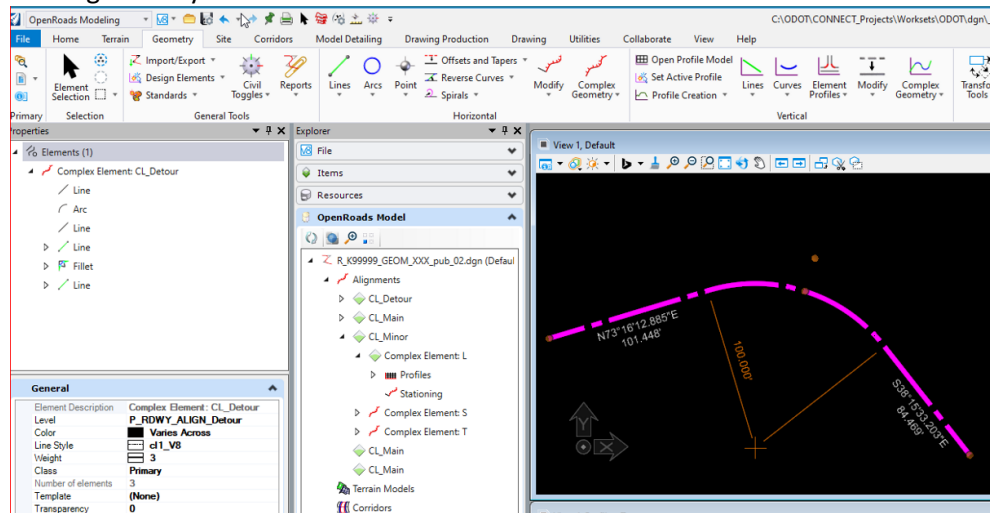# Basic Civil Geometry Rules

Basic Rules Define the Geometry

The basic civil geometry rules describe how the civil element was drawn. The rules allow you to alter how the segments and parts are related to one another with "manipulators". The image below shows a complex element selected in OpenRoads Designer. The orange-colored manipulators for the POB, POE, PI, and radius are seen when civil geometry is selected. The properties dialog for civil geometry shows the icons for civil geometry.


It Might Look Like Civil Geometry, But Is Not!

It is very easy to create graphics that are missing the basic civil rules of geometry. You may create elements that have a feature definition and symbology applied, but when selected - the element in the Properties dialog shows a green diamond icon. Some may show a black "Complex Chain" symbol, and some may even show a civil alignment symbol. The problem is that when selected - the element highlights, but no civil manipulators are seen! You may see an initial station, but do not be fooled.

Importing Geometry (LandXML or ALG)

If you don't toggle on "Create civil rules", you will not import the basic rules that define how the geometry was drawn and you won't be able to manipulate it. The picture below shows geometry that was imported without civil rules. An orange-colored initial station value is seen, but no manipulators. The green diamond icon is seen in the Properties dialog.
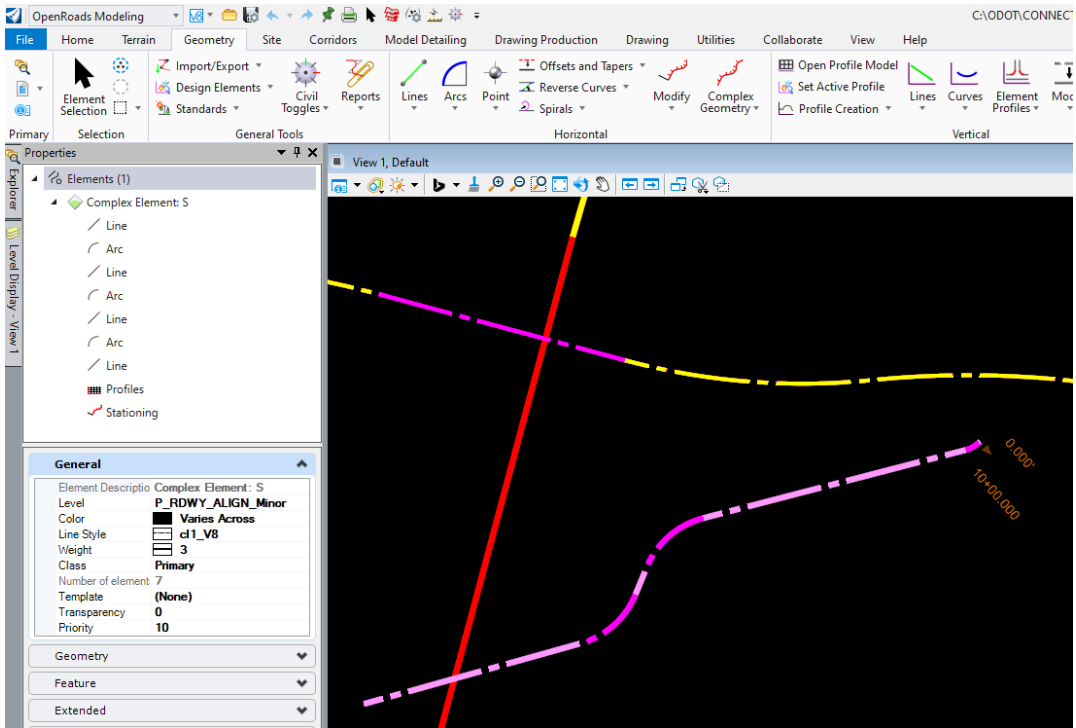
Copying an alignment with MicroStation Copy

The MicroStation commands cannot copy the basic rules that define how the geometry was drawn and you won't be able to manipulate it. The picture below shows graphics that were copied in from a reference using the MicroStation Copy command. Selection handles are seen, but no manipulators. The Properties dialog shows regular MicroStation element icons and there is no Feature group.
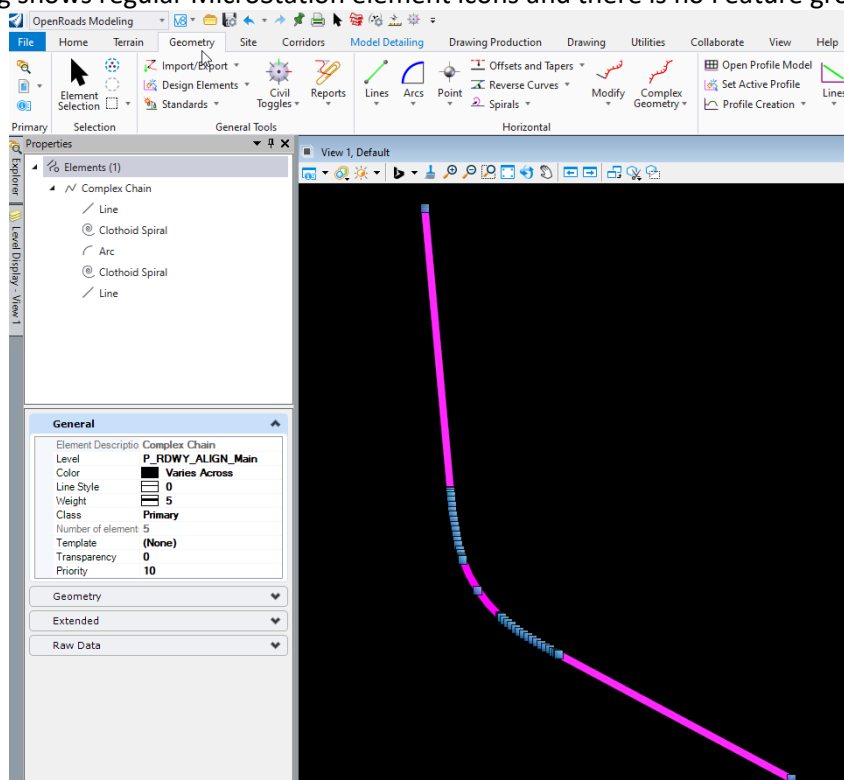
Drawing lines and arcs using MicroStation Place Line and Construct Circular Fillet commands

The MicroStation commands cannot apply the basic rules that define how the geometry was drawn and you won't be able to manipulate it. The picture below shows selected graphics highlighted magenta that were drawn using MicroStation commands. The civil command Complex By Element was used to create a complex element with a CL_Ramp feature definition, but this is not civil geometry. No manipulators are seen, and the green diamond icon shows in the Properties dialog.
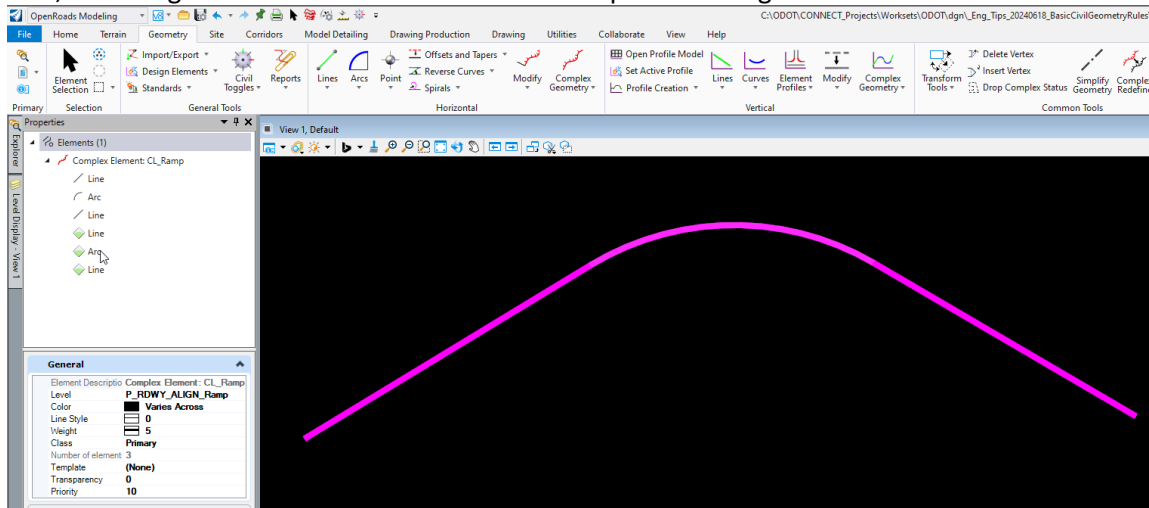
Civil Tools to use to Apply Basic Civil Geometry Rules

How ever you created graphics that are not actually civil geometry, you can use the following tools to apply basic civil geometry rules, which will provide you with a feature definition and manipulators.

Simplify Geometry and Set Feature Definition

Simplify Geometry may be used when you do not see manipulators. It removes *advanced referencing* rules, but it also **applies the basic civil geometry rules to graphics** that you have copied from references or alignments that you have imported without civil rules. You can use Simplify Geometry on imported profiles if they do not have manipulators.


If the graphics, when selected, do not have a Feature group in the Properties dialog, you will need to run the command OpenRoads Modeling>Geometry>General Tool>Standards>Set Feature Definition (this can be used in plan or profile). After using Set Feature Definition, you will see a Feature group in the Properties dialog.

Simplify Geometry and Set Feature Definition may be run in any order.

Transform Element (Copy)

When Civil elements are transformed, whether copied or moved, the advanced referencing rules are removed and **they become simplified elements with only the basic civil rules**. When copying civil graphics that are attached as a reference, Transform Element (Copy) will provide you with a copy of the civil geometry that has manipulators and the feature definition.
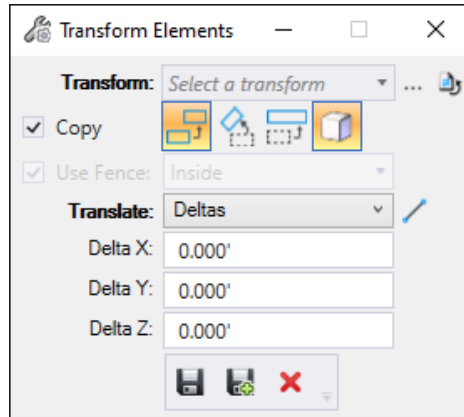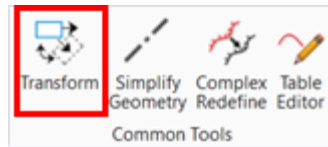
In the picture above, the Transform Elements dialog is set to Copy using Deltas set to 0 to create an exact copy in the same location.

Transform (Copy) - creates a new civil element and it will not have stationing. Stationing is more of an advanced rule, and it is removed during the transform. Apply an initial station to this new alignment.

Transform (Move) - retains the stationing on whatever it was snapped to.
- If it was snapped to a graphic that was not the end of the alignment - or placed out in space (N,E location, not snapped to anything) - the initial station stays there while you move the alignment.
- If the initial station was correctly snapped to the end of the alignment, the station moves with the alignment to its new location.