Chapter 9 - Grouping Design Graphics

This chapter discusses the various types of element groups and how they are used.

Chapter Objectives:

- Describe the methods of creating temporary groups
- Define semi-permanent groups
- Describe how to create semi-permanent groups

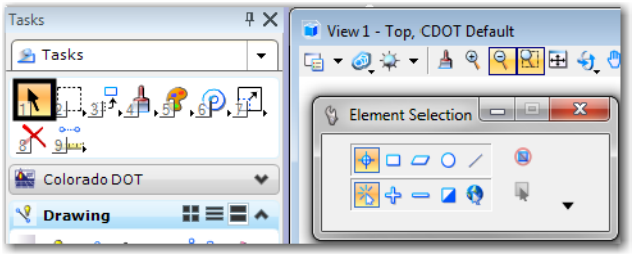
There are times when it is necessary to group elements because it is more efficient to place, modify or manipulate groups of elements rather than perform repetitive commands on individual elements. Element groups can be:

- Temporary — fences and selection sets or
- Semi-permanent — graphic groups and complex elements.

Temporary groups

If you want to perform a one-time manipulation on a group of elements (i.e. copy them or delete them), create a selection set or use a fence to group the elements.

Using Selection Sets



The **Element Selection** toolbar provides various methods for temporarily grouping elements. Once grouped, elements can be modified, manipulated or deleted as a group. When elements are grouped with these tools, they are placed in a selection set and remain in the selection set until you clear the set.

When elements are added to a selection set, they become highlighted. You can set the selection set color under **Settings > Design File > Color > Selection Set Color**. You can also quickly see the number of elements in the selection set from the indicator on the **Status Bar**.

These tools include:

Element Selection

Selects individual elements and adds them to the selection set. You can select multiple elements by either holding down the Ctrl key or by holding down the data button and dragging across the elements.

Several methods for selecting elements including:

- ***Individual*** — **<D>** on individual elements.
- ***Block*** — selects all elements inside the block. You can toggle the Block option to either inside or overlap.

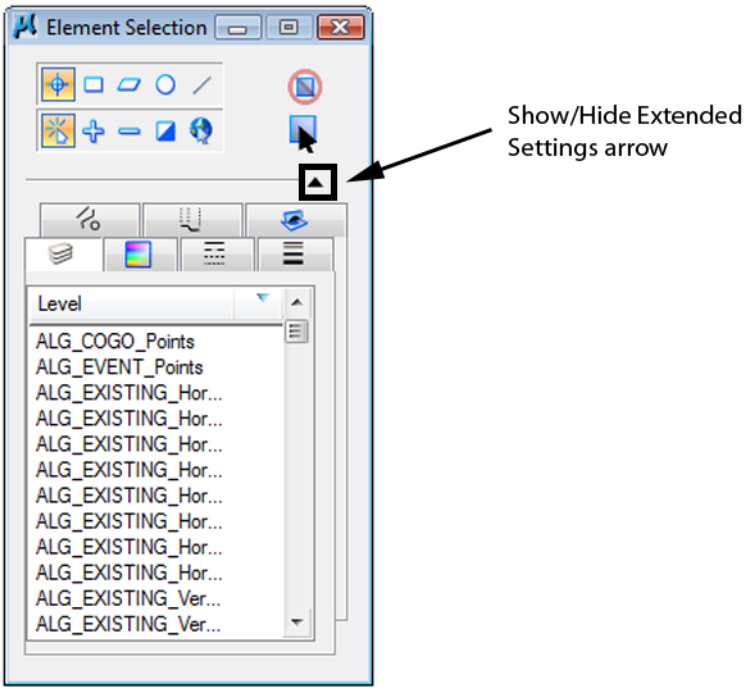
- ***Shape*** — selects all elements inside an irregular shape your draw. You can toggle the Block option to either inside or overlap.
- ***Circle*** — selects all elements inside a circle. You can toggle the Block option to either inside or overlap.
- ***Line*** — selects elements by drawing a line through the elements.

The **Mode** option gives you options for adding and removing elements from the set including:

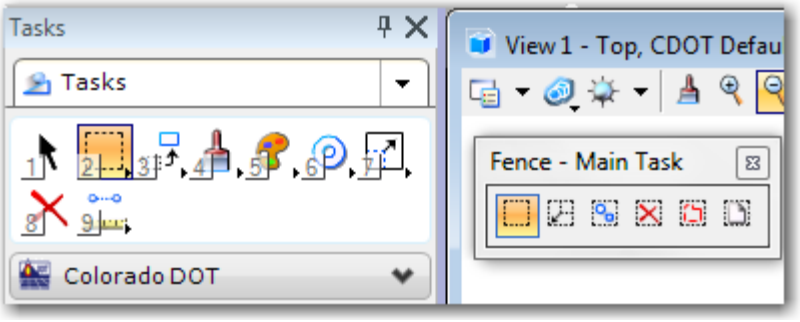
- ***New*** — clears the current selection set and creates a new set.
- ***Add*** — places elements in the set.
- ***Subtract*** — removes elements from the set.
- ***Invert*** — toggles an element (adds a removed element or removes an added element).
- ***Clear/Select All*** — removes all selected elements from the current set, or adds all elements if the set is empty.

Extended Settings

Additional options for how elements are added to or deleted from the selection set can be used by selecting the **Show/Hide Extended Settings** arrow. This includes filtering elements based on their attributes (color, style, weight, etc.) In many cases, you can find and add elements to a set much more quickly by filtering on attributes (e.g. all elements on level Design_Guradrail_Type-3), than individually picking them with the Element Selection tool.



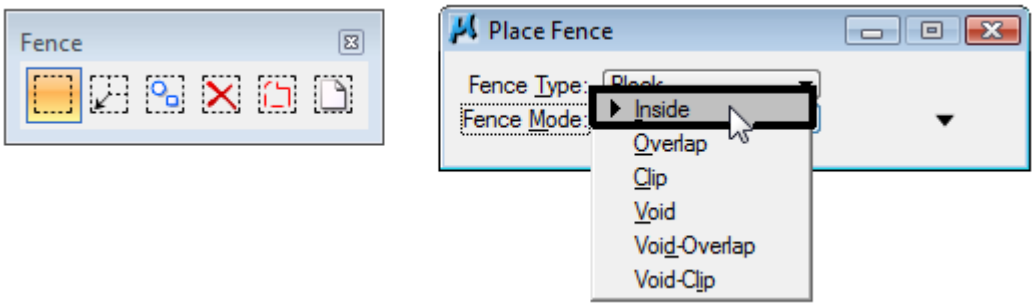
Using Fences



The **Fence** toolbar provides another set of tools to temporarily group elements. Once placed in the fence, the elements can be deleted, manipulated or the attributes changed. When the fence is removed, the elements are no longer grouped.

Place Fence

Temporarily groups elements by drawing a fence boundary around the elements. There are several types of fences you can place including blocks (drawn corner to opposite corner), shapes, and circles, also by element, view or design file.



The fence mode determines which elements will be affected by the fence. These include:

- ***Inside*** — to select elements entirely inside the fence.
- ***Overlap*** — to select elements inside or overlapping the fence.
- ***Clip*** — to select elements inside the fence and cut or break all elements that intersect the fence.
- ***Void*** — to select all elements outside the fence.
- ***Void-Overlap*** — to select all elements outside or overlapping the fence.
- ***Void-Clip*** — to select elements outside the fence and cut or break all elements that intersect the fence.

Once the elements are grouped in the fence, they can be deleted, manipulated, etc. You can use MicroStation view controls (**Zoom In, Zoom Out, Pan** etc.) and the fence remains persistent.

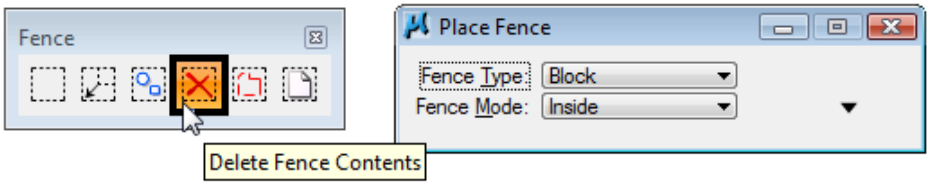
To remove the fence, select the **Place Fence** command again.

> ***Note:*** Check the fence indicator on the **Status Bar** to quickly determine is there is a fence placed in the design file.

The **Void** and **Clip** modes are two features not available with selection sets. However, there may be times when attribute filtering (not available with fences) is easier to use — especially when grouping graphics in high-density areas.

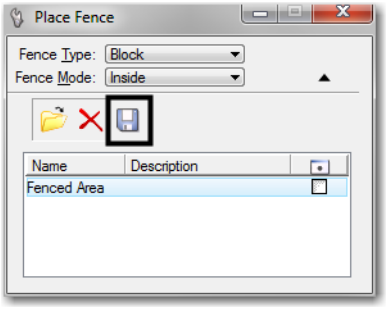
Delete Fence Contents

Deletes the contents of the fence based on the fence mode. Note that the **Delete Element** tool on the **Main** task menu ignores the presence of the fence and can only be used to delete individual elements.

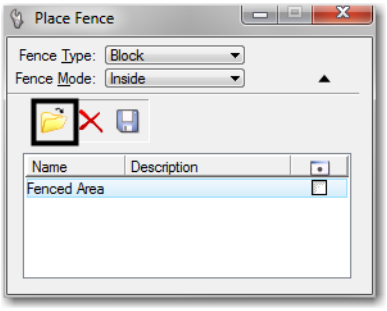


Saving a Fence

A fence can be saved for use at a later time within the Place Fence tool settings dialog box. To save a fence, expand the tool settings box, then **<D>** the **Save** button. Key in a name for the saved fence. Note: a saved fence stores the location of the fence only. It does not save any of the contents of the fence.



To use the saved fence, **<D>** the **Open** button. This replaces the fence in its original position, closing any fence currently displayed.

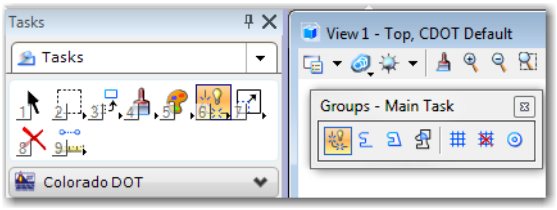


To remove a saved fence from the list, **<D>** the **Delete** button.

Semi-permanent groups

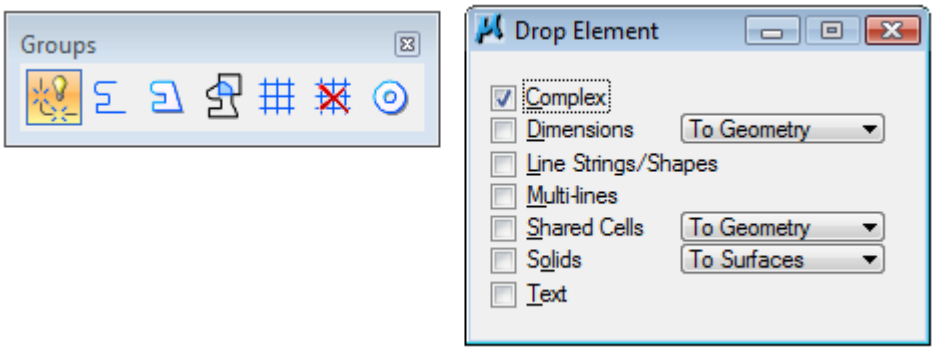
For groups that require more frequent manipulation, it is often more efficient for the elements to remain grouped until you "ungroup" them. These groups — complex chains, complex shapes or graphic groups are created using the **Groups** toolbar.

Groups toolbar



Drop Element

Drop Element returns a complex element to its original graphics. In addition to breaking up complex elements, this command is also used to drop other types of groups including linestrings and cells (discuss later).

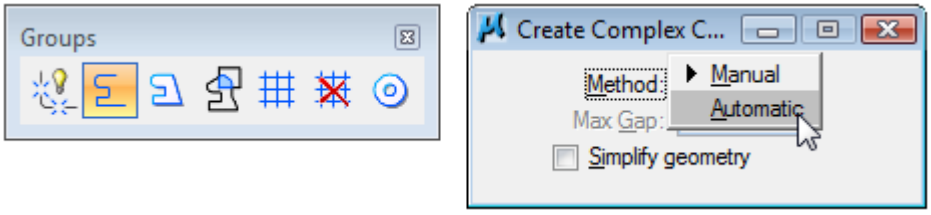


Creating Complex elements

Create Complex Chain

The Create Complex Chain command joins a series of lines, linestrings and/or arcs into one element with two end points. This command uses two methods:

- ***Manual*** — you graphically select each element to add to the complex chain.
- ***Automatic*** — adds all elements to the complex chain that are within the specified **Max Gap** distance (handy for numerous elements which would be tedious to pick individually).

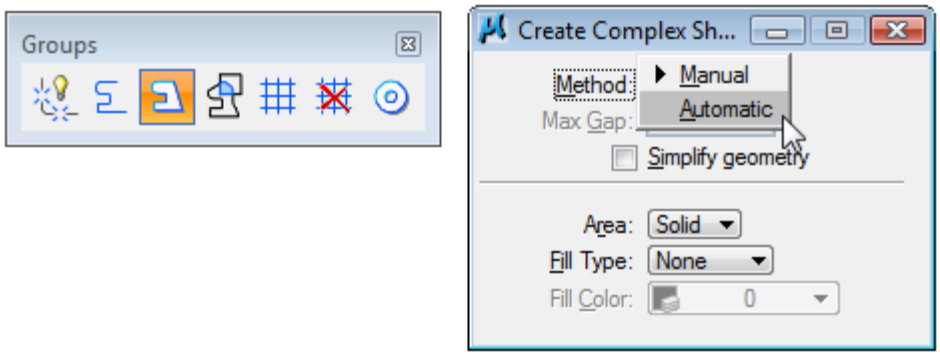


If you toggle on **Simplify geometry**, the new element is created as a linestring instead of a complex element. The advantage is that you can more easily modify a linestring than a complex element.

The new complex chain takes on the active element attributes, regardless of the attributes of the original elements that make up the chain. Be sure to set your active element attributes before creating the complex chain.

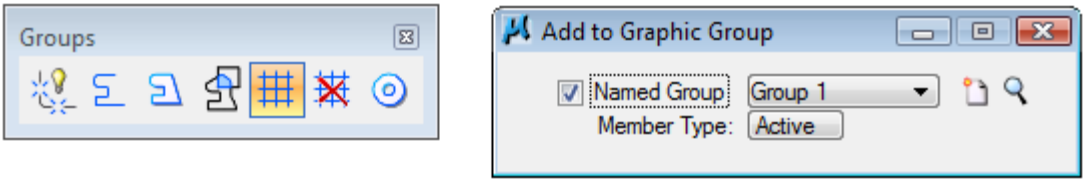
Complex Shape

Create Complex Shape joins a series of lines, linestrings and/or arcs into one closed element. A "filler" segment is added, if needed, to close the shape. The same **Manual** and **Automatic** methods found in the **Complex Chain** command are also available on the **Complex Shape** command.

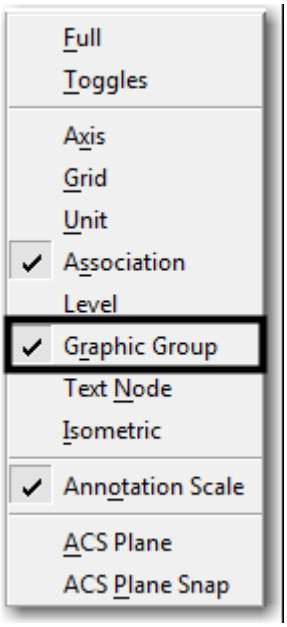


Add to Graphic Group

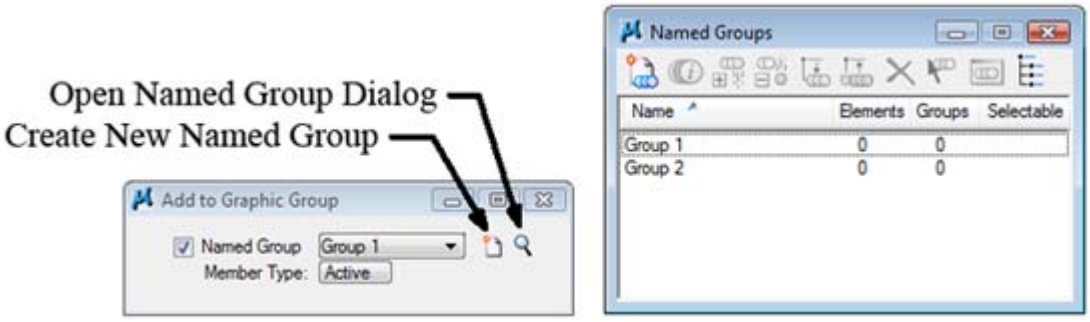
Add to Graphic Group creates a group of individual elements that can be named. Graphic groups are more efficient than a fence or a selection set for items that must be frequently grouped and manipulated. This command can also add elements to an existing named group or can combine groups.

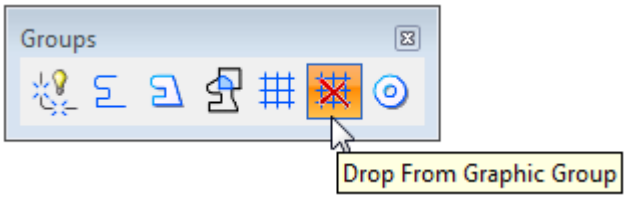


After creating the graphic group, the elements behave as a group as long as the **Graphic Group** lock is on (**Settings > Locks** or **Locks** button on the **Status Bar**). If the **Graphic Group** lock is off, you can manipulate, modify or delete individual elements in the group. However, the elements retain their group status and can be manipulated again as a group if the **Graphic Group** lock is turned back on.



The Open Named Group option (magnifying glass icon) is used to manage your named groups (create new groups, add or removed elements from the group, create group hierarchies, etc.)



Drop from Graphic Group

Removes individual elements from a graphic group or named group. The command is also used to drop an entire group (break up the entire group into its component elements).