



OpenRoads Designer: Civil AccuDraw

Civil AccuDraw

Placing elements in a 2D model is like manual drafting — all elements appear on the same plane, like drawing on a sheet of paper.

In 3D, you place elements in space — horizontally (for example, a floor), vertically (for example, a wall), or at any other angle or direction (for example, a sloping roof).

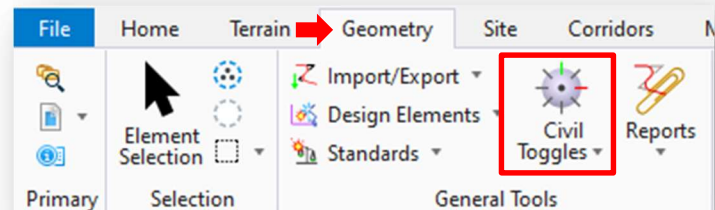
By default, data points in a 3D model are placed at the view's **Active Depth**. Where you snap a tentative point or place a data point in a blank part of a view, it will be located at the active depth. You can, however, snap a tentative point to an existing element at any depth in a view. When you accept such tentative points, the data point is placed at the level of the snap point.

AccuDraw and its drawing plane let you place elements away from the active depth. Often this improves productivity since you need not constantly change the active depth.

Civil Accudraw is activated by selecting the **Civil Accudraw** icon from the **Geometry** tab as shown below.

You can find Civil Accudraw tool set under these 2 workflows

- OpenRoads Modeling
- Survey



The first icon is used to turn Civil AccuDraw on or off.



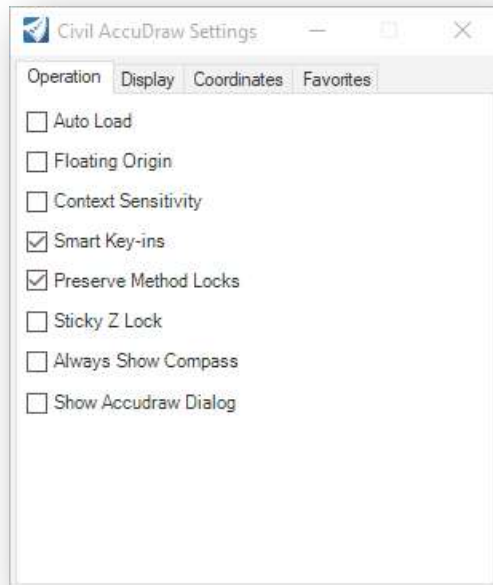
Civil AccuDraw performs many of the same functions as MicroStation AccuDraw but has greatly expanded capabilities for the civil designer. This guide will cover only a few of the functions available when using Civil AccuDraw. For more information, see the ORD online help.

Note: Simultaneous use of Civil AccuDraw and MicroStation AccuDraw will cause errors. Close MicroStation AccuDraw when using Civil AccuDraw.



Civil Accudraw Settings

Civil AccuDraw **Settings** are accessed by selecting the second icon as shown below.



Auto Load - (Default OFF)

Toggle this option ON to automatically load Civil Accudraw

Floating Origin - (Default ON)

ON: the origin moves to the last point placed.

OFF: the origin remains fixed.

ODOT recommends turning this option off.

Context Sensitivity - (Default ON)

ON: the compass rotates in response to the context of various tools.

ODOT recommends turning this option off.

Smart Key-Ins - (Default ON)

ON: Civil AccuDraw interprets a number as positive or negative, depending on the direction of the pointer from the compass.

XY ordinates only: Smart Key-ins cause Civil AccuDraw to move the focus to either the x or the y field depending on the pointer position.

Preserve Method Locks - (Default ON)

ON: the locked values remain locked after switching the ordinate methods. For example, using station-offset ordinates and a lock station of 1+00, switch to distance-direction ordinates. Station 1+00 will remain locked while inputting distance-direction. The resulting effect will be a distance-direction-station lock.

Sticky Z Lock - (Default OFF)

ON: inputs to Z ordinates remain locked (sticky) until they are changed. This is useful in a 3D DGN to control the Z ordinate. For example, input 100.00 for the Z ordinate and the value remains constant until changed.

OFF: The Z ordinate follows the cursor dynamics.



This also controls whether the origin for delta Z measurements follows the XY origin or is independent of XY.

ON: the origin for delta Z is completely independent of the XY origin. For example, the user can set the origin for dXdY measurements from point A and set dZ to be measured from a second point B. The Z origin does not change until reset by the user. The effect will be apparent when drawing a linestring. When drawing a linestring, the dynamic orientation of the compass will adjust to align with the most recent line segment. The Z origin will remain fixed wherever the user placed it at in the beginning.

Note: When AccuDraw ordinates are set to X, Y the sticky Z toggle does not apply. This is because, by definition, XY mode is always assumed to be absolute.

Always Show Compass - (Default OFF)

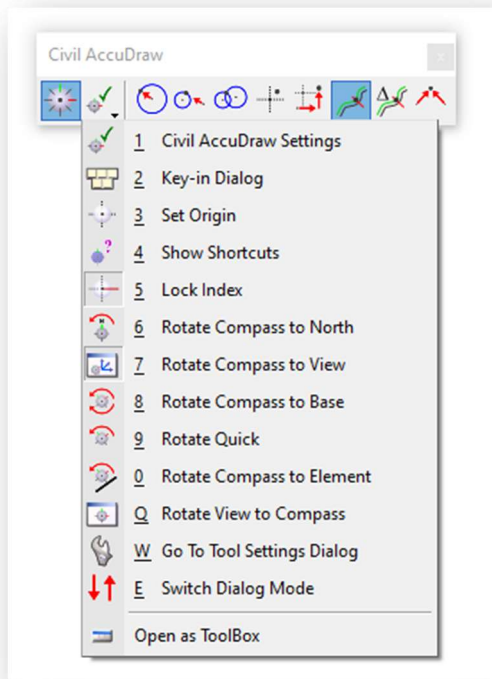
ON: the compass is always visible.

OFF: the compass is only visible when the appropriate input is required.



Civil Accudraw Shortcuts

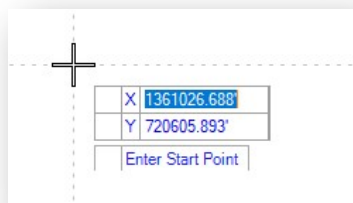
Hold down the second icon to reveal the shortcut menu shown below.



XY



When the **XY** mode is selected and a civil command is active, the coordinates of the current cursor position are displayed in a floating dialog as shown below.



The **Tab** key is used to move through the key-in fields in the dialog.

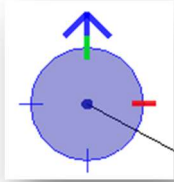
Values entered in the floating dialog are locked when the **Enter** key is pushed.

To unlock a value, tab to the field and push the **End** key.



Civil AccuDraw Compass

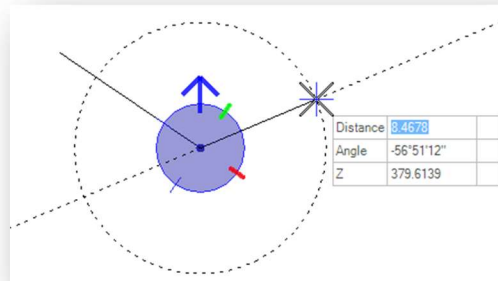
When the **Always Show Compass** setting is toggled on, a compass is displayed at AccuDraw's origin point when Civil AccuDraw is active.



The compass is always circular and is marked by a few tics. The default is 4 compass points which can be changed in the settings.

The north arrow on the compass will always point to north as defined by selecting **File > Settings > File > Design File Settings > Angle Readout**.

If the *Civil AccuDraw Settings* dialog (shown above) has the **Context Sensitive** option turned on (default), then the compass auto-rotates in a similar fashion to MicroStation AccuDraw:



Note that rather than direction being shown, the label and value are now an **Angle**. This is because the context is based on the direction of the preceding line segment rather than an absolute direction.

The compass can be rotated with the **V, B, T, RQ, RE** shortcuts.

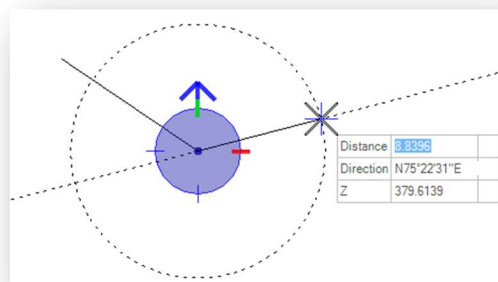
V rotates the drawing plane to align with the view axes.

T rotates the drawing plane to align with the axes in a standard Top view.

RQ is used to quickly and temporarily rotate the drawing plane.

RE rotates the drawing plane to match the orientation of a selected element.

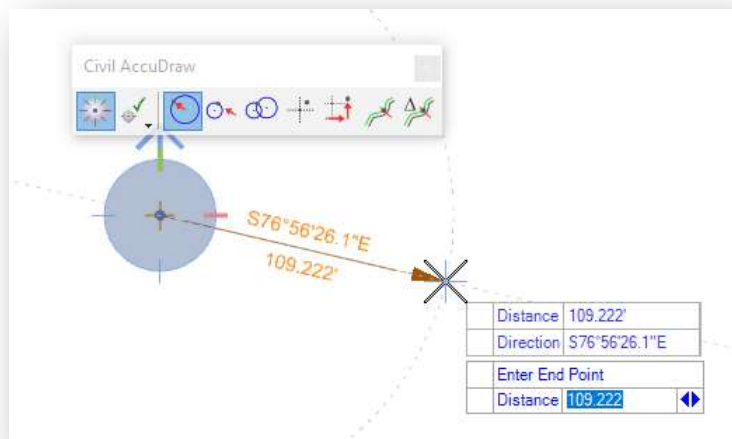
Use the **T** (Top) shortcut or the corresponding drop-down to return to a pure direction.





Distance-Direction

The **Distance-Direction** ordinate is used to enter points in polar coordinates as shown below.



Angle Syntax

The input for angle and direction fields follows the **File > Settings File > Design File Settings > Angle Readout** settings.

Valid forms for the various settings are as follows:

DD.DDDD, Radians or Grads - Use the customary decimal input.

DD MM SS or DD MM - The following delimiters are supported between degrees, minutes, and seconds:

Colon - For example DD:MM:SS

^ (caret) to designate degrees, minute (') and second (") - For example DD^MM'SS"

The following are not supported:

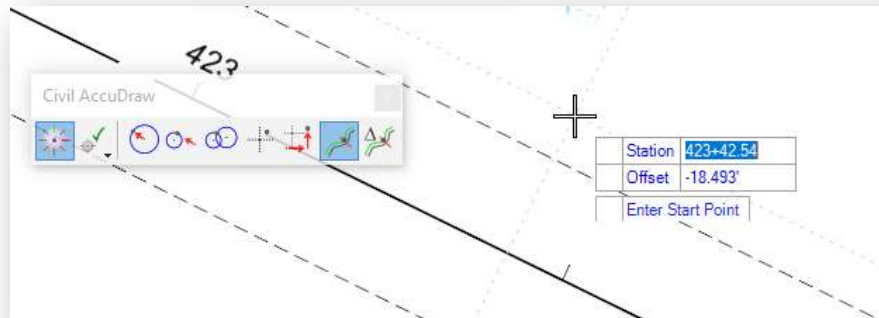
A space between degrees, minutes, and seconds because space launches the Civil AccuDraw popup menu.

Use d, m, and s to designate degrees, minutes, and seconds.



Station-Offset

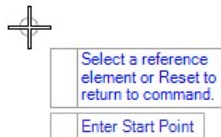
The **Station-Offset** ordinate is used with a reference element to enter information as a station and offset relative to a selected element.



The reference element can be a MicroStation element or an ORD Geometry element. If a MicroStation element is selected, the beginning of the element is assumed to be station 0+00. If a civil element is selected with stationing defined, the station value of the selected element is used.

Take the following steps to select the reference element with the **Station-Offset** ordinate active:

- Tab to activate the **Offset** field that is floating on the cursor.
- Enter the letter “O” shortcut to set the origin. You are prompted to select the reference element.



Once selected, data can be entered using station and offset values relative to the reference element as shown above.



Defining a Direction-Direction Intersection Ordinate

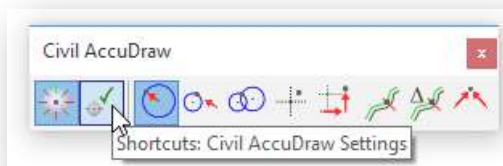
Civil AccuDraw allows users to customize the dialog or add additional ordinates. This section documents how to add a direction-direction intersection ordinate. This is useful for computing a bearing-bearing intersection.

Take the following steps to add a direction-direction ordinate:

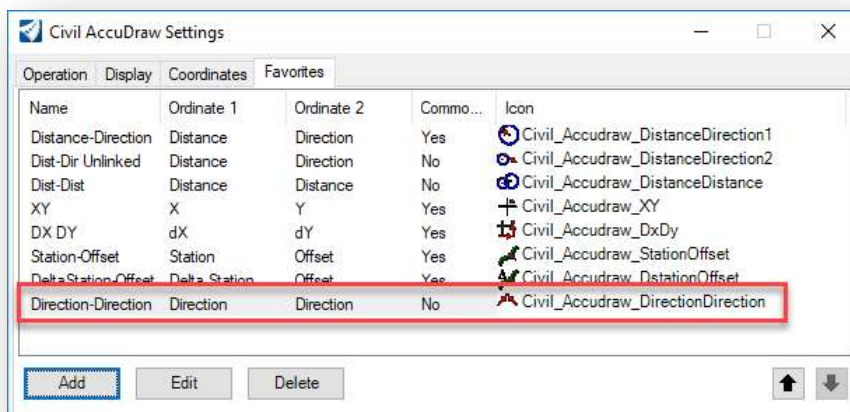
- ✓ Open **ProjectWise Explorer**



- ✓ Open the **Ohio DOT Projects** data source.
- ✓ Browse to the following folder to open the following design file:
400-Engineering\Roadway\Basemaps\123456_BK004.dgn
- ✓ Open the Civil AccuDraw dialog by choosing **Geometry > Civil Toggles > Civil AccuDraw**
- ✓ Click the second icon on the **Civil AccuDraw** dialog, **Shortcuts: Civil AccuDraw Settings**



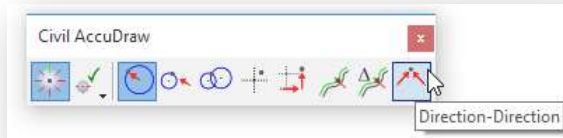
- ✓ Select the **Favorites** tab.



- ✓ Choose the **Add** button to add a new favorite.



- ✓ Configure the **Direction-Direction** ordinate as shown above.
- ✓ Close the Civil AccuDraw dialog and reopen it to see the added favorite, as shown below.



The added Civil AccuDraw favorite is saved in the following file:

C:\Users\username\AppData\Local\Bentley\OpenRoadsDesigner\10.0.0\prefs\accudrawFavorites.xml

You will also find the Civil AccuDarw settings under the following Root directory.

C:\Users\username\AppData\Local\Bentley\OpenRoadsDesigner\10.0.0\prefs\accudrawSettings.xml



OpenRoads Software Version

This document was prepared using the following software version:

OpenRoads Designer CONNECT Edition – 2021 Release 1 Update 10 – Version 10.10.01.03

This document was updated using the following software version:

OpenRoads Designer CONNECT Edition – 2022 Release 3 Update 12 – Version 10.12.02.04

Contacts

For any questions, suggestions, or problems with this document please contact the ODOT Office of CADD and Mapping Services by use of the following form on the ODOT website:

https://odot.formstack.com/forms/cadd_servicerequest
