

# Import Points CE 3.0

Import Points CE is an open source mVBA applet which runs in MicroStation CONNECT Edition. The applet enables users to import point data from text files— typically comma separated values (.csv), though other delimiters may be used. Upon execution of the applet's *Place* command, the source (point) file's location data and accompanying fields are transferred to the active model with user-specified data mappings and graphics.

## Installation

The applet should be installed in a location defined by the MicroStation Variable MS\_VBASEARCHDIRECTORIES, although any location where the user has read access will suffice.

Typical locations include:

```
C:\ProgramData\Bentley\MicroStation CONNECT Edition\Configuration\Organization\Macros
```

```
C:\ProgramData\Bentley\MicroStation CONNECT  
Edition\Configuration\WorkSpaces\WorkspaceName\Standards\Macros
```

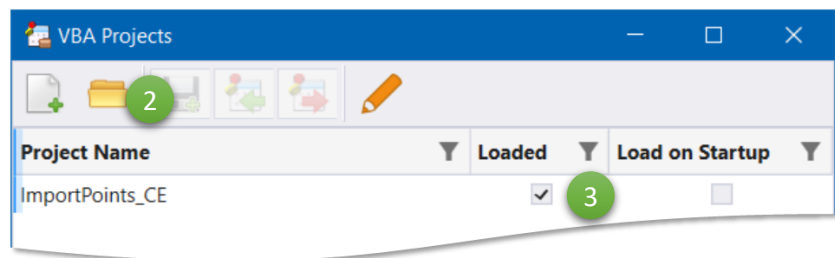
```
C:\ProgramData\Bentley\MicroStation CONNECT Edition\Configuration\WorkSpaces\ WorkspaceName  
\WorkSets\WorkSetName\Standards\Macros
```

To install, unzip the contents of the distribution file to a folder of your choice. It is important both **Import Points CE.mvba** and **Point Templates.dgnlib** reside in the same directory.

## Startup

The applet may be started via the VBA Projects dialog:

- 1) From the Utilities tab of MicroStation's ribbon select the *VBA Manager*.
- 2) Select *Open VBA Project from Disk* and navigate to the installation location. Choose **Import Points CE 3.mvba** and then select *Open*. The applet will automatically run.
- 3) Unchecking and rechecking "Loaded" will re-launch the applet after it has been terminated.



A key-in may also be used to launch the applet:

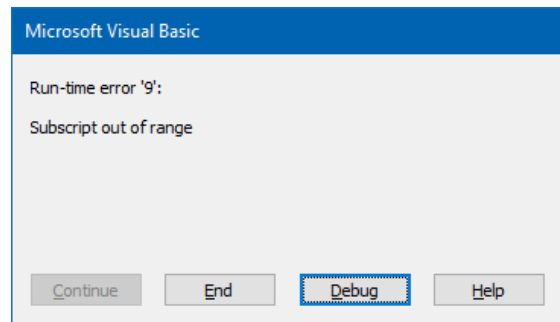
```
vba run [D:\PathToFile\Import Points CE 3.mvba]Main.StartImportPoints
```

If the applet is installed in a directory defined by MS\_VBASEARCHDIRECTORIES, the following key-in will also work:

```
vba load "Import Points CE 3"
```

## Environment Settings

Import Points CE 3.0 has “built-in” error trapping. Consequently, *Error Trapping* in Microsoft’s Visual Basic for Applications integrated development environment should be set to *Break on Unhandled Errors*. If this is not the case, upon load/startup of Import Points the following error message will be posted:

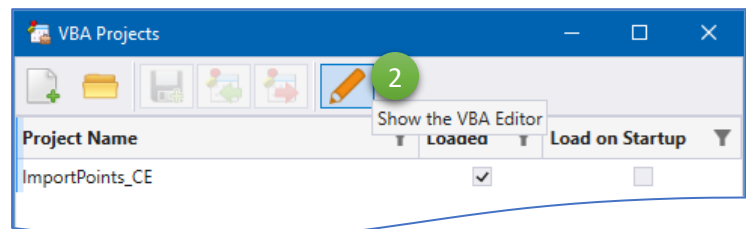


To adjust this setting:

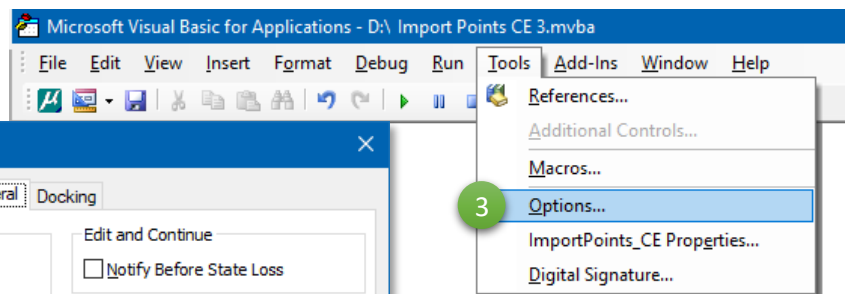
- 1) Open the VBA Manager (VBA Projects) from the *Utilities* tab in the MicroStation ribbon.



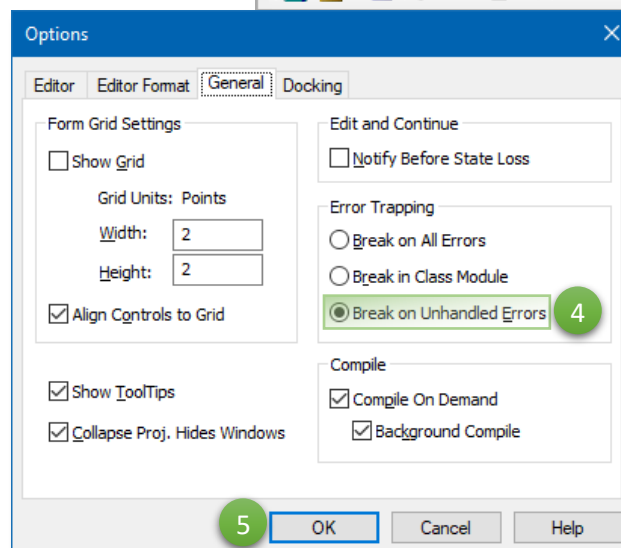
- 2) From the VBA Projects dialog select the *Show the VBA Editor* icon. (This action requires a project is already loaded)



- 3) Select *Options* from the *Tools* pull-down menu in the *Microsoft Visual Basic for Applications* window.



- 4) Under *Error Trapping* on the *General* tab of the Options dialog select *Break on Unhandled Errors*.

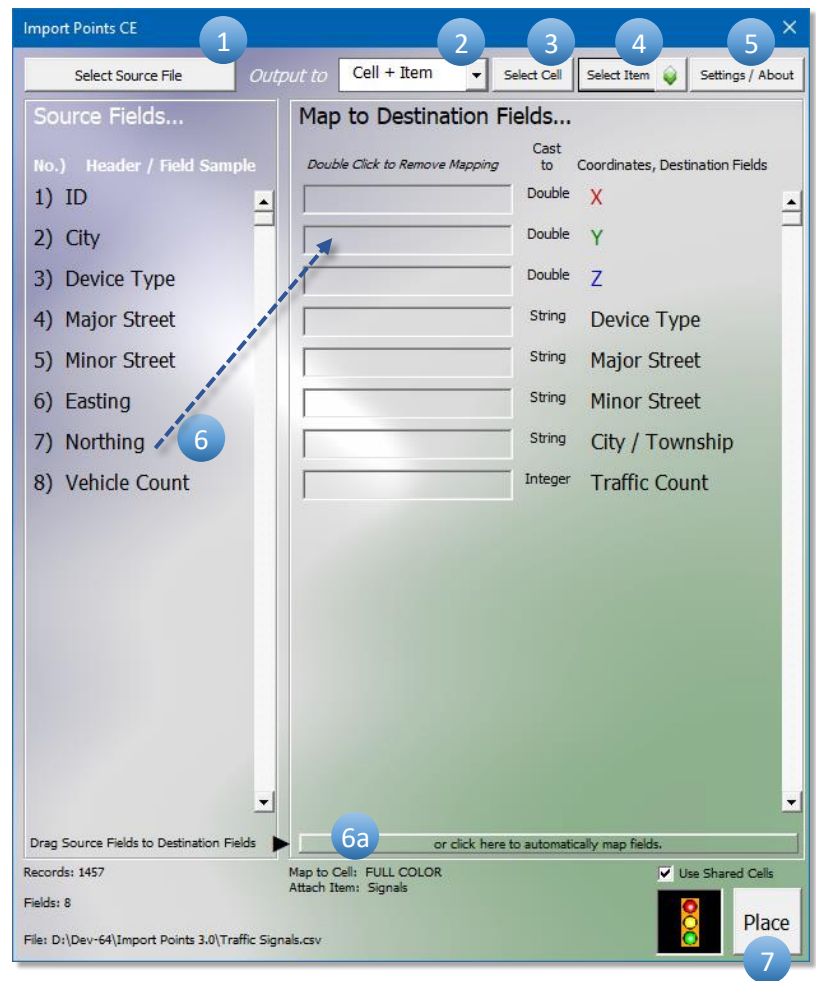


- 5) Select **OK**

## Workflow

Workflow within the primary form, *Import Points CE*, generally moves from left to right and top to bottom:

- 1) Select the Source File.
- 2) Define the Output.
- 3) Select a cell (if required).
- 4) Select an Item (if required).
- 5) Ensure settings are properly adjusted.
- 6) Map ordinates and data by dragging and dropping items from the *Source Fields* onto the *Destination Fields* or have Import Points automatically map source fields to destination fields (6a). Automatic mapping will find direct matches for empty destination fields and search for “near matches” if a direct match does not exist. Mismatches are easily overridden by dragging a different source field onto the mismatched destination field or by double clicking the destination field to remove the mapping.
- 7) Select **Place**.



### OPERATION NOTES:

- Both the Source and Destination panes accommodate up to 64 fields. Source files containing records with more than 64 fields may be used, but only 64 fields will be loaded. Consequently, it may be necessary to “pre-process” the source file in order to accommodate field capacity.
- There is no requirement that all the source or destination fields be used, though the **X** and **Y** fields along with the **[Spec’d Cell]** and **[Rule Spec’d Cell]** fields (when present) are mandatory.
- The **[Spec’d Cell]** and **[Rule Spec’d Cell]** fields are enabled from the *Select Cell* form.
  - The **[Spec’d Cell]** field is enabled by checking “Place Record-specified Cells.” It is used to place a cell named in a record at the location specified by the record. If the cell cannot be located, a user-defined default cell will be placed instead.
  - The **[Rule Spec’d Cell]** field is enabled by checking “Use Cell Specification Rules.” When selected the contents of a field and application of a rule (e.g. if the *value of the field* is > X place cell “Y” or if the field contains the text “ABC” place the cell named “Z”) determine the cell placed at the location specified by the record. If the cell cannot be located, a user-defined default cell will be placed instead.

- The “*Output to*” drop-down includes the following options:
  - **Cell** – Places cell graphics, drivable text, and items attached to the cell’s internal objects and the cell instance. Cell “instance items” originate from the cell’s model in the attached cell library.
  - **Cell + Item** – The same as above with the addition of item data attached to the cell instance.
  - **Point** – Places point elements (zero-length lines).
  - **Point + Item** – Places point elements and attaches item data.
  - **Text Node** – Places multi-line text (type 7 text nodes).
  - **Cell + Fields** – The same as **Cell**, with the addition of text fields driven by items attached to internal cell geometry.
  - **Line String** – Places a line string from points in the source file in the order encountered.

## Select Cell

From the *Select Cell* form, users may browse cells and examine the “mappable” items and text content.

Selecting *Default Library* will load the *Point Templates.dgnlib*. This library should reside in the same directory as the *Import Points.mvba*

Opens MicroStation’s *Cell Library* dialog

Displays [**Spec’d Cell**] in the *Destination Fields* pane

Use a set of Rules to select which cells are placed

Scale of cell at placement

When checked, cells are dropped after placement

When checked, items mapped to the cell’s sub elements are not used

Cells names from the currently attached library display here. Selecting a cell name from this pane will display the cell in in the *Cell Image* pane while details about items and text in the cell will display in the *Cell / Field Data* pane

**Select Cell**

Default Library

Cell Library...

☐ Place Record-specified Cells

☐ Use Cell Specification Rules

☐ Use Shared Cells

☒ Place as Annotation

Cell Scale: 1

☐ Drop Cells ☐ Make Static

☐ Ignore Internal Items

Cell / Field Data

Cell Name: Triangle Left + 3 (2D)  
Description: Triangle Pointing Left and 3 Lines of Text

TYPE	NAME	DETAILS
Text	Line 1	
Text	Line 2	
Text	Line 3	

When checked, shared cells are placed. *Drop Cells* and *Make Static* are disabled.

When checked, cells are placed with *Is Annotation* set to **True**\*

When checked, *Is Annotation* is set to **False** on elements from dropped cells\*\*

Cell Image

Cell Item and Text details

Cancel

Select Default Cell and Continue

\* Only cells that are “annotative” (where **Annotation Purpose** is set to true) may have the **Is Annotation** property set to true. This setting does not affect the **Is Annotation** properties of the cell’s component elements.

\*\* When *Make Static* is selected, setting the active model’s annotation scale to 1 and using *Cell Scale* to size the geometry will prevent shifting of annotative text when the cell is dropped.

## Select Item Type

Two of the “*Output to*” options, **Cell + Item** and **Point + Item**, allow the user to attach item data from libraries accessible via the active file. The *Select Item Type* form is used to browse libraries and examine the properties of items.

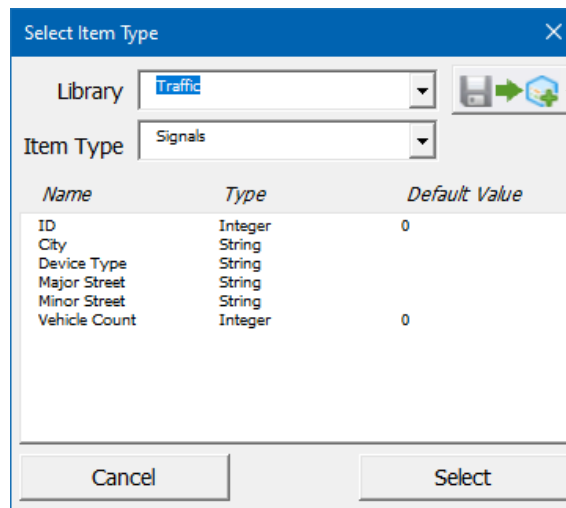
After placement, items attached to cells and points are assessable via the *Properties* dialog along with standard element properties.

Properties in item types may be used in reporting, or to change the apparent symbology of elements via display rules.

Supported item property datatypes:

- Boolean
- DateTime
- Double
- Integer
- String

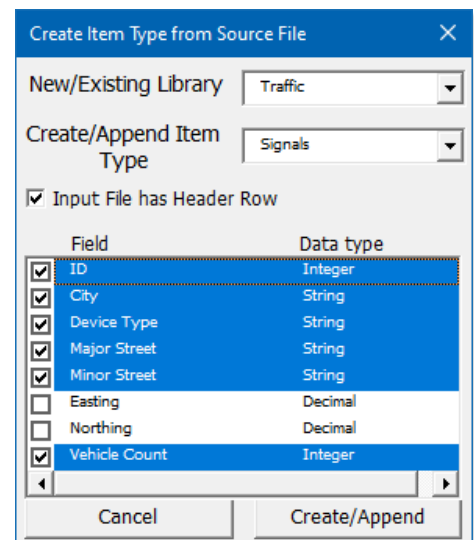
Note: *Property arrays* and the item datatype *point* are not currently supported.



Launches the *Create Item Type from Source File* dialog

## Create ItemType from Source File

The *Create ItemType from Source File* dialog is launched from the *Select Item Types* dialog. It scans the current source file and determines the data type of each field. The user may then select which fields should be converted to properties of the item type. New item type libraries and item types may be created directly from this dialog. Properties may also be appended to existing item types.



## Cell Selection Rules

Specific cells may be placed based on field values that are evaluated against user-defined rules. The general syntax is as follows:

If the **expression** is True, then use **CELL NAME**

Where the expression consists of:

A **field value** (string), **operator** and **comparator** (string) that evaluates to either **True** or **False**.

For example, if field *x* contains string *y* then place cell *z* or if field *a* is greater than the value of string *b* then use cell *c*.

The following table contains example expressions and corresponding results:

Field Value	Operator	Comparator	Result
rw-4	Contains	w	True
rw-4	=	w	False
rw-4	=	rw-4	True
rw-4	Left =	rw	True
rw-4	Right =	rw	False
125-76-2281	Right =	2281	True
ABC 123	>	122	True
123.75	<	124.35	True
rw-4	<	-3	True <sup>1</sup>
XYZ-056	>	55	False <sup>2</sup>
XYZ-056	<	ABC	False <sup>3</sup>
123 75B-22	>	500	True <sup>4</sup>
(space)	<	500	True <sup>5</sup>
(space)	=	0	False <sup>6</sup>
(space)	Is Empty	(ignored)	True <sup>7</sup>

1. The > and < operators use the first number found in the *Field Value* string. Valid numbers may include a decimal point and negation symbol.
2. A *Field Value* of "XYZ-056" yields **-56** when using either the > or < operators.
3. "ABC" yields **0** when using either the > or < operators.
4. "123 75B-22" yields **12375** when using either the > or < operators.
5. An empty *Field Value* or a non-printing character (e.g. space) will return **0** when using either the >, <, >= or <= operators.
6. The = operator uses string comparison, consequently *Field Values* consisting of non-printing characters will not return 0.
7. **Is Empty** returns True when encountering an empty field or a field containing only non-printing characters.
8. **Is Set** returns True if the field contains any value.

The rule list is processed from top to bottom. When data mapped from a record to the [ Rule Spec'd Cell ] field meets the rule's criterion, the corresponding cell is placed, and rule processing terminates. If no rule can be applied to the mapped data, then the user-specified default cell is used.

Remove selected rules

Add Rule

Apply changes to selected rule

Adjust Rule Priority



## Settings/About

When checked, the first row in the source file is considered a header and is not processed as a point

When checked, treats point data as Latitude, Longitude and Elevation and converts it to the current GCS

Field delimiter in source records

Determines how empty and unmapped text and numeric fields are handled

Restores the applet's default settings

Important Information about the software

The screenshot shows the 'Settings/About' dialog box with the following elements and annotations:

- Input File has Header Row:** A checked checkbox. An arrow points from the text 'When checked, the first row in the source file is considered a header and is not processed as a point' to this checkbox.
- Coordinates are in Latitude, Longitude and Elevation:** A checked checkbox. An arrow points from the text 'When checked, treats point data as Latitude, Longitude and Elevation and converts it to the current GCS' to this checkbox.
- Angular Format:** A dropdown menu showing 'DDD.ddddddd'. An arrow points from the text 'Supported Angular formats:' to this dropdown.
- Delimiter Character:** A dropdown menu showing 'Comma' and a preview of a comma character. An arrow points from the text 'Field delimiter in source records' to this dropdown.
- Blank/Undefined Fields Substitutions:** A section containing:
  - Text:** A checked checkbox with a text input field showing '(Undefined)'. An arrow points from the text 'Determines how empty and unmapped text and numeric fields are handled' to this section.
  - Number:** A checked checkbox with a numeric input field showing '0'.
  - Default Z:** A numeric input field showing '500'.
  - Remove Empty Text Objects:** An unchecked checkbox. An arrow points from the text 'Removes empty text objects from cells as well as blank lines from text nodes' to this checkbox.
- Restore Default Settings:** A button. An arrow points from the text 'Restores the applet's default settings' to this button.
- Settings/About:** Two buttons at the bottom. An arrow points from the text 'Important Information about the software' to the 'About' button.
- Done:** A button at the bottom right.

### Supported Angular formats:

DDD.ddddddd – Decimal degrees

DDD.MM.SSsssss – Degrees, minutes and seconds delimited by a decimal point, where the seconds have an implied decimal between the second and third numerals

DDD°MM' .SS.ss"N – Degrees, minutes, seconds and direction (N, S, E, W)

Removes empty text objects from cells as well as blank lines from text nodes

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