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Snapping Guide for the Summit Evolution Stereoplotter with DAT/EM Capture for MicroStation

Contents

Snapping Guide for the Summit Evolution Stereoplotter with DAT/EM Capture for MicroStation.....	1
How to Toggle 2D and 3D Snap	1
MicroStation AccuSnap	2
MicroStation Tentative Point Snaps	3
Button Manager Example	5
DAT/EM Keypad Controller Example	5
Post-Processing 2D and 3D Snaps with MapEditor.....	6

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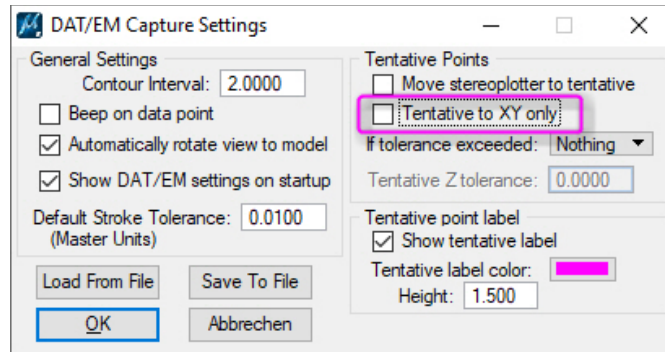
This guide will give you some hints for snapping methods using the DAT/EM Summit Evolution stereoplotter (Summit) and DAT/EM Capture for MicroStation (Capture). This includes how to set a 2D or 3D snap, settings, and keyins to use for the DAT/EM Keypad and Summit's Button Manager.

How to Toggle 2D and 3D Snap

Default MicroStation snaps are always 3D, but Summit with Capture offers both 2D and 3D snapping in MicroStation. The snap itself is always done by MicroStation, but Capture either pushes Summit's elevation into the snap for a 2D snap or leaves it at the default 3D snap.

The setting can be made using a dialog or a keyin. The keyin can be sent from the Keyin Browser in MicroStation, a digitizer button, or the Keypad Controller.

- The dialog version of the setting is on the MicroStation side in **DAT/EM SETTINGS > Tentative to XY only**. If checked, tentative snaps and AccuSnap will result in a 2D snap, using the (x,y) of the snap and the (z) of the current stereoplotter cursor elevation. If unchecked, the snaps will be the default MicroStation 3D snap.



Tentative to XY only unchecked for 3D snap, checked for 2D snap

- The **Tentative to XY only** keyin equivalents are:

TENTATIVE ON – 2D snap. Same as **Tentative to XY only** checked.

TENTATIVE OFF – 3D snap. Same as **Tentative to XY only** unchecked.

TENTATIVE TOGGLE – toggle 2D and 3D snap.

These keyins may be used on the DAT/EM Keypad or on a digitizer button set by **Summit > Tools > Button Manager**. DAT/EM recommends setting **TENTATIVE TOGGLE** on a button for the fastest toggle option.

MicroStation AccuSnap

DAT/EM's **Tentative to XY only** snap setting (described above) works with both MicroStation's tentative points and with AccuSnap. We'll first talk about AccuSnap.

You can save time by setting an AccuSnap toggle and your favorite set of snap locks on the DAT/EM Keypad or on digitizer buttons using Summit's Button Manager. If the settings you use most are on digitizer buttons, you won't have to look away from Summit to pick snap settings with the system mouse.

To set a single digitizer button to scroll through your favorite snap types, use the colon, :, separator between snap keyins on a Button Manager "User CAD" button. For example, a User CAD button set to **snap intersection:snap midpoint** would toggle between the intersection and midpoint snaps. You could list more snap types on a single button as long as the : separator appeared between the keyins. Each time you pressed that one key, the next snap lock in the list would be activated.

Useful AccuSnap keyins:

accusnap on
accusnap off
accusnap toggle

snap keypoint
snap intersection
snap midpoint
snap nearest

(See a list of more **snap** keyins in the MicroStation Keyin Browser)

DAT/EM Capture and Summit's superimposition (SI) can't detect potential AccuSnaps, because MicroStation does not publish them. You can see the little snap mark on the MicroStation side, but

unfortunately, you can't see it near the cursor in Summit. If you need the faster feedback* to show what snap you will get, use tentative point snaps instead.

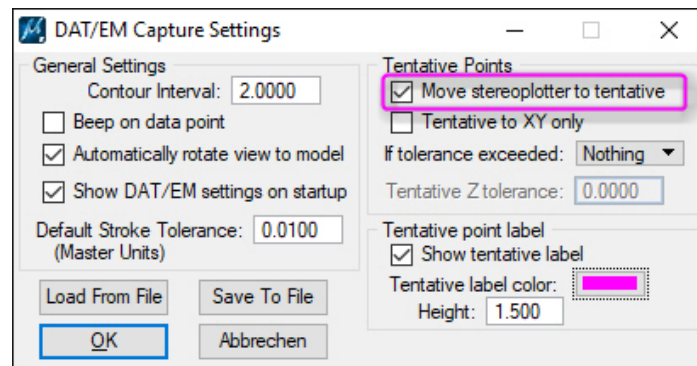
* For additional snap mode setting feedback, DAT/EM Version 7.7 and higher will show the submitted snap mode text in the CAD text area of SI, as long as the text string was submitted through a Summit digitizer button, the DAT/EM Keypad, or a keyin in the MicroStation Keyin Browser. System mouse clicks directly on the MicroStation AccuSnap toolbar are undetectable, so will not show in the SI CAD text area, but they will be properly activated as indicated on the AccuSnap toolbar.

MicroStation Tentative Point Snaps

MicroStation tentative points are potential or offered snaps, which you can view before picking to accept. Tentative points can also use the **SNAP** lock keyins listed above for AccuSnap. If hold the cursor still and repeatedly select tentative points without accepting any of them, MicroStation will offer all the potential snaps to be found at that location. This is useful when there is more than one snappable vertex or object near the cursor. You can find more information about tentative point snaps in MicroStation's Help tool.

Set a Button Manager button to **Type=Generic CAD, Action=Tentative** to allow Summit to pick a tentative point in MicroStation.

You can choose to have Summit's cursor move to each tentative point using **DAT/EM SETTINGS > Move stereoplotted to tentative** setting.



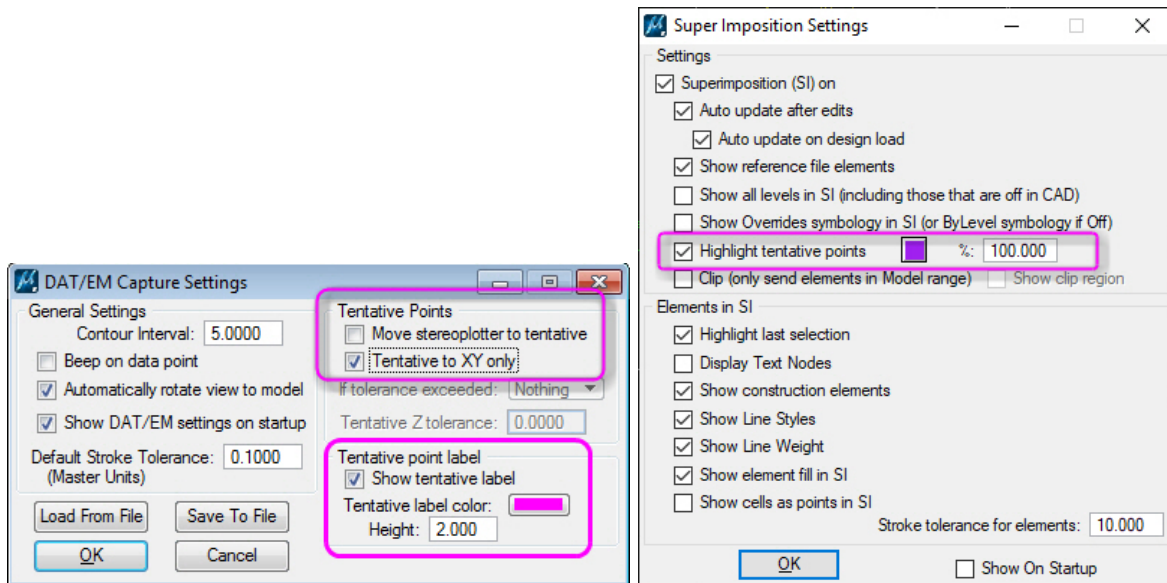
Setting to move the stereoplotted to a tentative point

Keyin equivalents of **Move stereoplotted to tentative** are:

TENTATIVE MOVE ON
TENTATIVE MOVE OFF
TENTATIVE MOVE TOGGLE

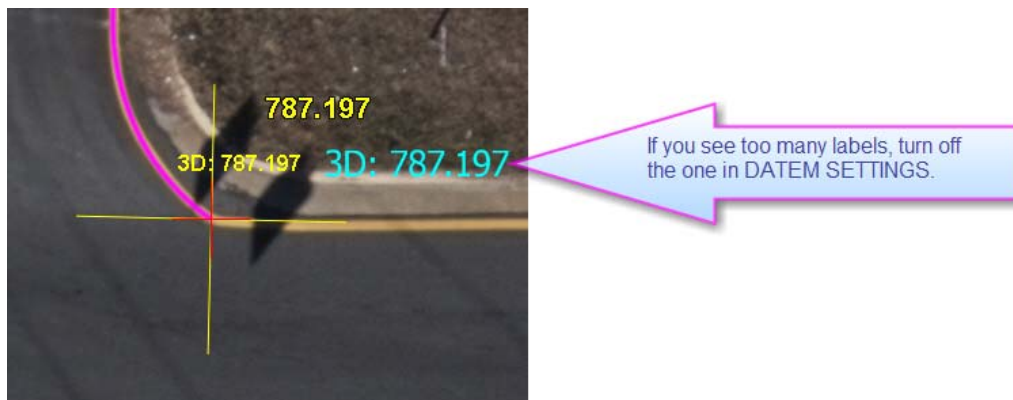
You will probably decide for yourself whether you like Summit to move to the tentative point or not, so it may not be necessary to put **TENTATIVE MOVE TOGGLE** on a Button Manager button. You may put it on the DAT/EM Keypad, or simply set it in the **DAT/EM SETTINGS** dialog and leave it that way.

Summit's superimposition (SI) can display information about a tentative point, including a mark and a "3D" or "2D" to indicate what type it is. It can also check the elevation difference between Summit's original cursor location and the tentative point and give an alarm if a tolerance is exceeded. These settings are not usually reset often, so there's no need to set a button for these tentative display choices. Settings are found in **DAT/EM SETTINGS** > **If tolerance exceeded, Tentative Z tolerance, Show tentative label, Tentative label color, and Height** and in **SI SETTINGS** > **Highlight Tentative Points** (and the color and size settings to the right of it).



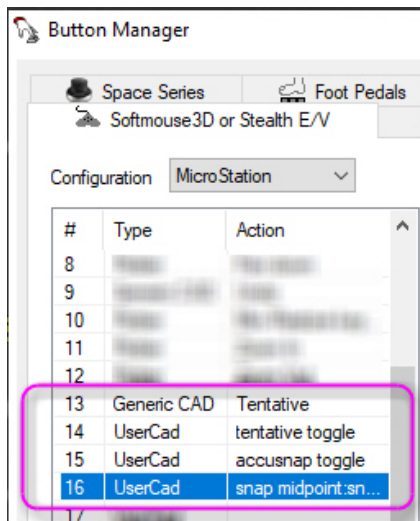
DAT/EM SETTINGS and SI SETTINGS tentative point settings

Note: If you see too many tentative point labels, turn off **DAT/EM SETTINGS** > **Show tentative label**. MicroStation XM needed the extra label; other versions may not. This extra setting in DAT/EM SETTINGS will not be offered for MicroStation CONNECT.



Button Manager Example

Below is an example of Button Manager buttons set to a group of useful snap settings:

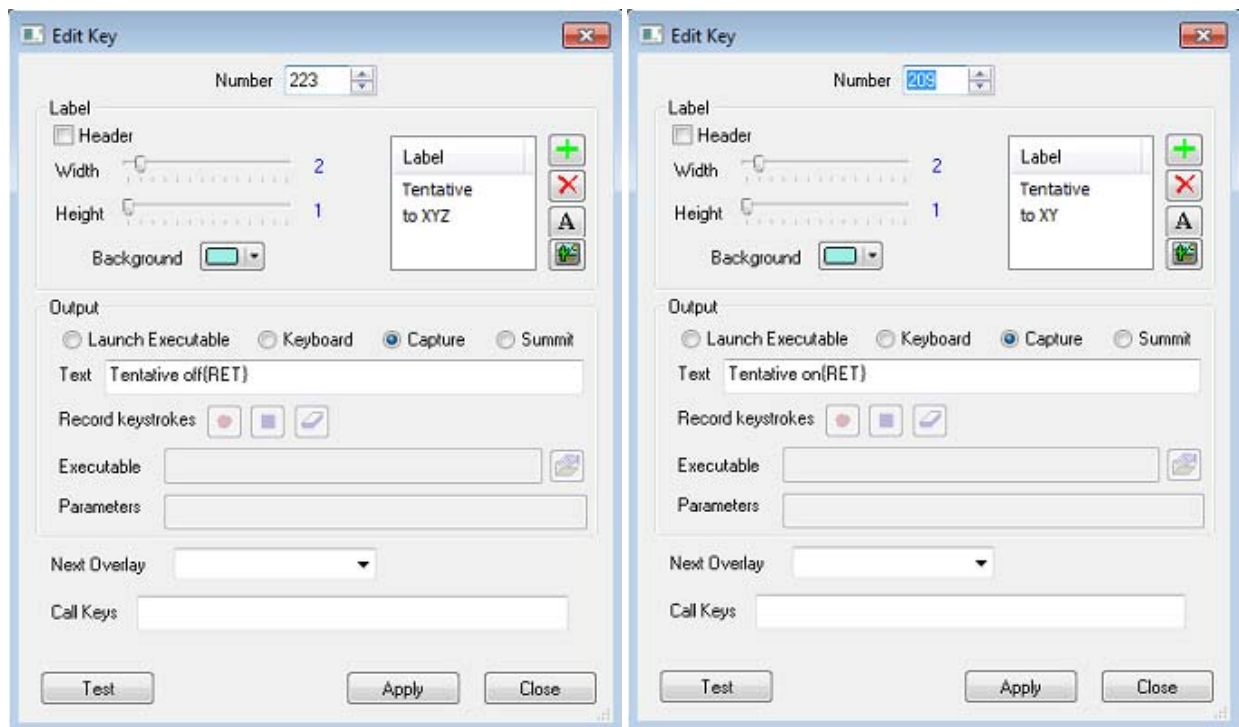


Examples of snapping buttons:

Generic CAD, Tentative
UserCad, tentative toggle
UserCad, accusnap toggle
UserCad, snap midpoint:snap keypoint:snap nearest:snap intersection

DAT/EM Keypad Controller Example

Below are examples of DAT/EM Keypad keys set to toggle 2D and 3D snapping. You could also choose to set just one key to TENTATIVE TOGGLE. You may also combine any of these keyins with a digitizing command. For example, make a key that sets the level and attributes for a road, sets a 3D snap, and starts the AUTOARC command.



DAT/EM Keypad keys set to TENTATIVE OFF (3D snap) and TENTATIVE ON (2D snap)

Any of the other keyins discussed above may be set on a Keypad key. Use the **Capture** output type to make sure the keyin is sent into MicroStation. Enter the keyin string in the **Text** field.

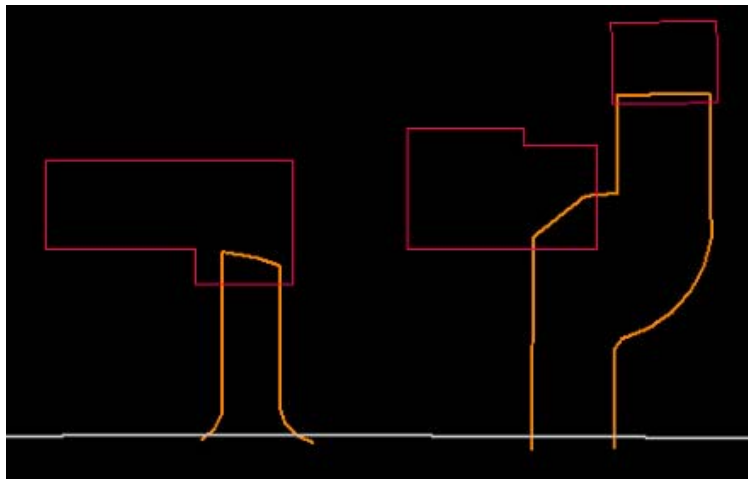
Post-Processing 2D and 3D Snaps with MapEditor

The MapEditor can be used as a post-processing step to create 2D and 3D snaps, with options to add nodes (vertices) at intersections, and to break line objects at intersections.

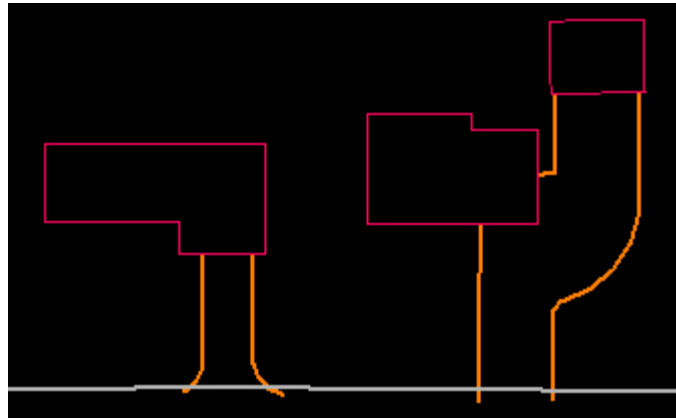
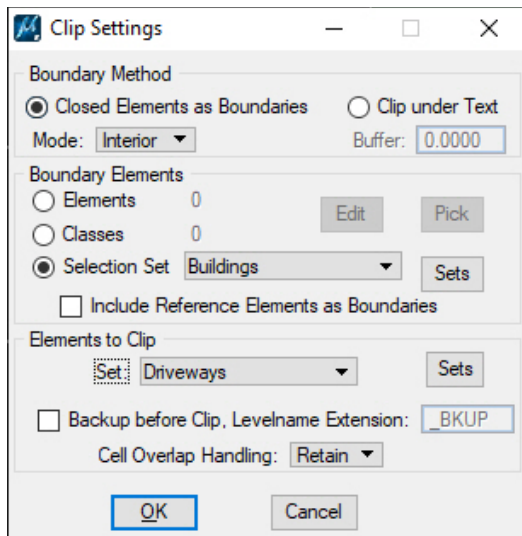
The MapEditor can be run on a quick one-time-only, this-design-only basis, or it can run a parameter file of preset tasks. If you often use the same design file template, so that you always have the same level schema, it will be worth the time to create a parameter file to add and ensure the desired snaps. You will save a lot of time at the drawing stage if you can skip the commonly done object snaps and have MapEditor do them later.

Even if you carefully ensure snaps during digitizing, MapEditor can still check them later. It could catch that one out of a thousand that was missed or 2D snapped when it should have been 3D. It can also quickly “visit” the edited locations to let you visually check the MapEditor edits. It could also simply visit the proposed edit locations and let you decide what to do there.

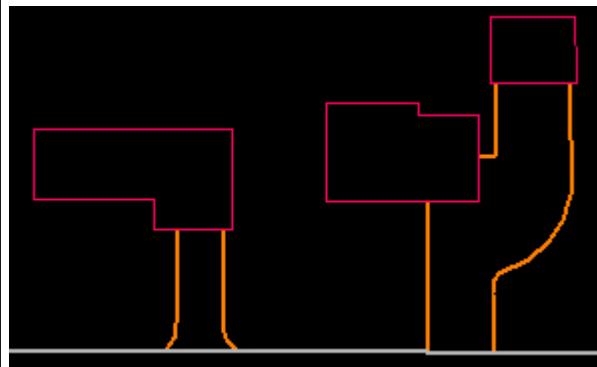
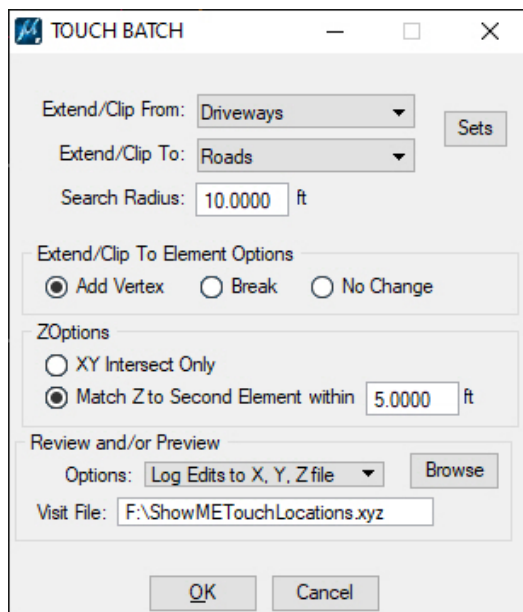
You can draw objects such as driveways, fences, and vegetation lines running into building roof shapes without worrying about precise 2D snaps at the time of drawing. You can also draw driveway lines that fall a little short or overlap the road a little, then enter and exit the building (garage). Later, MapEditor Clip can remove the objects from inside the buildings, performing a 2D snap, and MapEditor Touch can extend or trim the driveways to the road with a 3D snap. It can also add a node (vertex) at the intersection on the road line and optionally create a “Visit” file for you to visually verify each edit:



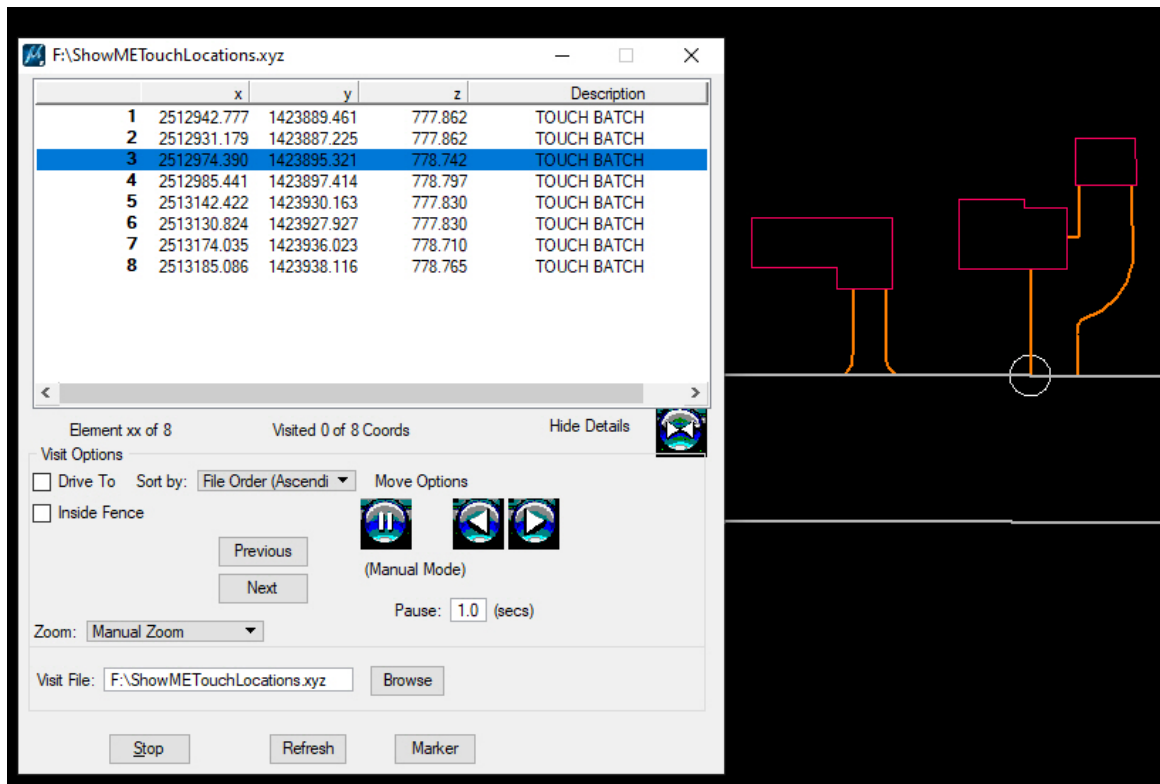
Example of driveway lines drawn overlapping the road and building objects



Example of MapEditor Clip settings to clip the driveways out of the buildings, resulting in 2D snaps

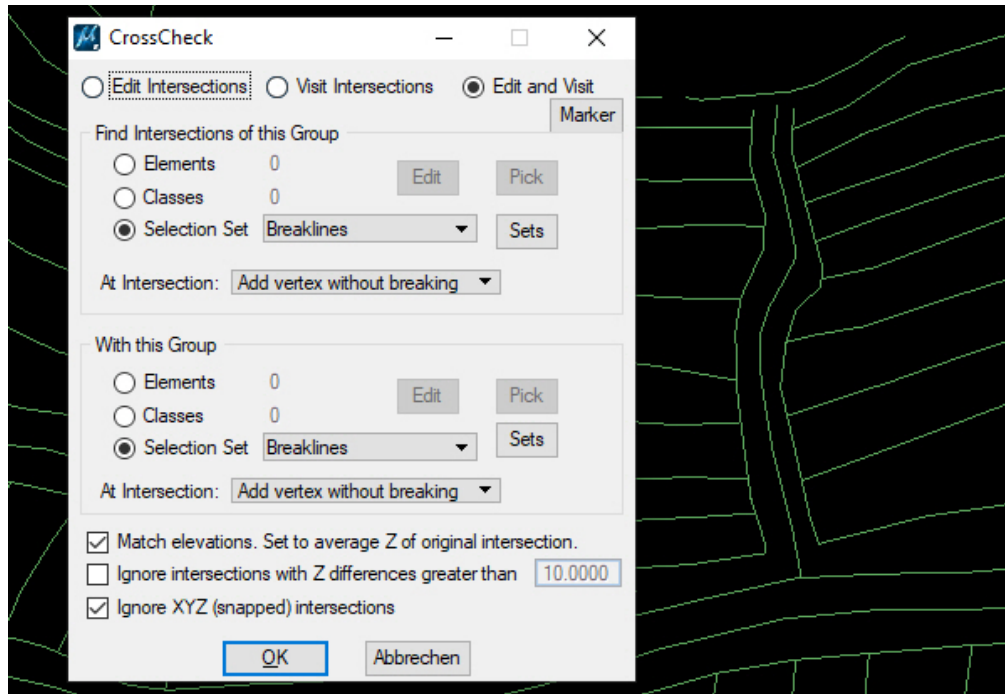


Example of MapEditor Touch settings to extend/trim the driveways to the road line, resulting in 3D snaps and a node added to the road line at each driveway intersection. A "Visit" file is made for QC.

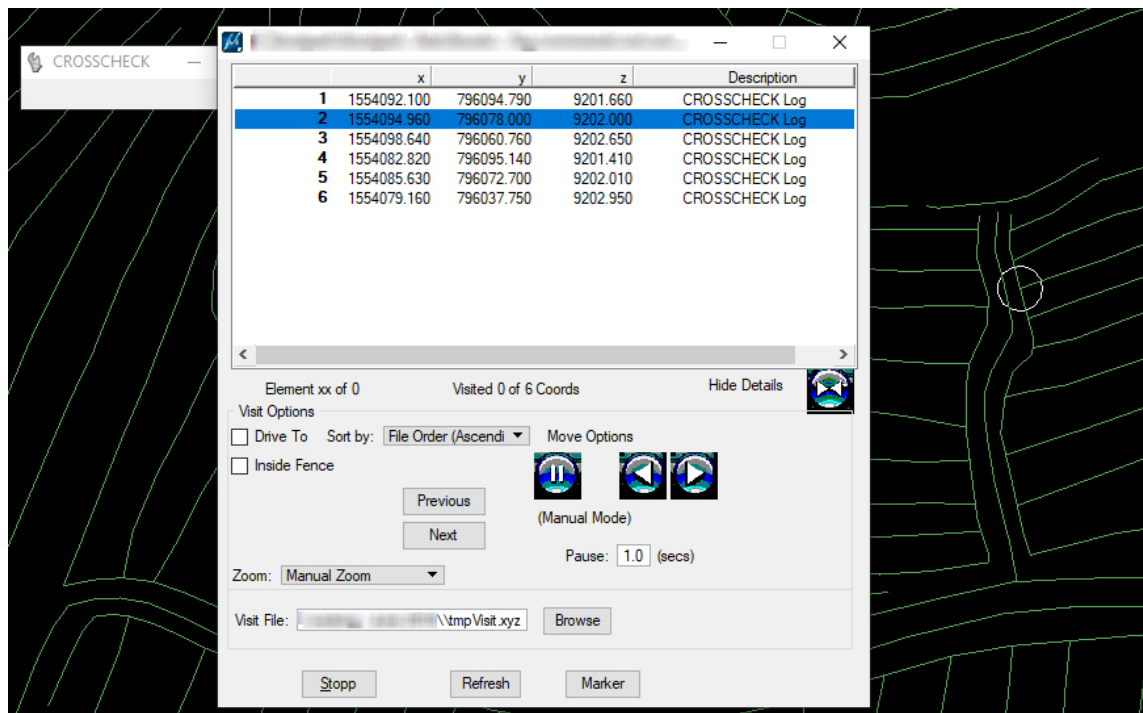


The optional “Visit” file is offered immediately for a semi-interactive run or Visit can be started later. Visit moves to each vertex for you to visually verify the edit. (8 results here include more objects that are outside the view.)

As another example, you could ensure that breakline-level strings always intersect with each other and have a node at their intersection. For this, use MapEditor’s CrossCheck command set to average the elevations (result is a 3D snap) at intersections, add a node on both “from” and “to” objects, and optionally visit the edited intersections when finished.



CrossCheck is set here to find intersections, ensure a 3D snap, and add nodes at the intersection



CrossCheck can launch Visit to show the intersections that either were edited or qualify for editing