

Populate Content

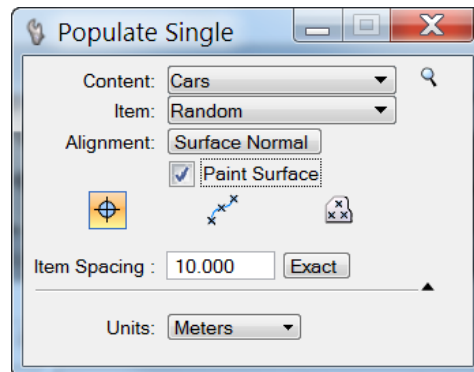
Overview

The populate content tool allows the placement of cells or RPC on any surface in a design file, the tool will automatically calculate the top most surface in the Z direction and place the items at the correct height. This tool includes the ability for randomly selecting items from a library of defined cells, models or RPC with random spacing and placement characteristics, making this tool ideally suited for rapidly placing trees and foliage into your 3D scene.

Populate Content

The populate content tool has three modes of operation depending on if you want to place a single item on a surface or a set of items along a path or fill an area with items. At each data point an item will be placed on the surface below it in the view selected

Populate Single



Content

This option button is populated with a list of the sets of items to place when using the tool. The magnifying glass next to it opens a dialog which allows the creation and maintenance of sets of items for use by the tool. This dialog is described later in this document

Item

This item lists all the entries in the chosen content set to place. Here an individual item can be selected or by selecting the Random option an item will be randomly picked from the set every time an item is required for placement.

Alignment

The options are Vertical and Surface Normal, choosing Vertical the content is always aligned with the Z-Axis and choosing Surface Normal results in the content being orientated based on the surface normal at the point in which it makes contact with the surface. For example you might want to choose Vertical for placing People or Trees and choose Surface Normal when placing Vehicles.

Paint Surface

When this check box is selected the tool will enable the user to paint the surface with items. The operation of this is similar to the stream curve tool where a series of items will be placed at the cursor location as it moves across the view. The spacing of the items is dependent on the “Item Spacing” settings below the tool mode icons.

Mode Icons

These icons switch the operation of the tool between “Populate Single”, “Populate Along Path”, “Populate in Area”

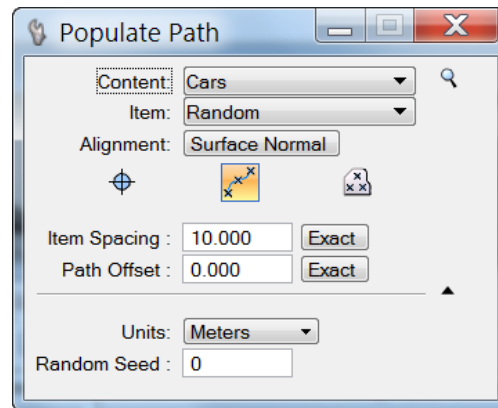
Item Spacing

This item is only available when using the “Paint Surface” mode of the tool. It determines the spacing between successive items placed. So if it is set to 15 and the units in the extended tool settings are set to meters then when the cursor moves 15 meters from the last item placement point then another item will be placed. The option button to the right of this item allows the spacing between these items to be varied based on a percentage of the distance used.

Units

When using the item spacing with the “Paint Surface” mode this item specifies the units of the distance to be used. It is defaulted to the same units as the design file.

Populate Along Path



This mode of the tool will place items at specified points along a path. Once the path has been selected prompts to select the start and end points of placement will be displayed followed by a data point to accept the placement.

Content

This option button is populated with a list of the sets of items to place when using the tool. The magnifying glass next to it opens a dialog which allows the creation and maintenance of sets of items for use by the tool. This dialog is described later in this document.

Item

This item lists all the entries in the chosen content set to place. Here an individual item can be selected or by selecting the Random option an item will be randomly picked from the set every time an item is required for placement.

Alignment

The options are Vertical and Surface Normal, choosing Vertical the content is always aligned with the Z-Axis and choosing Surface Normal results in the content being orientated based on the surface normal at the point in which it makes contact with the surface. For example you might want to choose Vertical for placing People or Trees and choose Surface Normal when placing Vehicles.

Item Spacing

This item determines the spacing between successive items placed. So if it is set to 10 and the units in the extended tool settings are set to meters then at 10 meter intervals along the path another item will be placed. The option button to the right of this item allows the spacing between these items to be varied randomly based on a percentage of the distance used.

Path Offset

This items enables the items to be placed offset from the path by the distance specified in the text item, again the units are as determined by the units value in the extended section of the tool settings. The option button to the right allows this value to be randomly varied by the percentage specified.

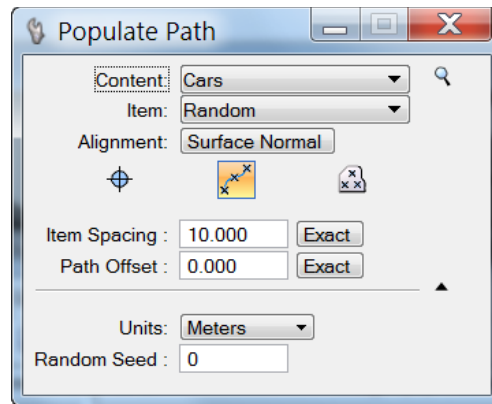
Units

When using the item spacing of path offset this item specifies the units of the distance to be used. It is defaulted to the same units as the design file.

Random Seed

This value will regenerate the items displayed and selected based on a different random number base. This will provide a different variation of items selected and distances used.

Populate Area



This mode of the tool will fill a shape with items based on the criteria specified in the tool. Simply identify the shape to be populated (or if populating a fence is required then check the “Use Fence” option). Then items will be placed on the surface within the area.

Content

This option button is populated with a list of the sets of items to place when using the tool. The magnifying glass next to it opens a dialog which allows the creation and maintenance of sets of items for use by the tool. This dialog is described later in this document.

Item

This item lists all the entries in the chosen content set to place. Here an individual item can be selected or by selecting the Random option an item will be randomly picked from the set every time an item is required for placement.

Alignment

The options are Vertical and Surface Normal, choosing Vertical the content is always aligned with the Z-Axis and choosing Surface Normal results in the content being orientated based on the surface normal at the point in which it makes contact with the surface. For example you might want to choose Vertical for placing People or Trees and choose Surface Normal when placing Vehicles.

Item Spacing

This item determines the spacing between successive items placed. So if it is set to 10 and the units in the extended tool settings are set to meters then at no item will be placed within a 10 meter radius of the current item. The option button to the right of this item allows the spacing between these items to be varied randomly based on a percentage of the distance used.

Units

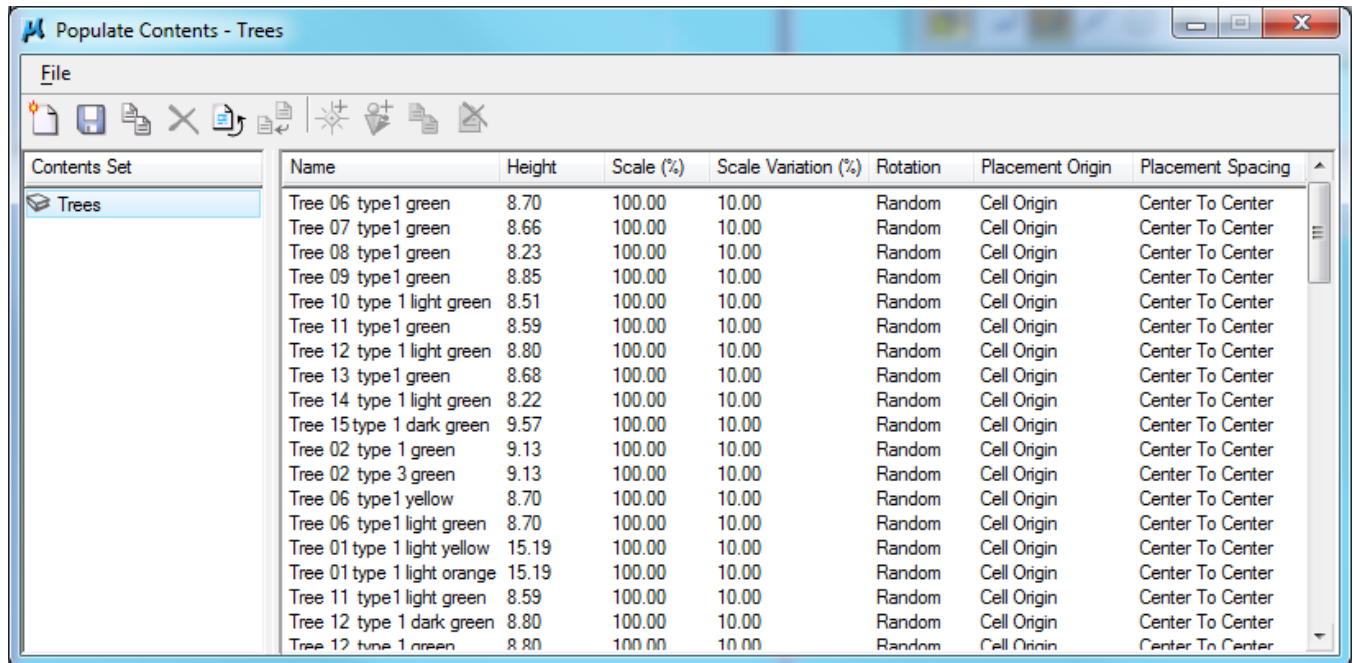
When using the item spacing of path offset this item specifies the units of the distance to be used. It is defaulted to the same units as the design file.

Random Seed

This value will regenerate the items displayed and selected based on a different random number base. This will provide a different variation of items selected and distances used.

Content Library

The content library provides the facility to create and maintain a set of differing types of content to be used by the tool. These content items can either be cells, models or RPC.



The screenshot shows a software window titled "Populate Contents - Trees". It features a "File" menu bar with icons for New, Save, Copy, Paste, Undo, Redo, and Delete. Below the menu is a "Contents Set" list on the left with a tree icon and the text "Trees". To the right is a table with the following columns: Name, Height, Scale (%), Scale Variation (%), Rotation, Placement Origin, and Placement Spacing. The table contains 20 rows of tree data.

Name	Height	Scale (%)	Scale Variation (%)	Rotation	Placement Origin	Placement Spacing
Tree 06 type1 green	8.70	100.00	10.00	Random	Cell Origin	Center To Center
Tree 07 type1 green	8.66	100.00	10.00	Random	Cell Origin	Center To Center
Tree 08 type1 green	8.23	100.00	10.00	Random	Cell Origin	Center To Center
Tree 09 type1 green	8.85	100.00	10.00	Random	Cell Origin	Center To Center
Tree 10 type 1 light green	8.51	100.00	10.00	Random	Cell Origin	Center To Center
Tree 11 type1 green	8.59	100.00	10.00	Random	Cell Origin	Center To Center
Tree 12 type 1 light green	8.80	100.00	10.00	Random	Cell Origin	Center To Center
Tree 13 type1 green	8.68	100.00	10.00	Random	Cell Origin	Center To Center
Tree 14 type 1 light green	8.22	100.00	10.00	Random	Cell Origin	Center To Center
Tree 15 type 1 dark green	9.57	100.00	10.00	Random	Cell Origin	Center To Center
Tree 02 type 1 green	9.13	100.00	10.00	Random	Cell Origin	Center To Center
Tree 02 type 3 green	9.13	100.00	10.00	Random	Cell Origin	Center To Center
Tree 06 type1 yellow	8.70	100.00	10.00	Random	Cell Origin	Center To Center
Tree 06 type1 light green	8.70	100.00	10.00	Random	Cell Origin	Center To Center
Tree 01 type 1 light yellow	15.19	100.00	10.00	Random	Cell Origin	Center To Center
Tree 01 type 1 light orange	15.19	100.00	10.00	Random	Cell Origin	Center To Center
Tree 11 type1 light green	8.59	100.00	10.00	Random	Cell Origin	Center To Center
Tree 12 type 1 dark green	8.80	100.00	10.00	Random	Cell Origin	Center To Center
Tree 12 type 1 green	8.80	100.00	10.00	Random	Cell Origin	Center To Center

New



This icon will create a new entry in the contents set list column allowing the user to set the name of the entry. A series of cells, rpc's etc can be added to this set.

Save



When the contents of a contents set have been changed the changes are saved to file when this icon is used.

Copy



This icon will copy the currently selected list of contents to a new list with a different name

Delete

This icon will delete the currently selected contents set item.

Reset

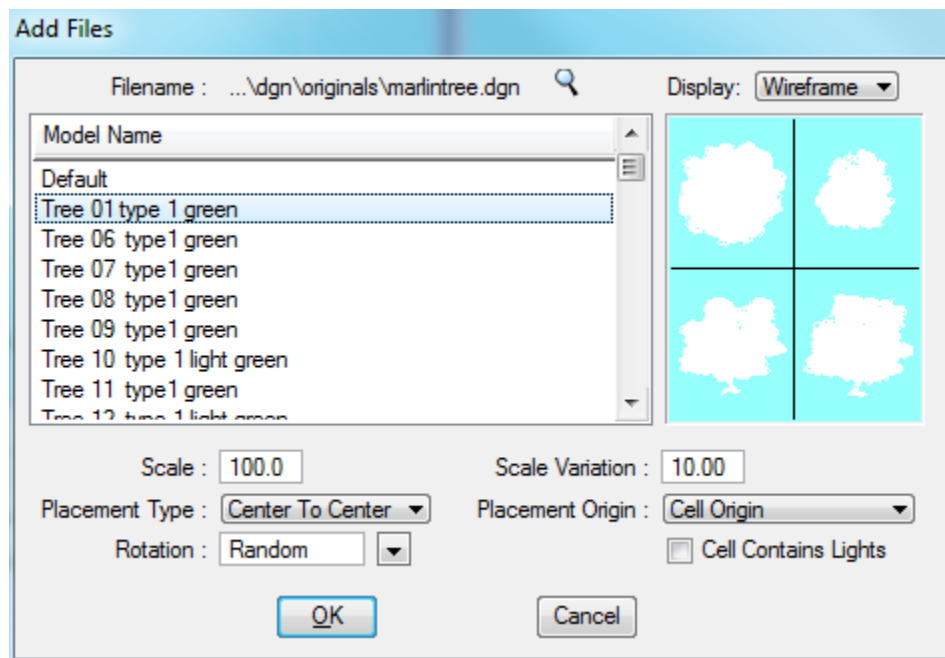
This icon will reset the currently unsaved changes to the list

Update From Library

If the origin of this list of contents is from another file such as a dgnlib and it is different in the active file from the originating file this icon will reset the list to the state that the list is in the library.

Add Item

This icon will open the following dialog.



This dialog allows the user to open a .dgn,.cel,.dgnlib etc. file and select a series of models within that file for use as items to place.

The user has the option of selecting one or more of the entries in the list and these will then be added with the associated options into the item list of the main contents library dialog.

Scale

This is a scale factor to apply to the item when placed.

Scale Variation

This value is a percentage which will be used in conjunction with the scale value to enable a random variation in height to be setup.

Placement Type

This option button provides the facility to select how the items are placed next to each other. They can either be placed “Center To Center” This means that the item spacing will be the distance of the center of one item to the center of the next item. Or “Edge To Edge” can be selected this means that the spacing is from the edge of the range of one item to the edge of the range to the next item.

Placement Origin

The point of the item which is placed on the surface is specified with this option button. It can either be “Cell Origin”, where the origin of the cell is the point that the item is located on the surface. Or “Range Bottom Center” where the lowest point in the Z range of the item is used in conjunction with the center in x & y as the placement point.

Rotation

This is an angle which to rotate the contents of the model to such that when the item is placed it is facing a specific direction or can be in a random direction. For a specific angle to be used just enter it into the item.

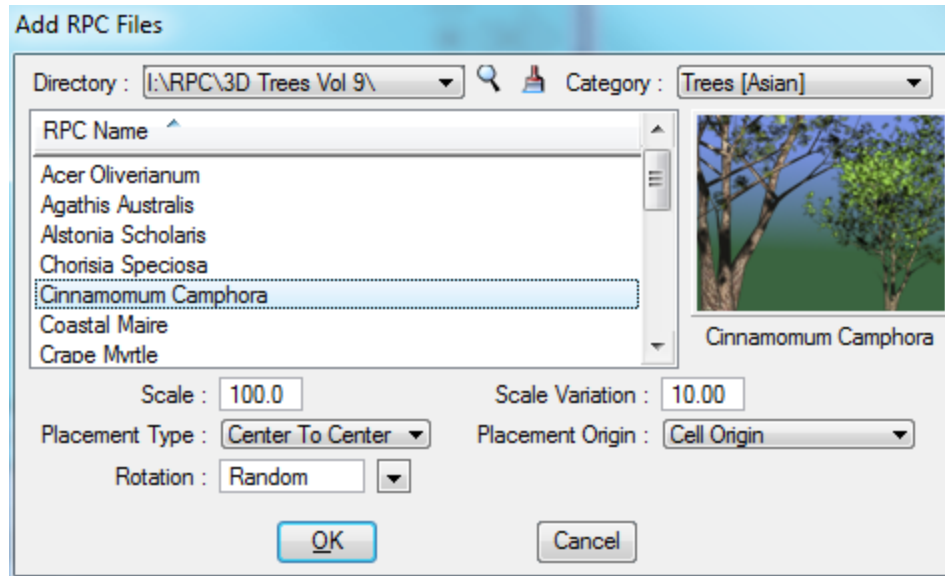
Cell Contains Lights

If the cell being placed contains lights then this item must be checked so the lights can be processed correctly.

Add RPC



This dialog allows the addition of RPC into the system.



This dialog allows the user to select a series of RPC for use as items to place.

The user has the option of selecting one or more of the entries in the list and these will then be added with the associated options into the item list of the main contents library dialog.

Scale

This is a scale factor to apply to the item when placed.

Scale Variation

This value is a percentage which will be used in conjunction with the scale value to enable a random variation in height to be setup.

Placement Type

This option button provides the facility to select how the items are placed next to each other. They can either be placed “Center To Center” This means that the item spacing will be the distance of the center of one item to the center of the next item. Or “Edge To Edge” can be selected this means that the spacing is from the edge of the range of one item to the edge of the range to the next item.

Placement Origin

The point of the item which is placed on the surface is specified with this option button. It can either be “Cell Origin”, where the origin of the cell is the point that the item is located on the surface. Or “Range Bottom Center” where the lowest point in the Z range of the item is used in conjunction with the center in x & y as the placement point.

Rotation

This is an angle which to rotate the RPC to such that when the item is placed it is facing a specific direction or can be in a random direction. For a specific angle to be used just enter it into the item.