordinates* for the geometric center of the **Polygon**.

Point Spacing shows the spacing of points in X and Y axes respectively and allows modification with drop-down menus and the associated text boxes.

The **Calculation Points** *panel* contains:

Color shows the currently selected **Color** and allows for modification with the **Color** *dialog*.
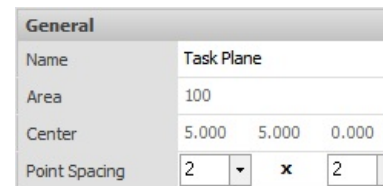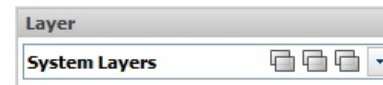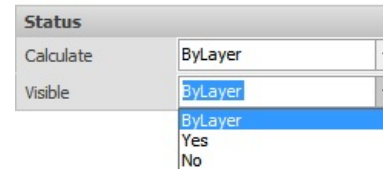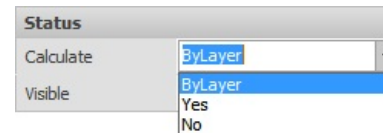
Lower Limit defines the **Color** of the value highlight and allows specification of the type of highlight. **Minimum** indicates only the lowest value is highlighted. Choosing a value from the drop-down or typing a value will highlight values less than or equal to that value.

Upper Limit defines the **Color** of the value highlight and allows specification of the type of highlight. **Maximum** indicates only the highest value is highlighted. Choosing a value from the drop-down or typing a value will highlight values greater than or equal to that value.

Decimal indicates how many digits are displayed.

Point Style illustrates the selected *symbol* used to indicate each calculation point and allows modification to one of 5 choices.

The **Display** *panel* contains:

Calculation Points is a checkbox indicating if points are shown or not.

Contours is a checkbox indicating if the iso-*illuminance* contours are displayed or not on a per-zone basis. Once **Contours** are turned on in the **Calculations** *tab* of the **Ribbonbar,** this allows for individual zone contours to be displayed or not.

Shaded is a checkbox indicating if pseudo-color shading is turned on or off.

The **Calculation** *panel* contains:

Type is a *drop-down menu* for selection of one of the 7 ways in which Visual handles meter orientation.

Measurement is a *drop-down menu* allowing selection of one of 4 calculation units/methods.

Reflectance is a *text box* for specification of the necessary parameter for non-***Illuminance*** calculations.

See Calculation for more information.

The **Calculation Parameters** *panel* contains:

Normal is the direction the perpendicular to the surface points in a unit *vector*. i.e. (0,0,1) would indicate the *plane* of the **Calculation Zone** is in the positive Z direction.

Orientation indicates the rotation of the "meter" associated to each point of the **Calculation Zone** with respect to the 0° X-axis.

Tilt is the angle of inclination of the "meter" associated to the **Calculation Zone** with 0° being straight up, 90° being at the horizon, and 180° being straight down.

When modifying a **Calculation Zone** created with the **TV** option, Visual displays the location of the camera for modification. See Calculation Types

The **Flip** button rotates the surface **Normal** 180°. When using the **Calculation Zone Surface** command, Visual places the grid on the "front" face of the solid. Depending on the order in which the *vertices* were chosen, the result of this command may not place the grid on the desired side. Therefore, the **Flip** button would make the other side of the solid the "front" and Visual would place the grid on the opposite side.

Multiple objects can be selected and modified. **Properties** that do not have the same value will have an ellipsis entry indicating multiple values. The ellipsis can be clicked and parameters modified as normal, thus setting that value to all objects; for example, color or layer.

(...)

After **Properties** have been suitably modified, click the right mouse button to end the command and apply parameter modifications.


Drop-down menus in the **Properties** *tab* allow for parameter selection just as in the commands that create objects. Reference specific commands for detailed information on parameters.

4.4.4 Luminaire Properties

Luminaire properties are shown in the [Sidebar](#) when the **Properties** command is active and *Luminaire* objects are selected.

To activate the **Properties** command, click the **Properties** button on the **Home** *tab* of the **Ribbon Bar** or in the **Sidebar**, or press the "P" *hotkey*. When a *Luminaire* object is selected, Visual displays the properties for that object in the **Sidebar**.
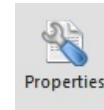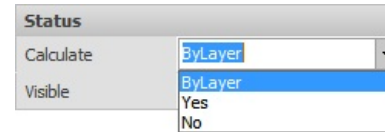
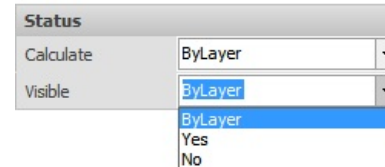For *Luminaire* objects, Visual displays the following *panels*:

The **Layer** *panel* indicating on which layer the object resides. The layer may be changed by clicking the *drop-down menu* arrow on the right. "**System Layers**" is the default and is in fact a **Layer Group**, which indicates the object is on the **Background** layer of the **System Layers** group. See [Layers](#) for more information.

The **Status** *panel* contains **Calculate** and **Visible** menus that allow control of individual objects. Selecting "Yes" means the object(s) will be used in calculations or will be visible. Selecting "No" means the object(s) will not be used in calculations and will not be visible. "ByLayer" indicates that control of object visibility and use in calculations is controlled by selections made in the [Layer Manager](#) for [Editability](#) and [Calculation State](#).

Once an object has been made not visible with this *dialog*, the only way to get access to the object is through the [Design Manager](#) where the object can be selected and made visible again, for example.

The *Luminaire* **Type** *panel* contains:

Luminaire **Selector**, which is a reduced drop-down version of the *Luminaire* **Schedule**. showing *Luminaire* **Label** and **Count**. The *drop-down menu* shows the truncated schedule **Label**, **Count**, and **Catalog Number**.

Candela **Distribution** showing the shape of the *luminaire* output with the name of the *photometric* file below the polar plot.

The **Position** *panel* contains:

Aim Point is an editable X,Y,Z triplet indicating where the *Luminaire* is aimed. Unless the *Luminaire* was inserted with **Place & Aim**, Visual assumes the aim point

to be in the Z=0 *plane*.

Insertion Point is an editable X,Y,Z triplet indicating where the *Luminaire* is placed. Unless the *Luminaire* was inserted with **Place & Aim**, Visual assumes the placement to be in the Z=0 *plane*.

Mounting Height of a *Luminaire* is set when a *Luminaire* is placed and can be modified to any value to suit the design intent.

Orientation indicates the rotation of the *Luminaire* with respect to the 0° X-axis. See 3.2 The Luminaire Editor for more information.

Tilt is the angle of inclination with 0° being straight down, 90° being at the horizon, and 180° being straight up.
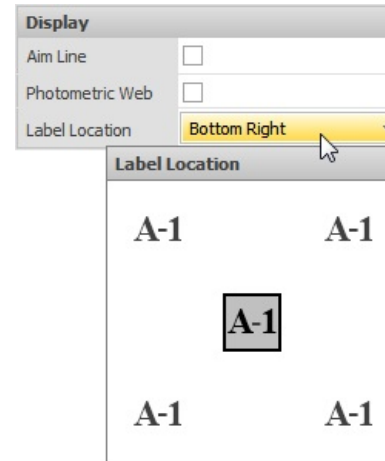
Mounting Height	10
Orientation	0.0
Tilt	0.0

The **Display** *panel* contains:

Aim Line is a checkbox that turns on or off the display of the line from the *Luminaire* to the **Aim Point**. This can be very useful to illustrate where *luminaires* are aimed for certain project types like facade lighting.

Photometric **Web** is a check box that turns on or off the display of a pseudo-scaled 3-D mesh illustrating the shape of the *candela* distribution for the selected *Luminaire*.

Label Location is a drop-down menu with 5 location choices to avoid possible overlap of **Labels** when displayed in certain situations.

Display

Display	
Aim Line	☐
Photometric Web	☐
Label Location	Bottom Right ▾

Label Location

A-1		A-1
	A-1	
A-1		A-1

Multiple objects can be selected and modified. **Properties** that do not have the same value will have an ellipsis entry indicating multiple values. The ellipsis can be clicked and parameters modified as normal, thus setting that value to all objects; for example, color or layer.

(…)

After **Properties** have been suitably modified, click the right mouse button to end the command and apply parameter modifications.

Drop-down menus in the **Properties** *tab* allow for parameter selection just as in the commands that create objects. Reference specific commands for detailed information on parameters.

4.4.5 Solid Properties

Solid properties are shown in the [Sidebar](#) when the **Properties** command is active and **Solid** objects are selected.

To activate the **Properties** command, click the **Properties** button on the **Home** *tab* of the **Ribbon Bar** or in the **Sidebar**, or press the "P" *hotkey*. When a **Solid** object is selected, Visual displays the properties for that object in the **Sidebar**.
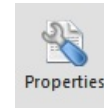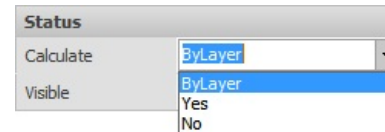
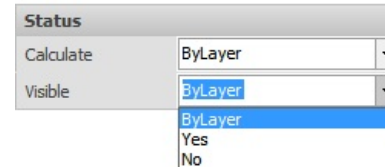For **Solid** objects, Visual displays the following *panels*:

The **Layer** *panel* indicating on which layer the object resides. The layer may be changed by clicking the *drop-down menu* arrow on the right. "**System Layers**" is the default and is in fact a **Layer Group**, which indicates the object is on the **Background** layer of the **System Layers** group. See [Layers Tab](#) for more information.

The **Status** *panel* contains **Calculate** and **Visible** menus that allow control of individual objects. Selecting "Yes" means the object(s) will be used in calculations or will be visible. Selecting "No" means the object(s) will not be used in calculations and will not be visible. "ByLayer" indicates that control of object visibility and use in calculations is controlled by selections made in the [Layer Manager](#) for [Editability](#) and [Calculation State](#).

Once an object has been made not visible with this *dialog*, the only way to get access to the object is through the [Design Manager](#) where the object can be selected and made visible again, for example.

The **General** *panel* contains:

Name is the user-specified name or the Visual default.

Area is shown in square feet or square meters inside the *polygonal* solid boundary.

Normal is the direction the perpendicular to the surface points in a unit *vector*. i.e. (0,0,1) would indicate the front surface is in the positive-Z direction. The **Flip** button orients the **Surface Normal** 180° from its current position and thus changes the "front" to the "back".

Reflectance is the numerical value and associated color of the solid.

Transmittance is set to 0% and *diffuse* by default when creating an object. ***Transmittance*** can be modified to be higher and/or **Transparent**. ***Diffuse Transmittance*** is like an opal acrylic where a clear image cannot be seen through
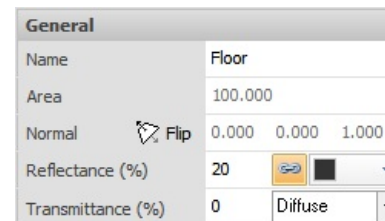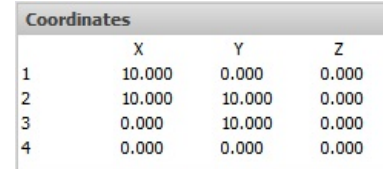
the material.

The **Render** *panel* allows for one or both sides of a **Solid Object** to be hidden in Rendered Display Mode. Placing a check in the box indicates that selection will be hidden.

Render	
Hide Back	☐
Hide Front	☐

The *Coordinates panel* shows all *vertex coordinates* in X,Y,Z triplets and is not editable.

Coordinates	X	Y	Z
1	10.000	0.000	0.000
2	10.000	10.000	0.000
3	0.000	10.000	0.000
4	0.000	0.000	0.000

The **Flip** button rotates the surface **Normal** 180°. When using the **Calculation Zone Surface** command, Visual places the grid on the "front" face of the solid. Depending on the order in which the *vertices* were chosen, the result of this command may not place the grid on the desired side. Therefore, the **Flip** button would make the other side of the solid the "front" and Visual would place the grid on the opposite side.
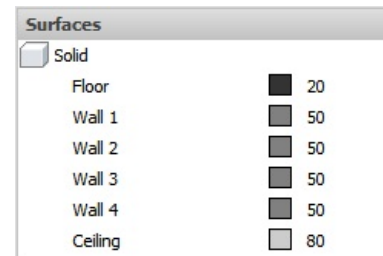
⬙ Flip

The **Link** button connects the solid *Reflectance* to the **Color**. When **Color** and *Reflectance* are **Linked**, Visual will adjust the *Reflectance* value based on the chosen **Color**. In complex designs not involving **Rendering**, it may be advantageous to color objects differently in the *model* for identification without impacting the calculations.

When a **Room** or **Structure** is selected, Visual displays the associated **Solids** in the **Surfaces** section of the **Sidebar**. Selecting one of the **Surfaces** in the **Sidebar** populates the **General** and *Coordinates* sections with the associated information.

See Ribbonbar Properties Tab for information on how **Single Selection** and **Multiple Selection** impact selection of **Grouped** objects.

Surfaces		
☐ Solid		
Floor	■	20
Wall 1	■	50
Wall 2	■	50
Wall 3	■	50
Wall 4	■	50
Ceiling	☐	80

Multiple objects can be selected and modified. **Properties** that do not have the same value will have an ellipsis entry indicating multiple values. The ellipsis can be clicked and parameters modified as normal, thus setting that value to all objects; for example, color or layer.

(...)

After **Properties** have been suitably modified, click the right mouse button to end the command and apply parameter modifications.

Drop-down menus in the **Properties** *tab* allow for parameter selection just as in the commands that create objects. Reference specific commands for detailed information on parameters.