

LAB 2 - Levels

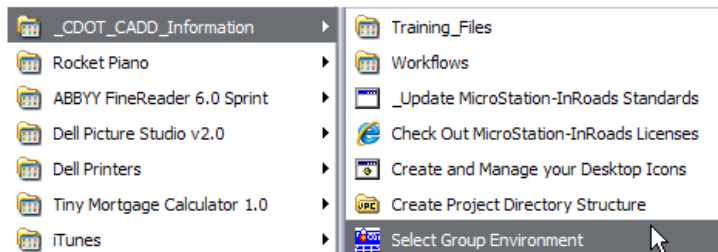
Chapter Objectives:

After completing this exercise you will know how to:

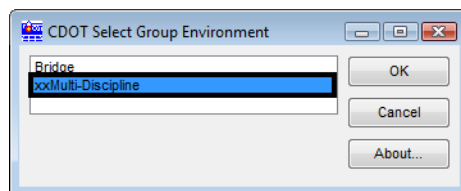
- Attach the appropriate levels by using the **Select Group** program
- Use **Level Display** to turn levels on/off
- Use key-ins to turn levels on/off
- Set the active level for placing graphics
- Use shortcuts for turning all levels on/off
- Turn levels off by graphically selecting an element
- Turn different levels on/off in different views
- Customize the **Level Display** and **Level Manager** boxes
- Sort levels
- Save a view for later recall
- Access CDOT standard level filters
- Use level filters to manage levels and turn groups of level on/off

Lab 2.1 - Starting MicroStation

1. From your desktop's Start Menu, choose **Start > All Programs > _CDOT_CADD_Information > Select Group Environment**.

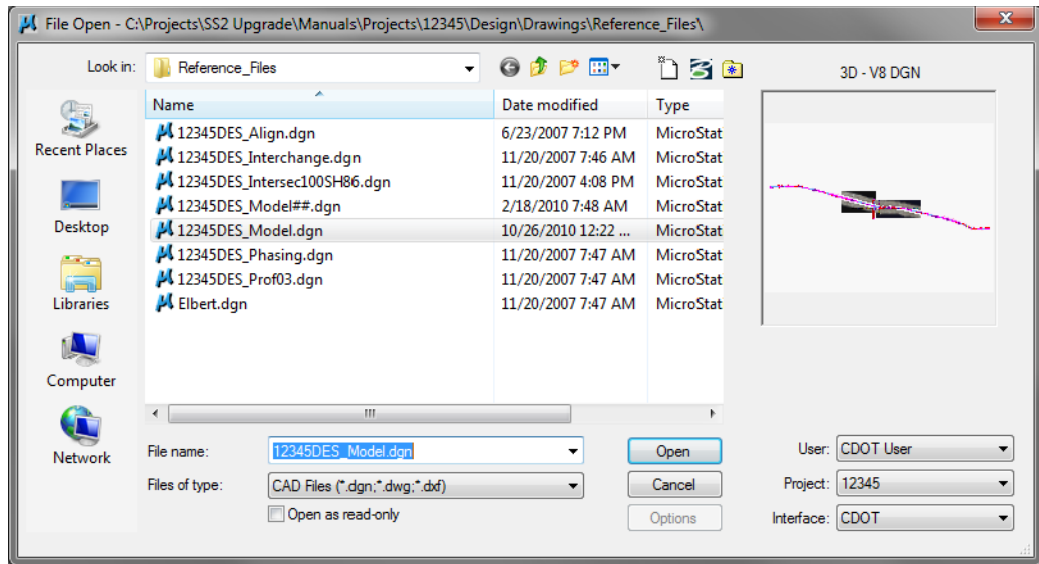


2. In the **Select Group Environment** box, select **xxMulti-Discipline**, and then select **OK**.



Note: This will allow you access to all discipline's levels.

3. Start MicroStation and open the design file 12345DES_Model.dgn from the c:\Projects\12345\Design\Drawings\Reference_Files folder.



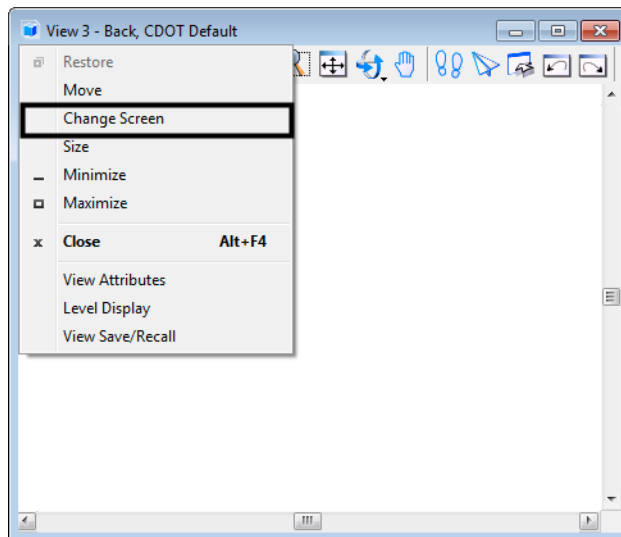
View 1 is a plan view of the entire project that you set up in the last lab.

4. Minimize or Close the CDOT Menu.
5. Open View 5 from the View Toggles toolbar (lower left).

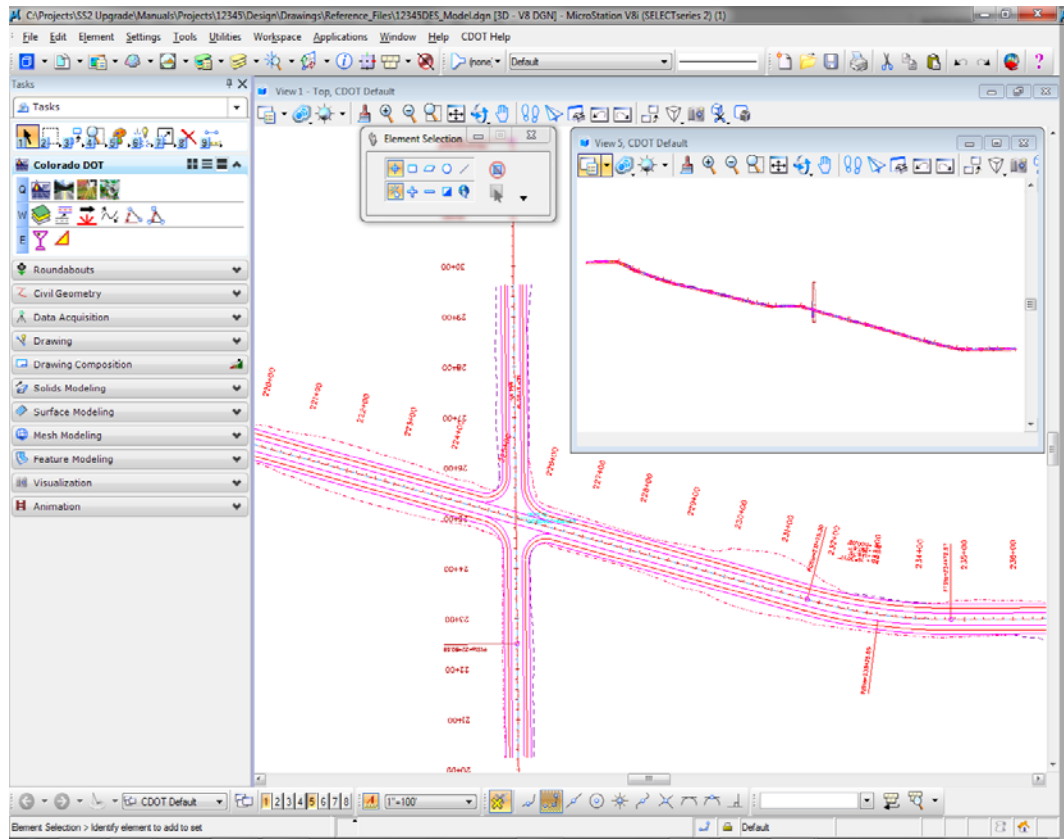


6. Fit View 5.

Note: If you want to move View 5 to the left screen, select the **Change Screen** option from the view's control menu.



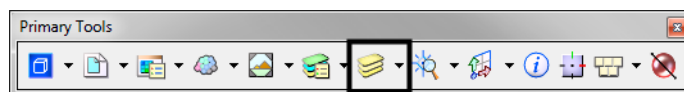
7. In View 1, **Window Area** around the intersection as shown.



Lab 2.2 - Working with Levels

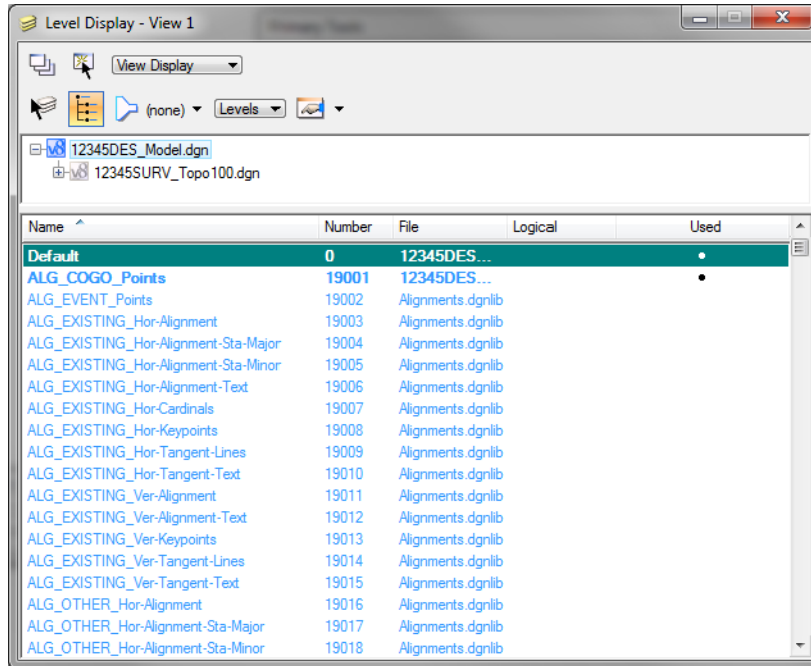
Sorting Levels

1. Select **Settings > Level > Display** (or, from the **Primary** toolbar select **Level Display**).



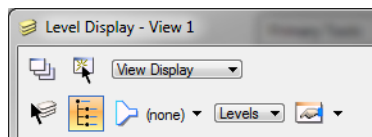
The Level Display box opens. It is used to turn levels on and off.

- In the top left corner on the **Level Display** box, toggle **off** all of the **Views**.



With all views off, there are no levels available to turn on/off (the levels are grayed-out).

- Turn on **View Index 1** and leave all other views off.



4. <D> on the column heading **Name** to sort by name, then <D> on **Used** to bring the used levels to the top of the list.

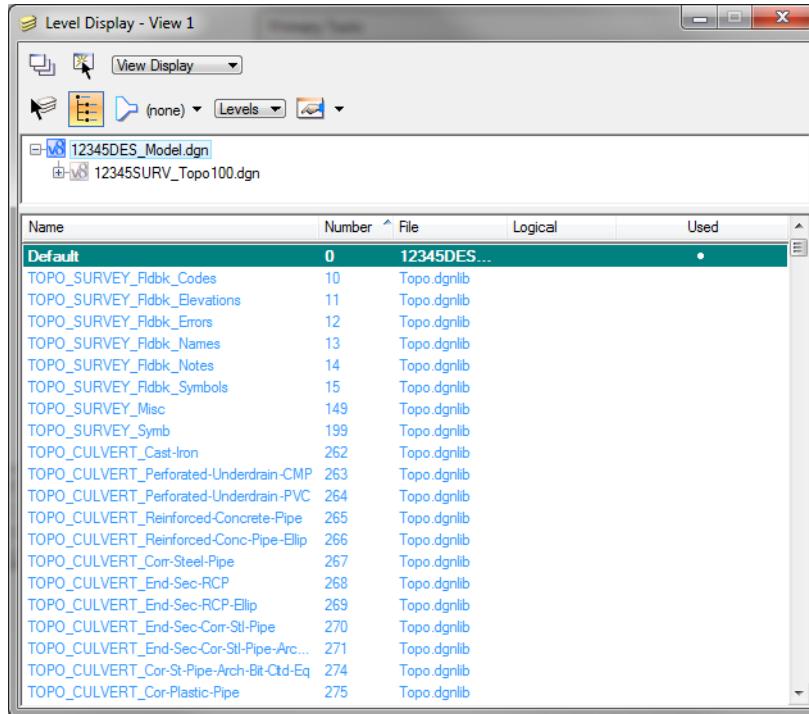
Name	Number	File	Logical	Used
Default	0	12345DES...		•
ALG_COGO_Points	19001	12345DES...		•
ALG_PROPOSED_Hor-Alignment	19029	12345DES...		•
ALG_PROPOSED_Hor-Alignment-Sta...	19030	12345DES...		•
ALG_PROPOSED_Hor-Alignment-Sta...	19031	12345DES...		•
ALG_PROPOSED_Hor-Alignment-Text	19032	12345DES...		•
ALG_PROPOSED_Hor-Cardinals	19033	12345DES...		•
ALG_SECONDARY_Hor-Alignment-S...	19043	12345DES...		•
ALG_SECONDARY_Hor-Alignment-S...	19044	12345DES...		•
ALG_SECONDARY_Hor-Cardinals	19046	12345DES...		•
DES_ROADWAY_Curb-Top	14041	12345DES...		•
DES_ROADWAY_Edge-Of-Road-Oil	14016	12345DES...		•
DES_ROADWAY_Lane-Line	14044	12345DES...		•
DES_ROADWAY_Misc	14045	12345DES...		•
DES_ROADWAY_Point-of-Slope-Sel...	14046	12345DES...		•
DES_ROADWAY_Shoulder	14047	12345DES...		•
DES_ROADWAY_Toe-of-Fill	14051	12345DES...		•
DES_ROADWAY_Top-of-Cut	14052	12345DES...		•
DRAFT_LC-Center_WT-3	22018	12345DES...		•
ALG_EVENT_Points	19002	Alignments.dgnlib		•
ALG_EXISTING_Hor-Alignment	19003	Alignments.dgnlib		•

Note: The highlight color may vary based on your Windows Theme setting.

5. Scroll through the list of levels.

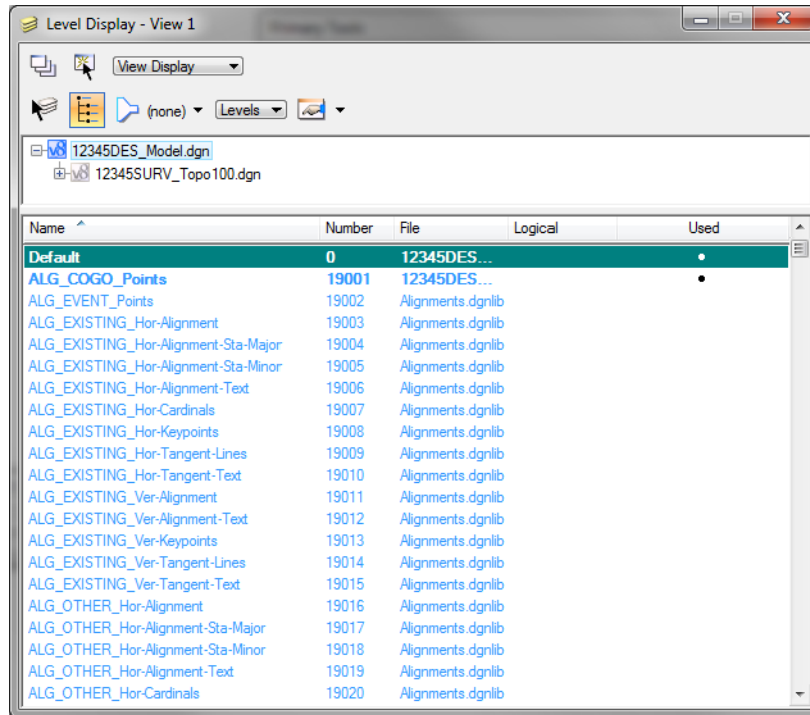
The levels which are used (those with graphics placed on them) appear in bold text. All other unused levels are from the attached libraries.

6. <D> on the column heading **Number** to sort by level number.



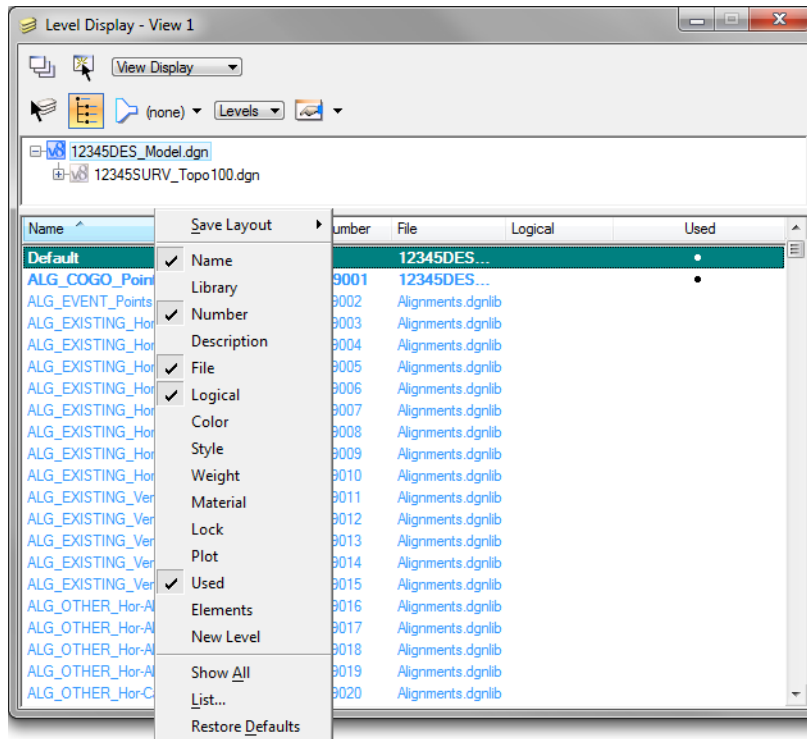
Note that levels are grouped by number. For example, all Roadway Design levels are 14000 series; all Right-of-Way levels are 15000 series, etc.

7. <D> on the column heading **Name** to sort the levels alphabetically by name and scroll through the level list. (If you toggle the **Name** column, you will sort A – Z, then Z – A). Toggle **Name** until you sort A – Z.



Note: All MicroStation levels are assigned both names and numbers.

- Right-click in any column heading (Name, Number, etc.) and toggle off the column Logical.

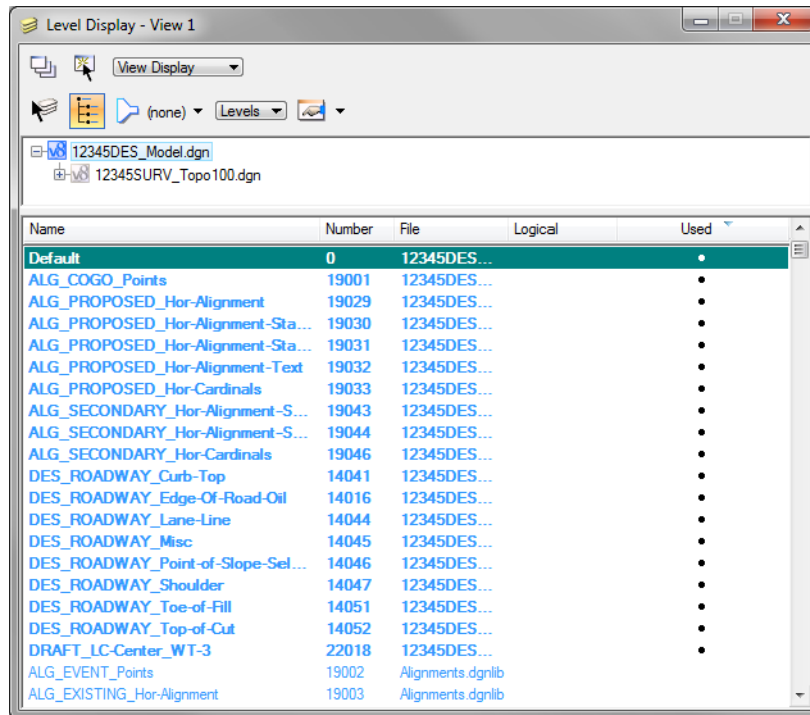


You can customize the look of the Level Display box by turning on/off information columns.

Turn levels on/off using Level Display

- With the levels now sorted by name, <D> on the column heading Used until all used levels are brought to the top of the list. This now sorts all used levels alphabetically.

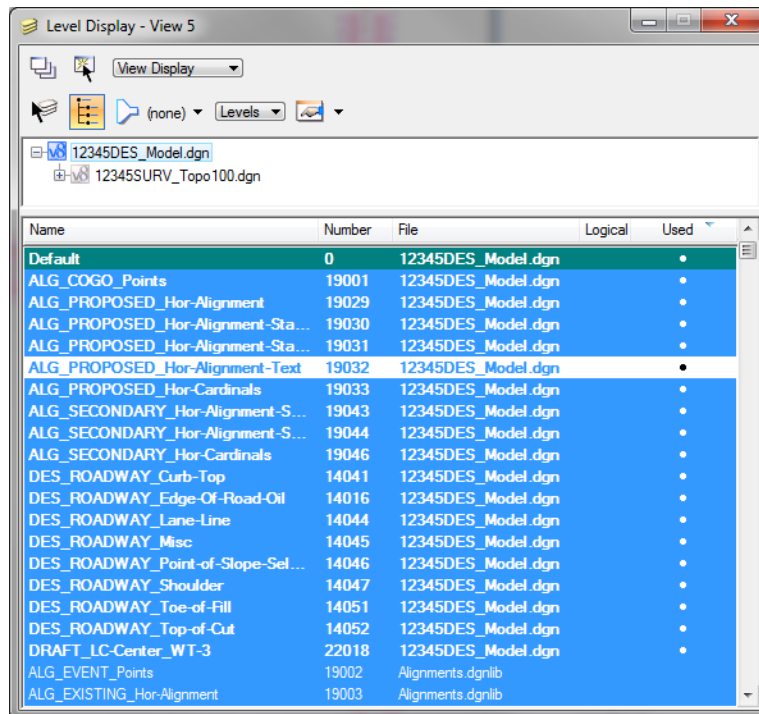
Note: You may have to click **Used** twice to get all used levels to the top.



2. Scroll up to the top of the list to see the used levels.

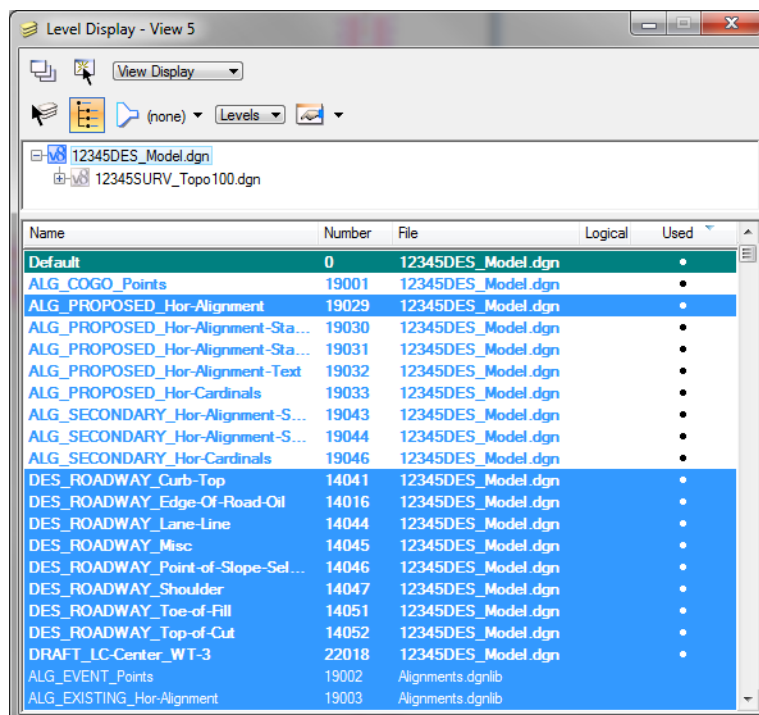
Note: Sorting by **Used** is a handy way to quickly find a level that you want to turn on/off.

5. <D> on the level ALG_PROPOSED_Hor-Alignment-Text to turn it off.

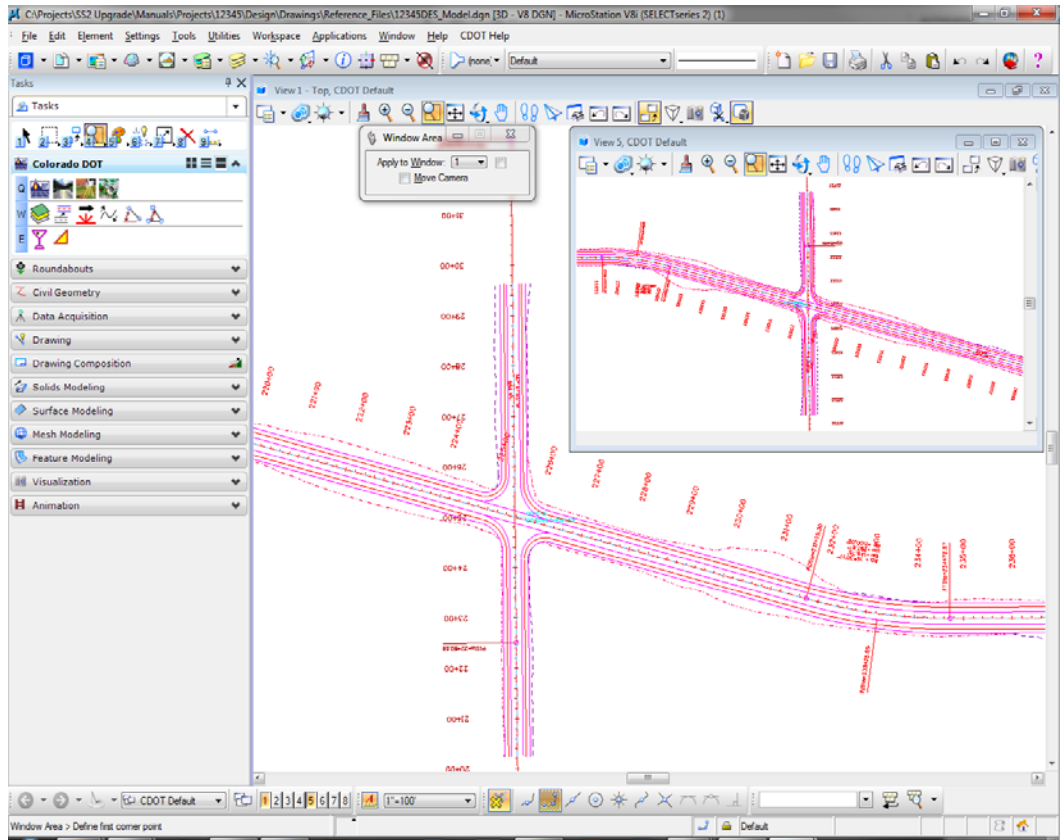


Note: Level displays are view dependent – you can have different levels on/off in different views.

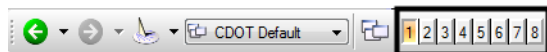
6. In View 5, hold down the data button and drag to turn off all ALG levels except the ALG_PROPOSED_Hor-Alignment level as shown.



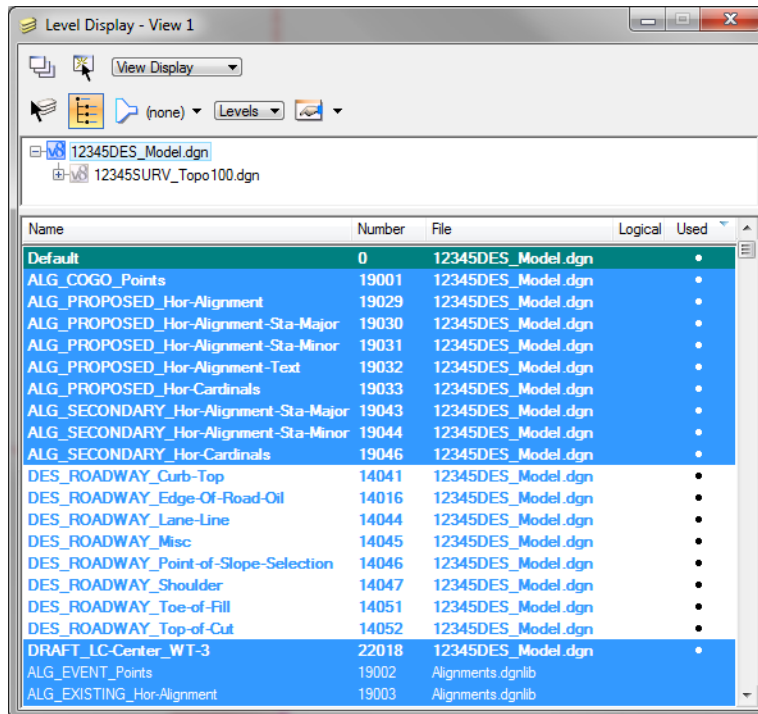
The intersection text is now off in View 5 but on in View 1.



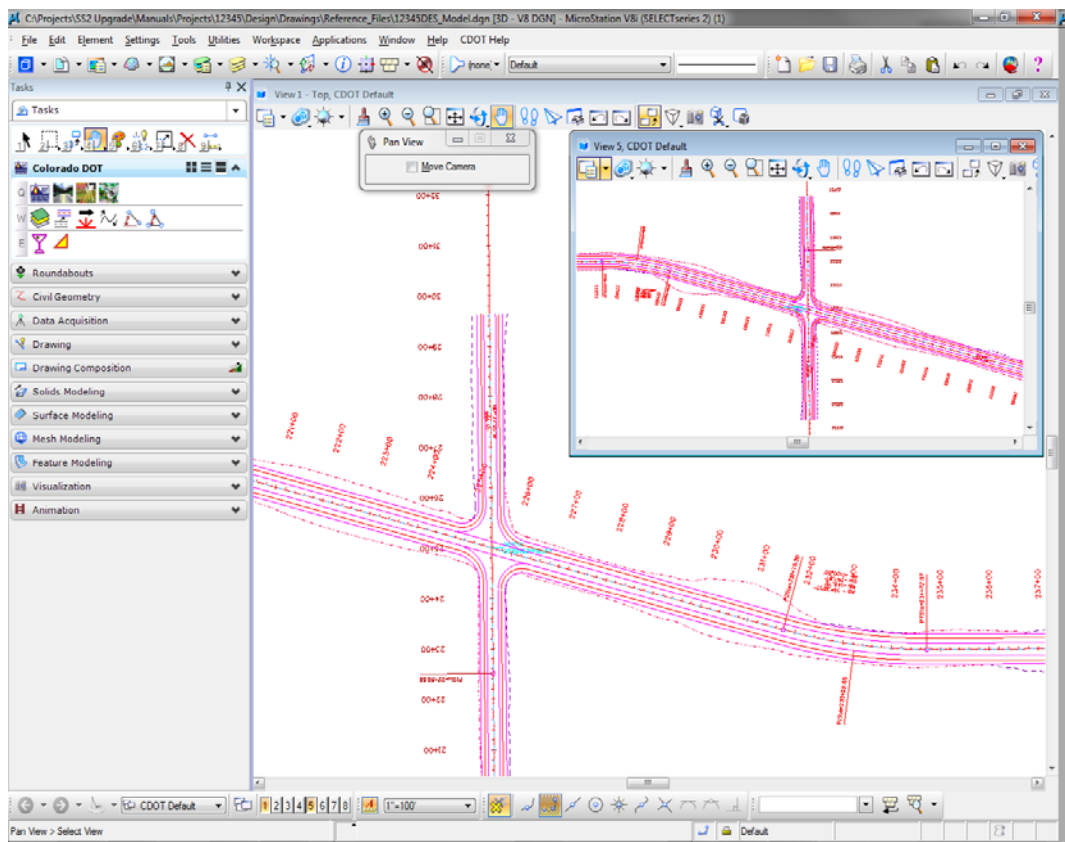
7. Turn **off** View Index 5 and turn View Index 1 back **on**.



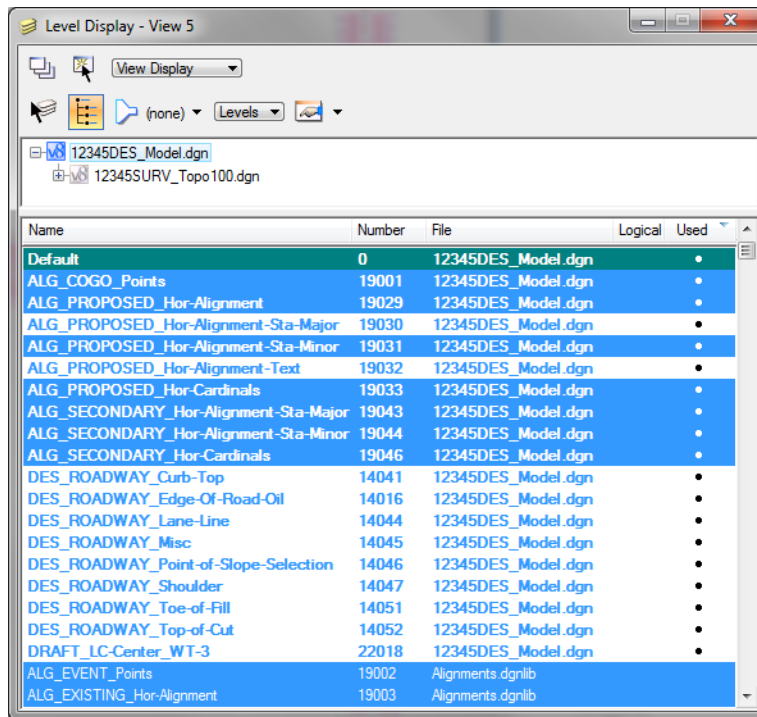
- Hold down the data button and drag across all DES_ levels to turn them **off** in View 1.



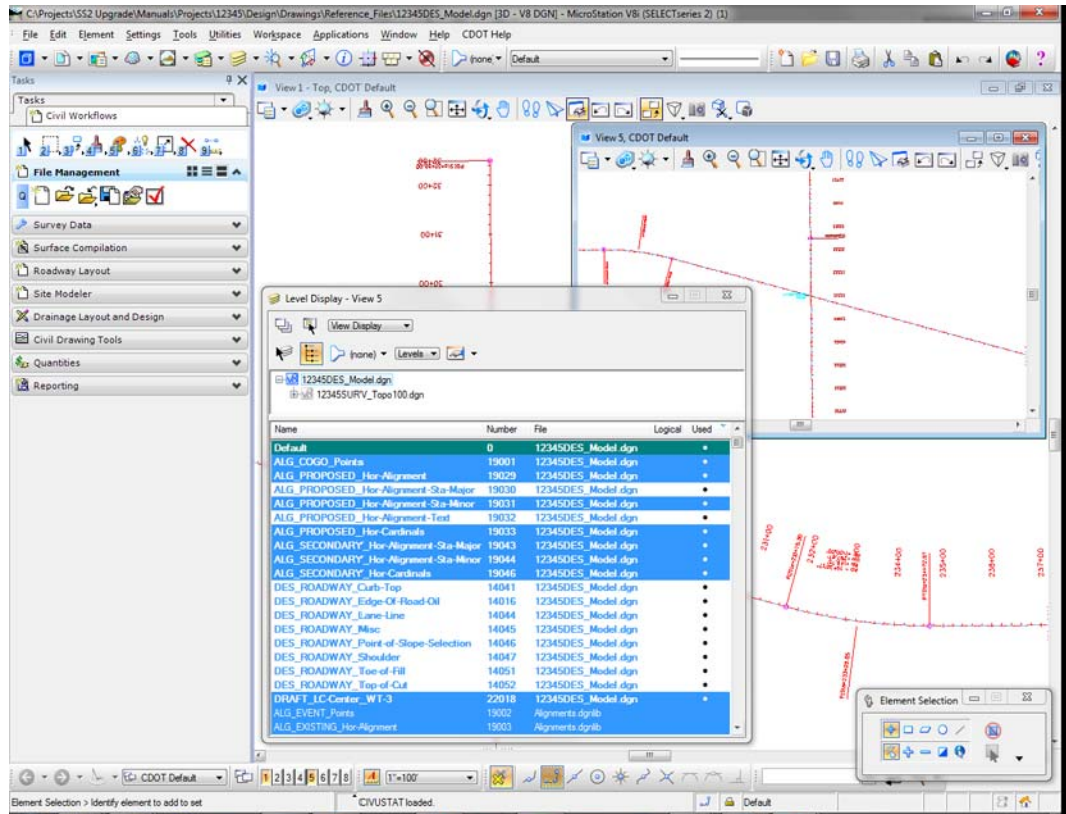
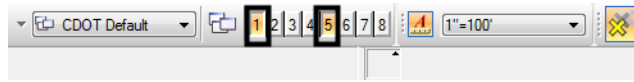
Only alignment levels are now on in View 1.



9. Turn **off** the levels **ALG_PROPOSED_Hor-Alignment-Text** and **ALG_PROPOSED_Hor-Alignment-Sta-Major** in View 1.



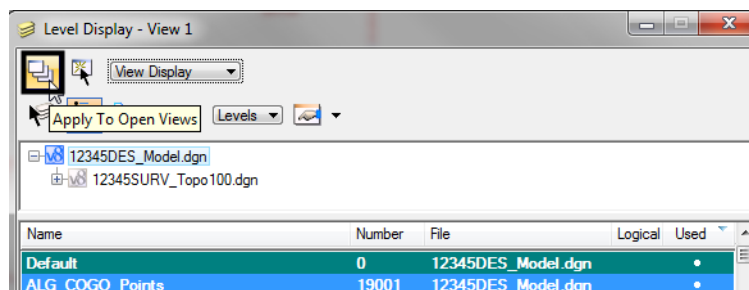
10. Turn **on** View Index 5 so that both View Index 1 and 5 are now **on**.



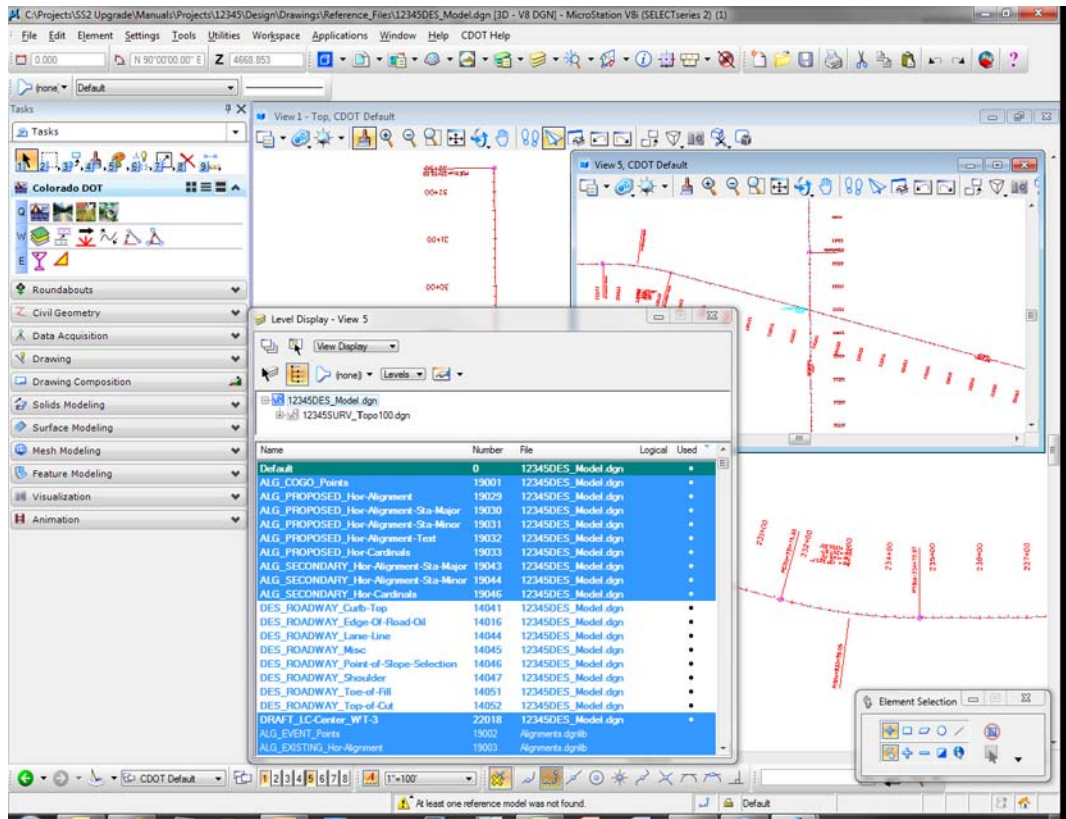
The Level Display dialog box reflects the active view's settings. The active view is recognized by a change in the color of the view title bar (in this example, View 5).

To make the displayed levels in View 5 match those in View 1;

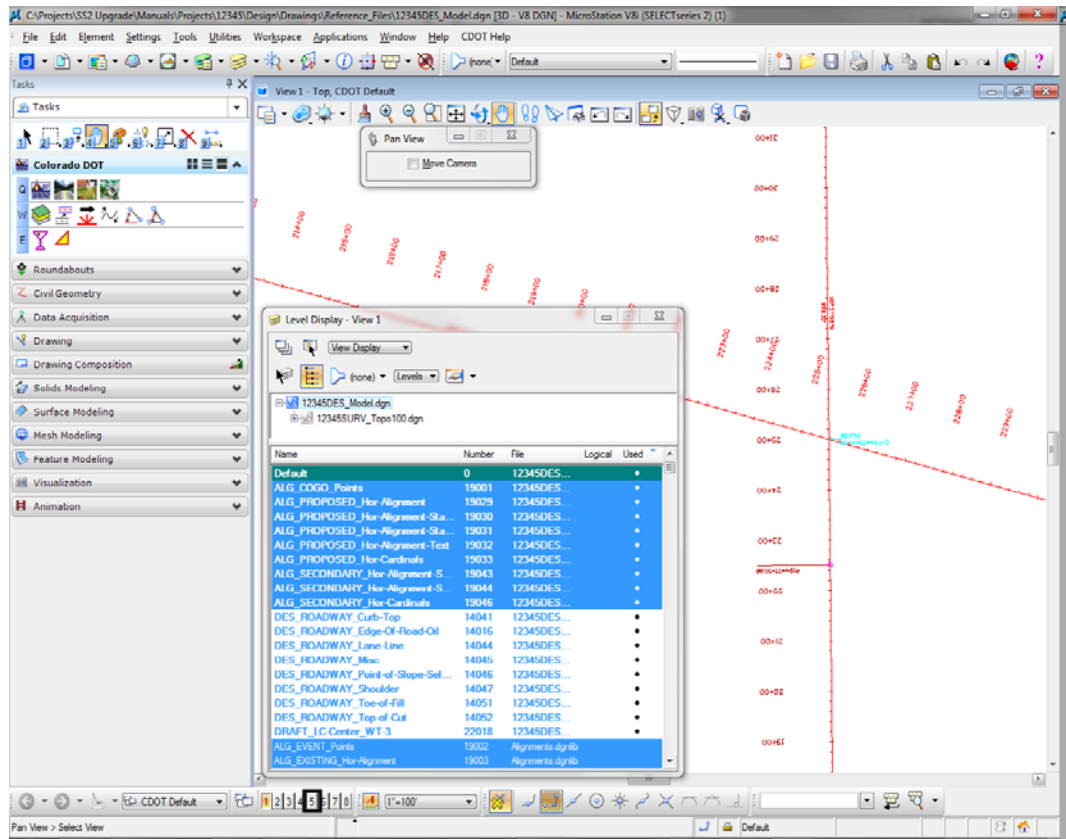
11. Make View 1 the active view by left clicking on the View 1 title bar.
12. In the **Level Display** dialog box, <D> the **Apply to Open Views** button.



13. Bring View 5 to the front and notice that the displayed levels match View 1.



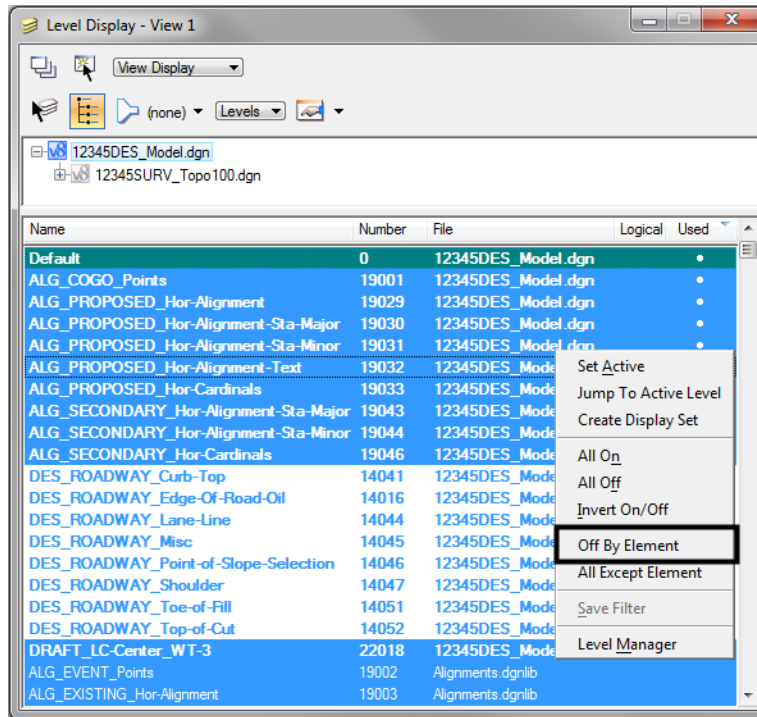
14. Close View 5 by toggling off View 5 in the View Groups tool box



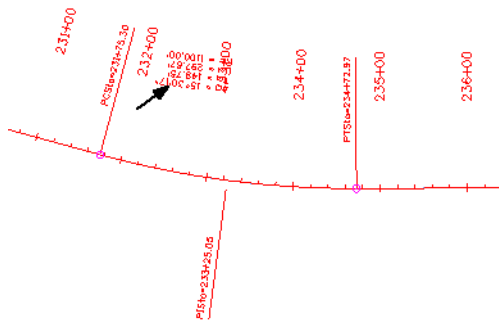
Note: Clicking on the X in the upper right corner of the view window will also close out of View 5

Turn levels on/off By Element

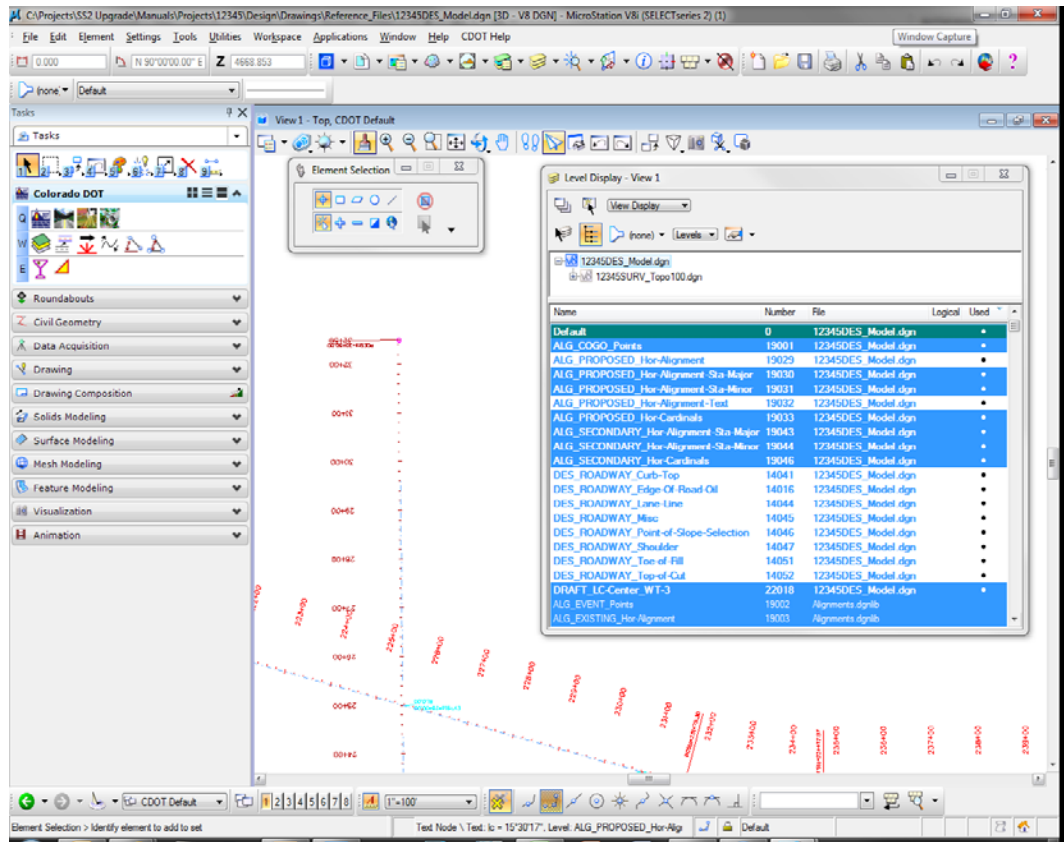
1. The station and alignment text levels are currently **on**. Right-click anywhere over the level names and select **Off By Element**.



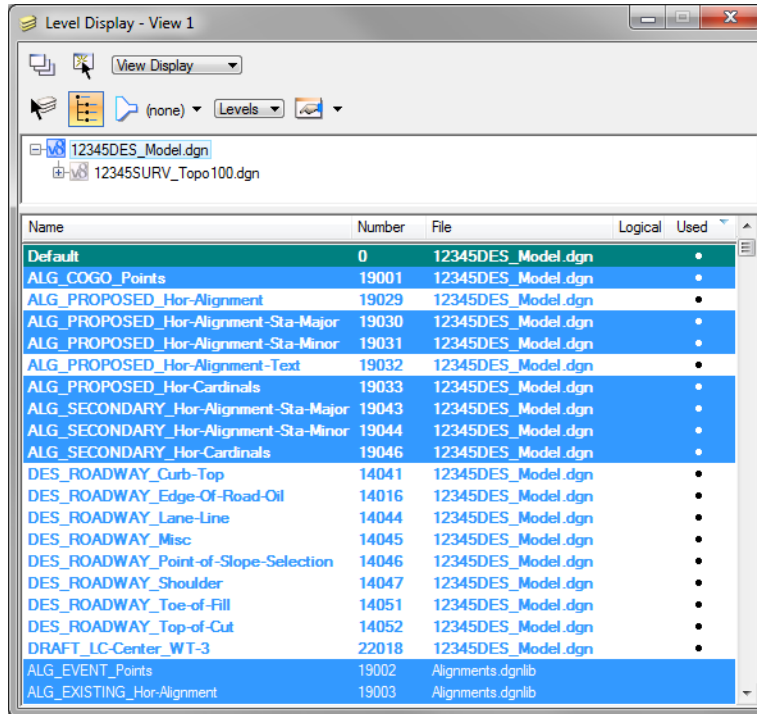
2. <D> on the red alignment curve text as shown.



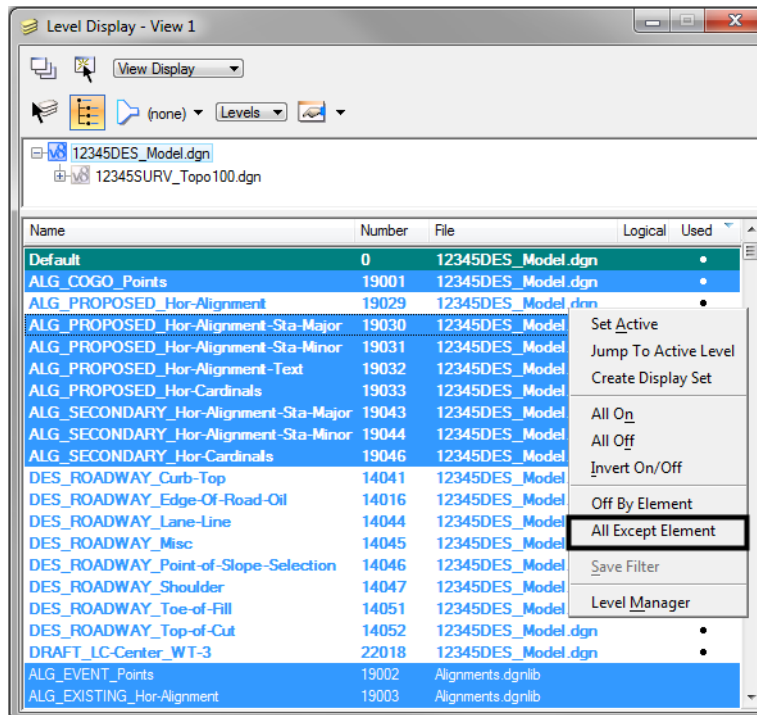
The level **ALG_PROPOSED_Hor-Alignment-Text** is turned **off** by graphically picking an element on that level.



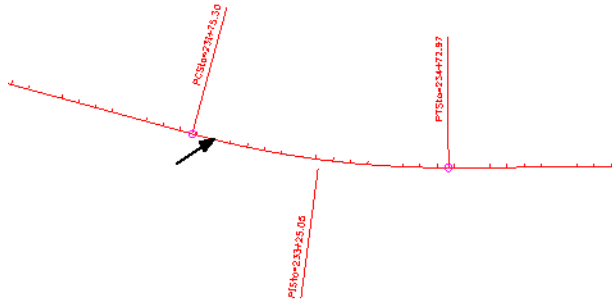
- Turn off the Level DRAFT_LC-Center_WT-3.



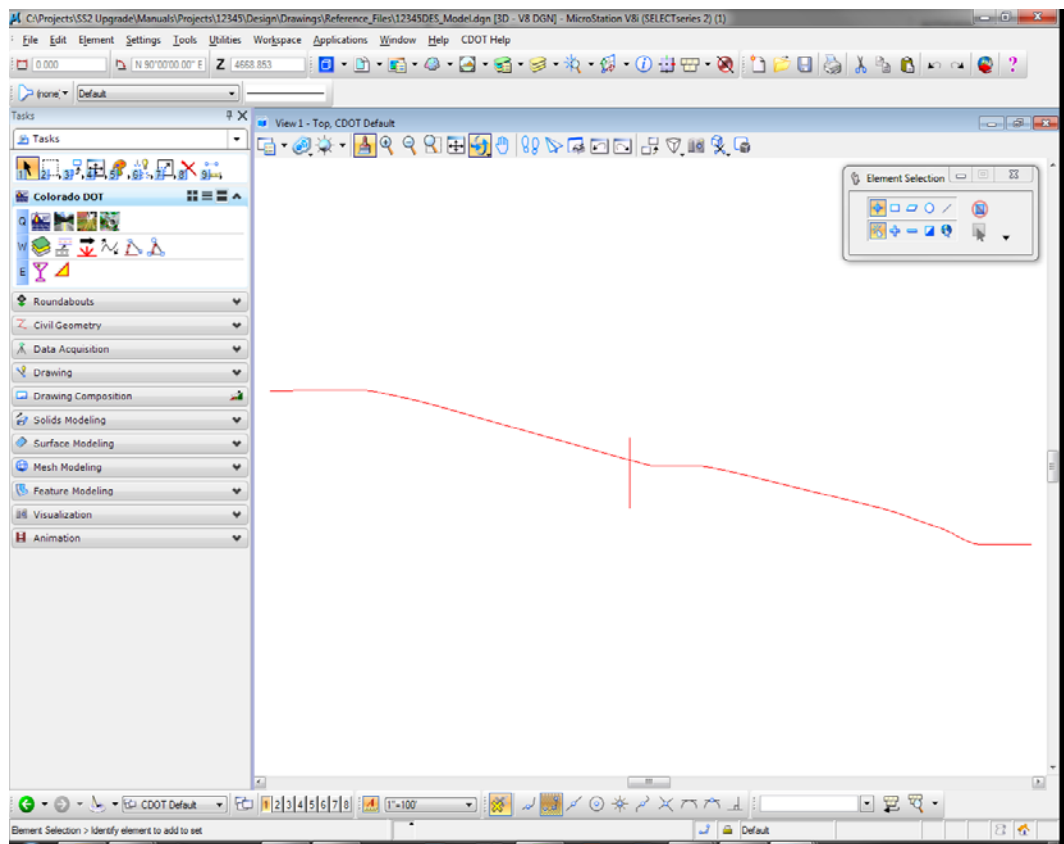
- Right-click again anywhere in the Level Display box and select All Except Element.



- <D> on the SH 86 (mainline) red-centerline.

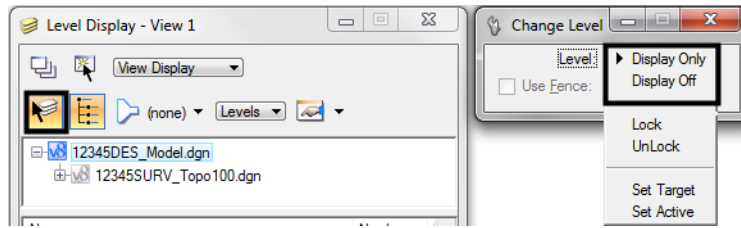


- Fit View 1.

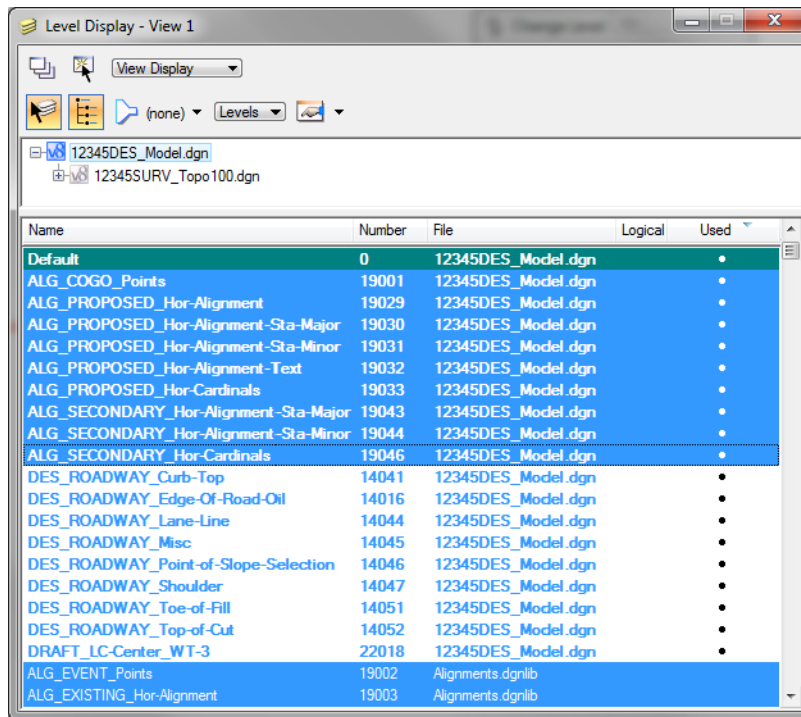


All elements except the centerlines are turned off in the view. The **Off By Element** and **All Except Element** are handy options to turn levels on/off without knowing the level names or number.

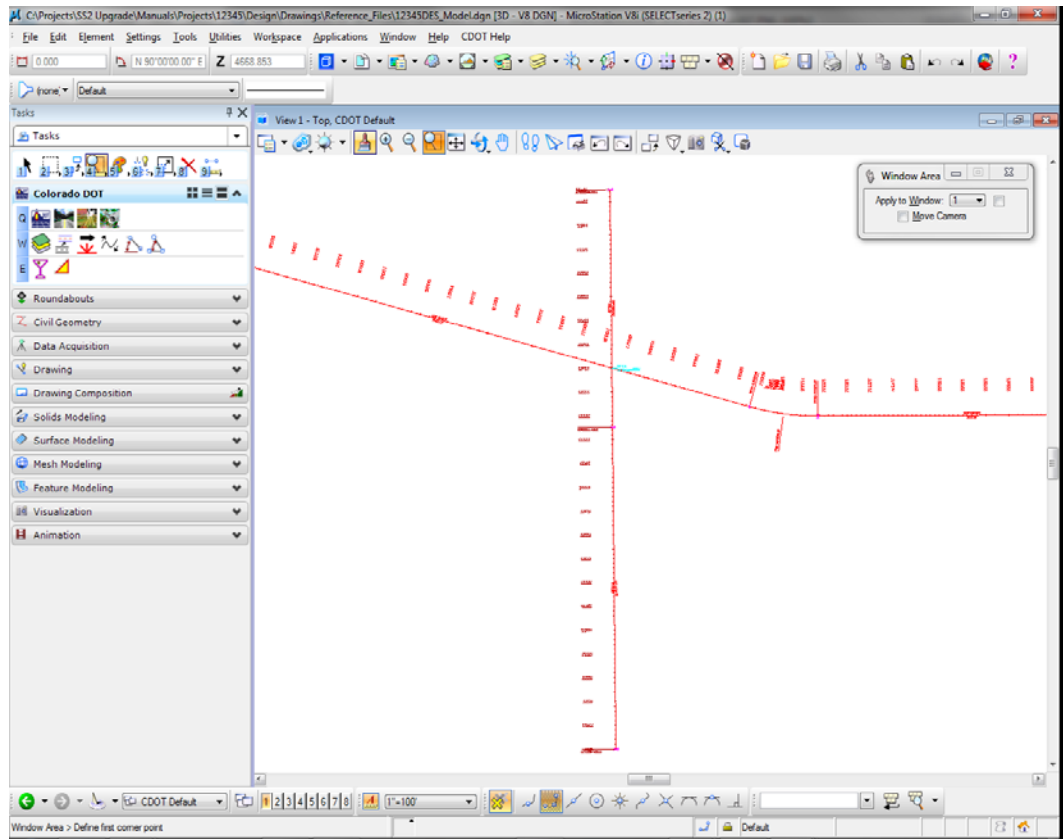
Note: You can also use the **Change Level** command, with the Level option set to **Display Only** or **Display Off**, to accomplish the same task.



Turn *on* all of the alignment levels (data point <D>) and drag across all **ALG** levels.



7. Window in to the intersection as shown.

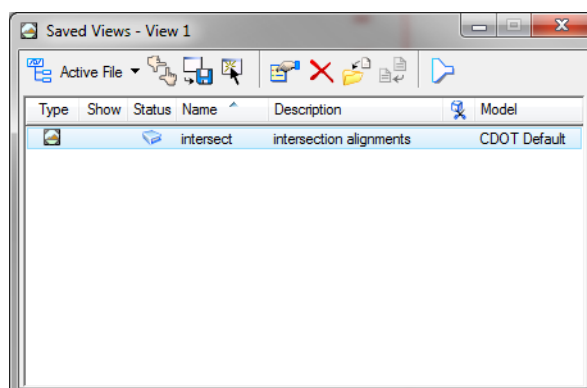


Save a view

1. <D> in the Key-in box to set the focus.
2. Key in ***sv=intersect,intersection alignments*** and press <Enter>.

Note: Always press <Enter> or <Tab> after key-ins.

3. <D> in View 1 to select it as the view to save.
4. Verify you saved the view. Select **Utilities > Saved Views**.



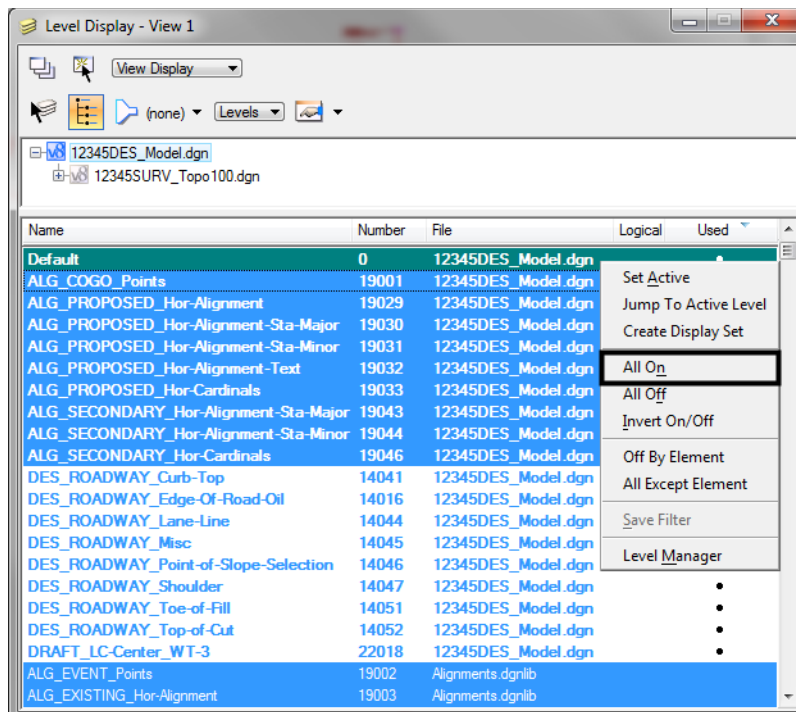
Note: The **Saved Views** dialog box opens and the saved view shows in the list. The **Saved Views** dialog is used to manage your saved views (create and delete views, edit view names and descriptions, and recall saved views).

5. Close the **Saved Views** dialog box.

You may recall this saved view in upcoming labs.

Turn all levels on/off

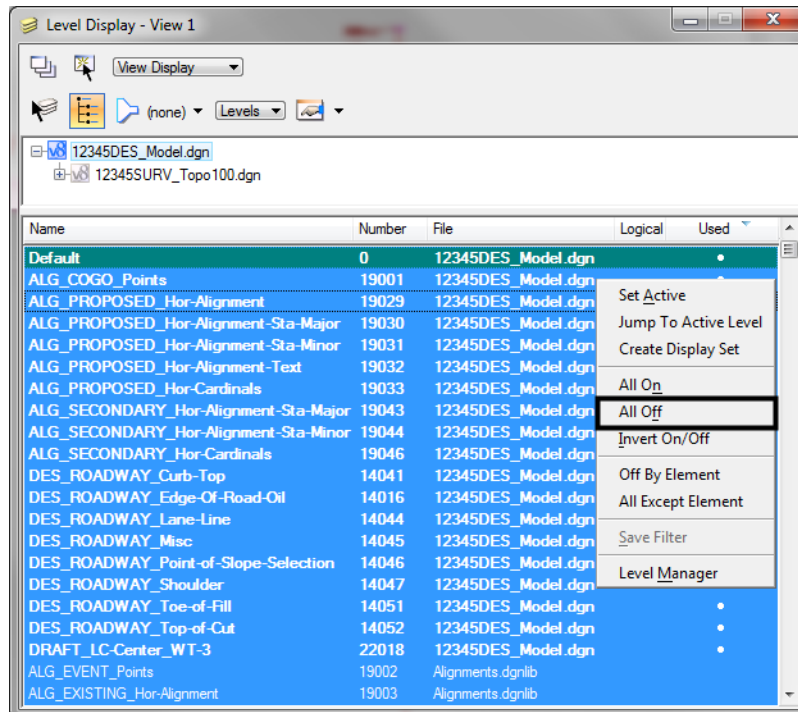
1. Right-click again in **Level Display** and select **All On**.



All levels are turned on in View 1.

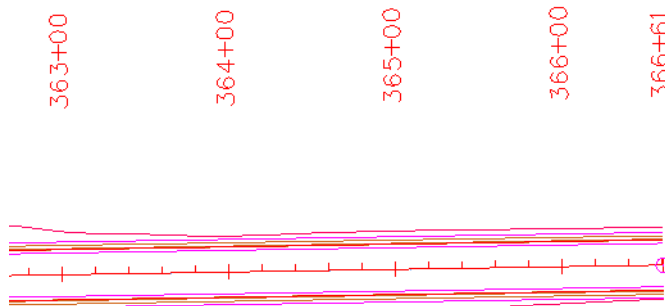
2. Fit View 1.

3. Right-click in the level display box and select **All Off** to turn all levels **off** in View 1.



Note: You can also turn all levels on or off with the key-ins **on=all** and **of=all**.

4. Turn all levels back **on** in View 1.
5. Window in to the end of the project as shown.

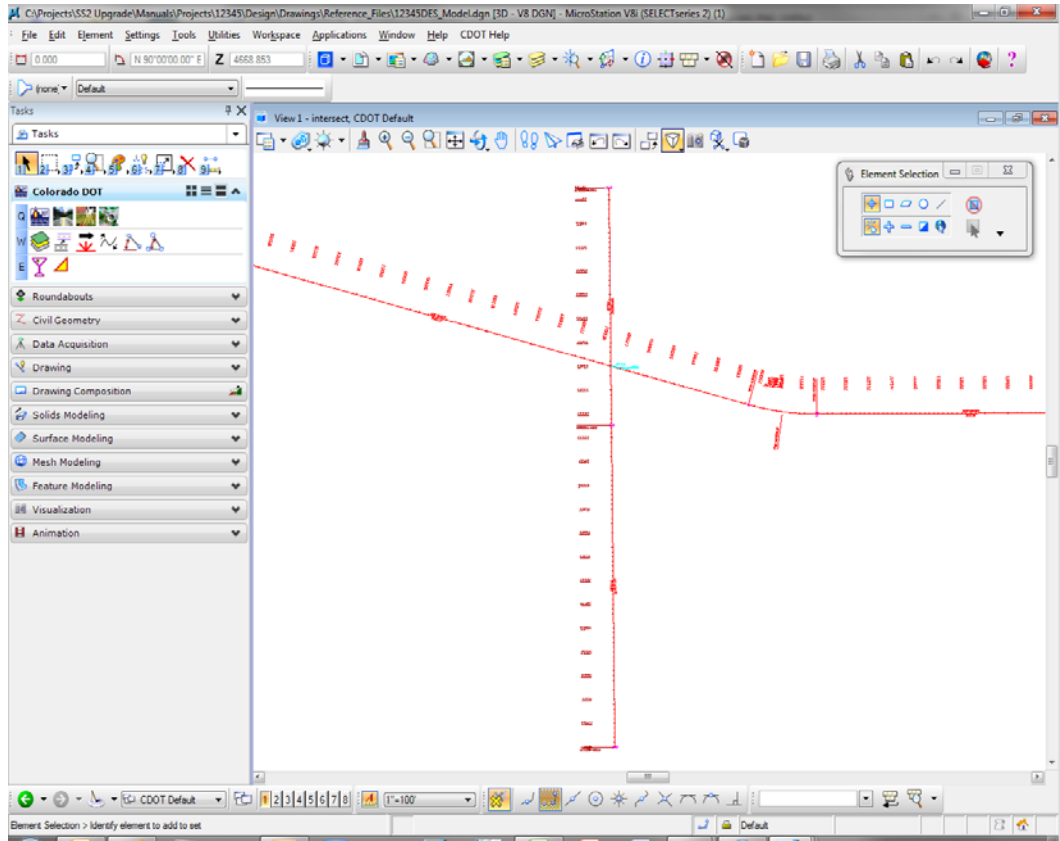


Recall the saved view

1. In the Key-in box, key in **vi=intersect**.

Don't forget to <Tab> or <Enter> after key-ins.

2. <D> in View 1.

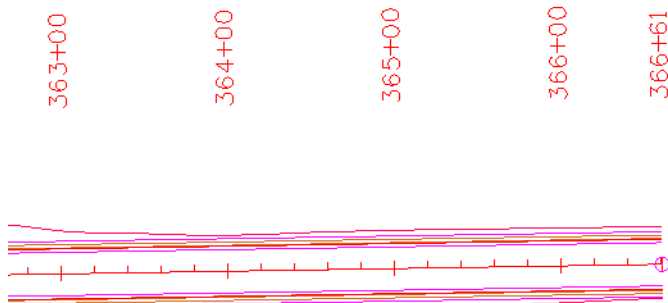


The saved view of the alignment and stationing is recalled in View 1. The appropriate levels from the saved view are turned on/off.

3. From the **View Control** toolbar, select **View Previous**.



The previous view of the beginning of the project is recalled. Notice that all levels are turned back on from this previous view.



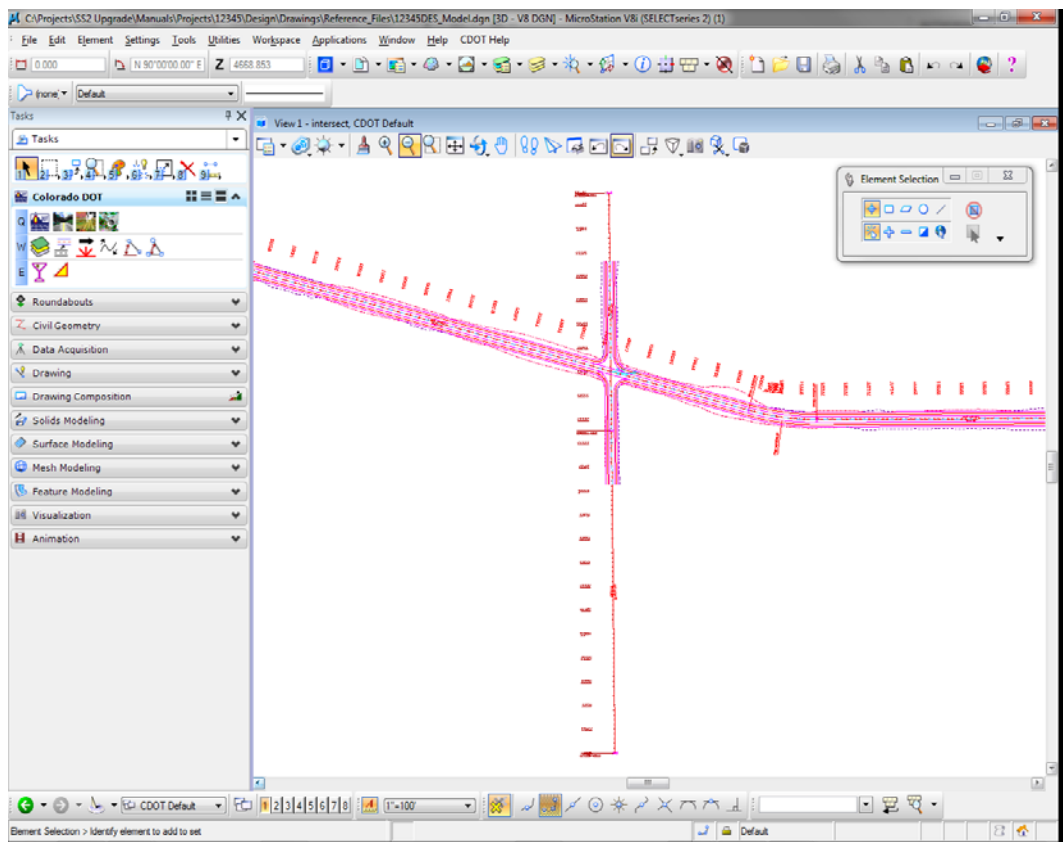
4. Select View Next.



This recalls the intersection view again with the design levels turned off.

Use key-ins to turn level on/off

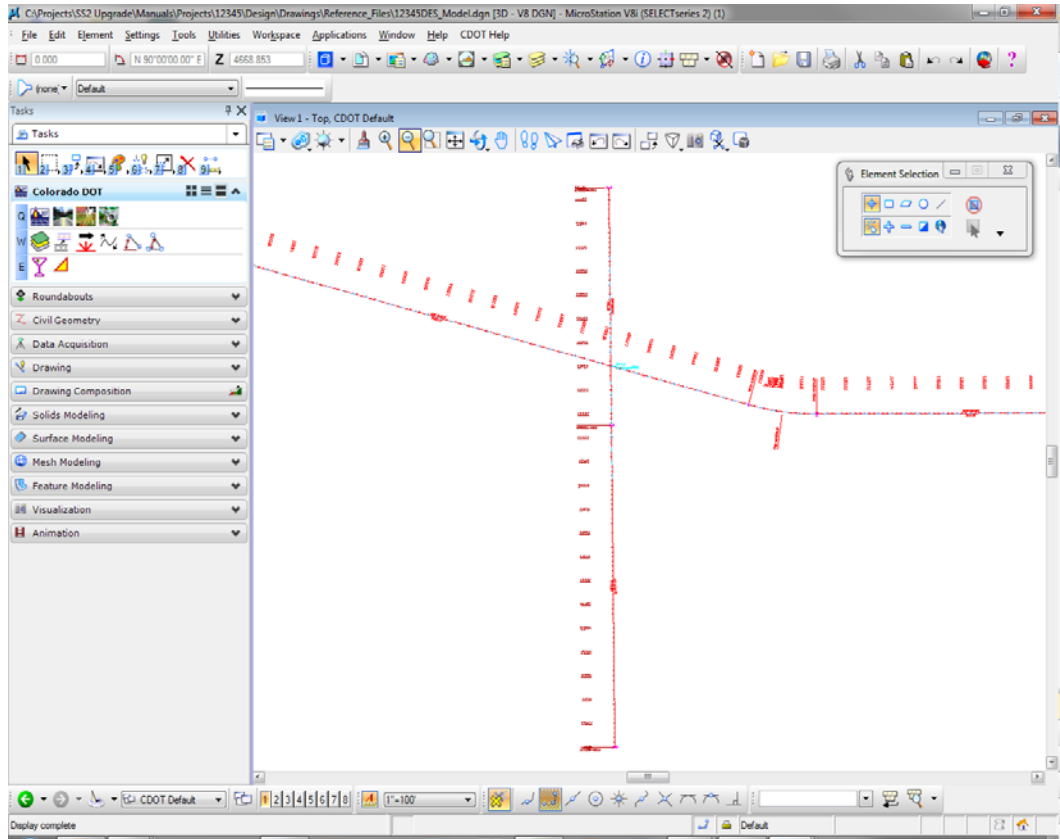
1. Key in **on=all**, then <Tab> or <Enter>.
2. <D> in View 1 to turn all level back on in this view.



Note: Levels are view-dependent. When using key-ins, you must select the view with a data point <D> to tell MicroStation which view to turn levels on or off.

3. Key in **of=des***.

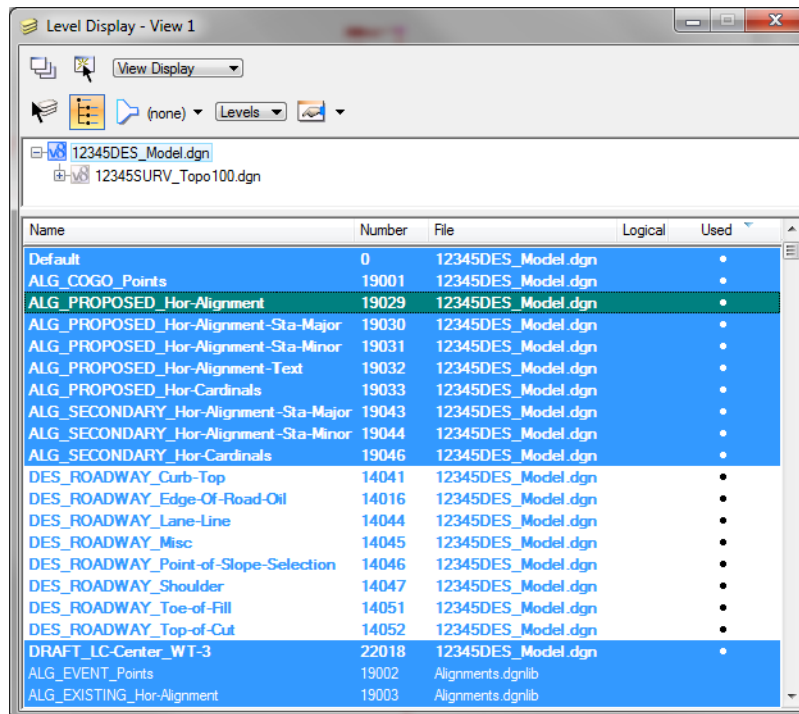
4. <D> in View 1 to select View 1.



All DES_ levels are turned off in view 1. You can use wild cards with key-ins to turn a group of levels on or off.

Set the active level

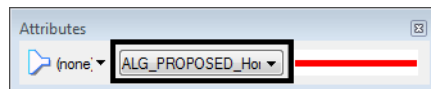
1. In the Level Display box, double-click on the level ALG_PROPOSED_Hor_Alignment to set it active.



The background color changes to green.

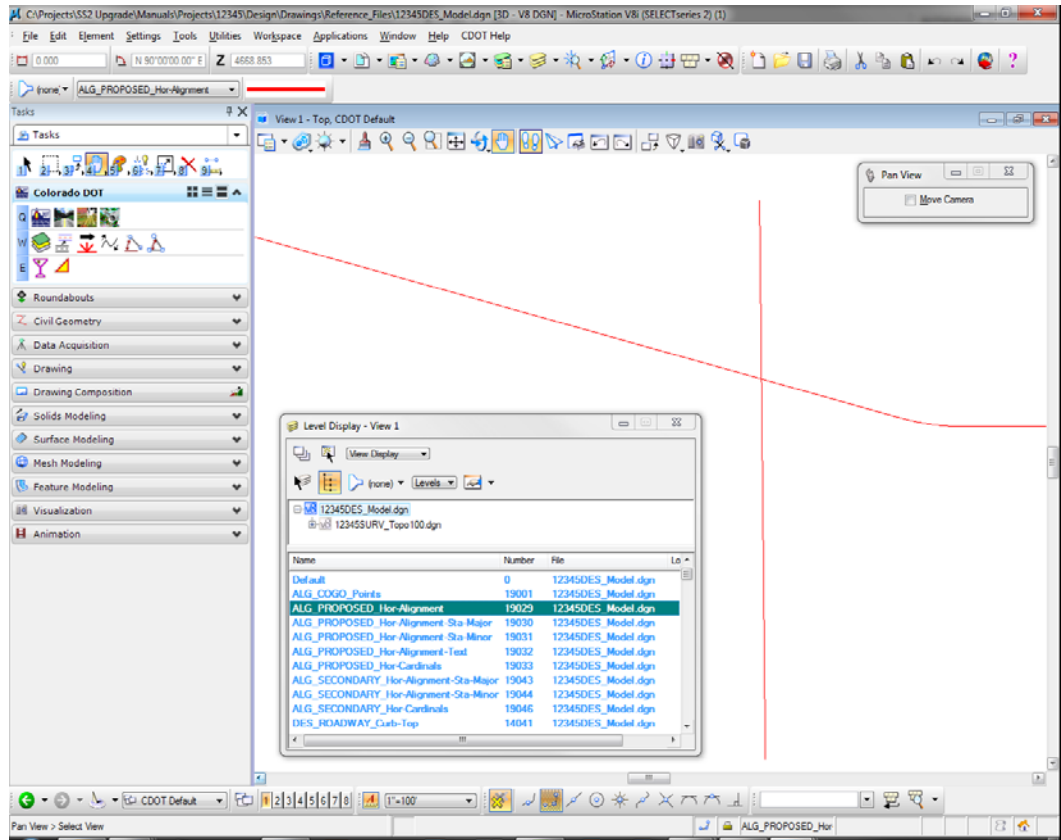
Note: You can also use the **lv=** key-in to set the active level.

The active level is also reflected in the Attributes toolbar at the top of the screen.



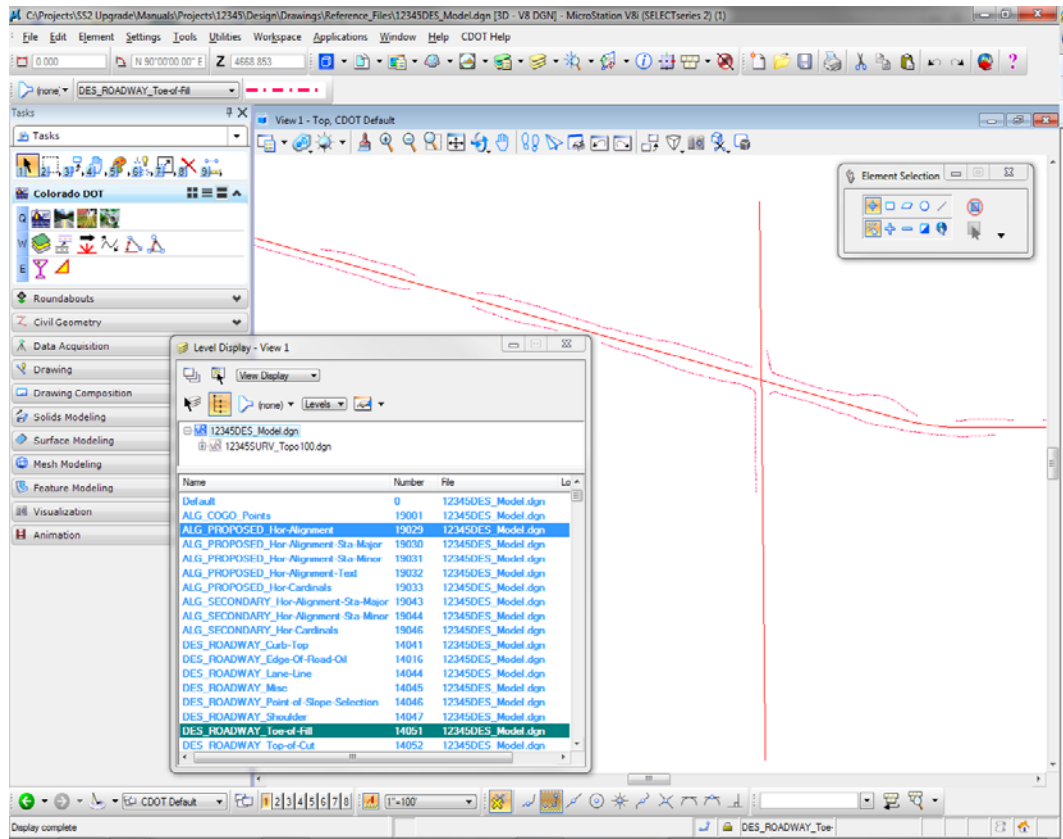
2. Turn all levels **off** in View 1.

All levels are turned off except the alignment centerline because it is the active level.



Note: The active level is always displayed provided the option **Display Active Level in All Views** is toggled on in **Workspace > Preferences > Operation**. If this option is turned off, you can also turn the active level on/off.

- Key in **lv=14051**, to change the active level to the Toe-of-Fill level.



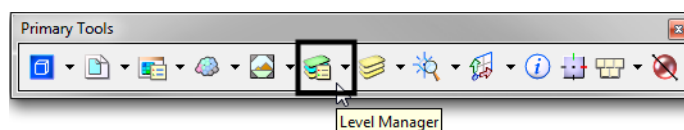
This level is automatically turned on in the view and now shows with a green background in the Level Display box.

- Close the Level Display box.

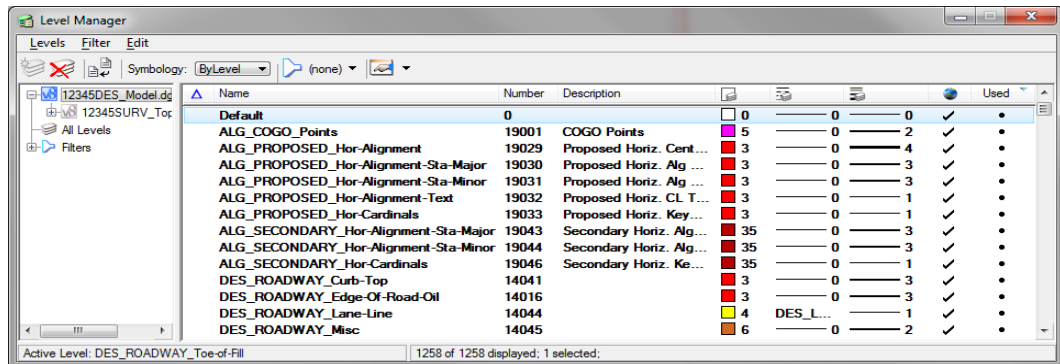
Lab 2.3 - Working with the Level Manager

The **Level Manager** shows all of the level libraries that are attached to your design file, level names, numbers, descriptions, etc. The **Level Manager** also displays each level's **ByLevel** symbology – the color, line style and weight assigned to that level, which conforms to CDOT's CADD standards. Additional information such as if the level is used, frozen, available for plotting, etc. are also shown in the **Level Manager**.

- Open the **Level Manager**. Select **Settings > Level > Manager** or on the **Primary** toolbar select **Level Manager**.



- Sort the **Level Manager** on **Used** to bring all the used levels to the top of the list, you may need to scroll over to the right to see the column **Used**.



Level Libraries

Level libraries are master templates of levels. The discipline-specific level libraries (Roadway Design, ROW, Alignments, etc.) are attached to your design file via the **Select Group Environment** utility program that you ran before starting MicroStation. The **Select Group** program has two options: **Bridge** and **xxMulti-Discipline**. All groups except Bridge should choose **xxMulti-Discipline** to attach all level libraries. The Bridge option just attaches level libraries needed for the Bridge group.

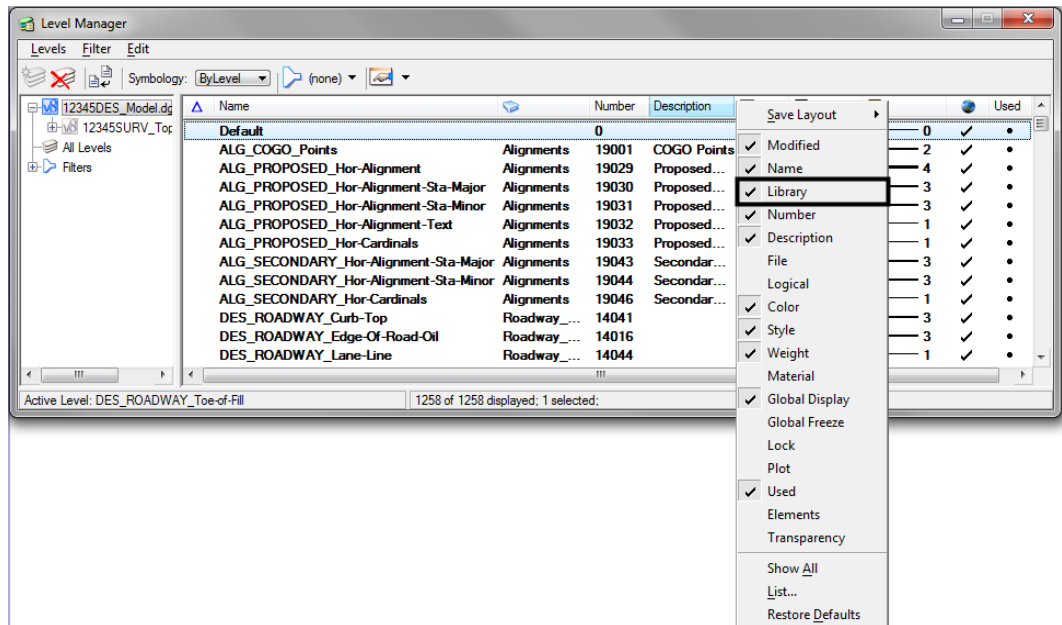
When a level is set active and graphics are placed on this level, the level is copied from the library file to the active design file.

Used levels that are copied to the design file appear bold in the **Level Manager**. All unused levels are in the library.

- Scroll through the list of levels.

All levels have a logical level naming convention according to their library (e.g. all roadway design levels start with **DES**, all alignment levels with **ALG**, topo levels with **TOPO**).

- Right click in the column headings and toggle **Library** on.

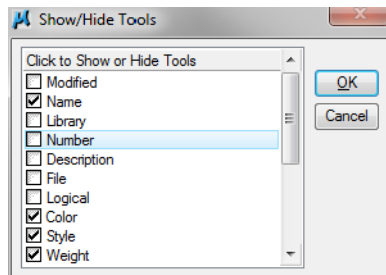


The library name is now shown in its own column in Level Manager.

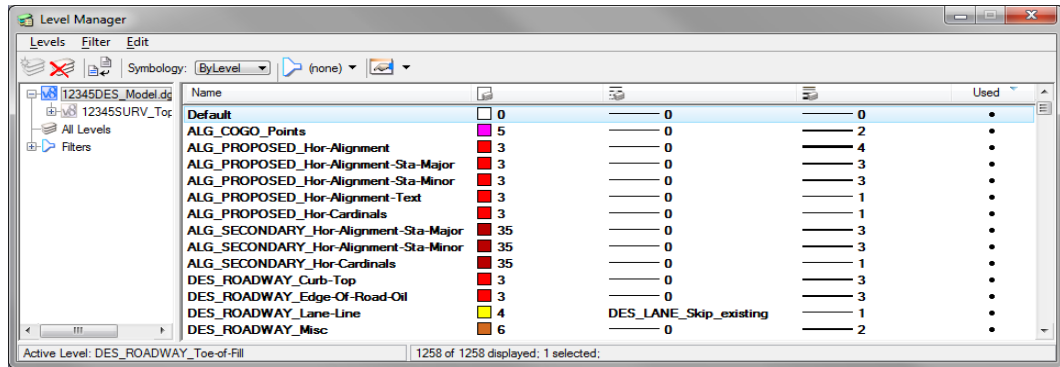
Name	Library	Number	Description	Color
DRAFT_LC-Center_WT-3	Standard_Levels	22018		1
DES_ROADWAY_Top-of-Cut	Roadway_Design	14052		13
DES_ROADWAY_Toe-of-Fill	Roadway_Design	14051		10
DES_ROADWAY_Shoulder	Roadway_Design	14047		5
DES_ROADWAY_Point-of-Slope...	Roadway_Design	14046		5
DES_ROADWAY_Misc	Roadway_Design	14045		6
DES_ROADWAY_Lane-Line	Roadway_Design	14044		4
DES_ROADWAY_Edge-Of-Road-Oil	Roadway_Design	14016		3
DES_ROADWAY_Curb-Top	Roadway_Design	14041		3

Change the look of the Level Manager box

1. Right-click in any column heading (Name, Number, etc.) and select List.
2. Toggle heading on or off so that Name, Color, Style, Weight, and Used are on and select OK.



The Level Manager box updates to reflect the changes.



3. Close the Level Manager box.

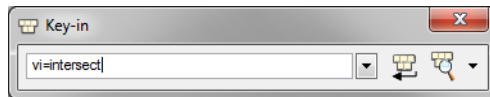
ByLevel Symbology

ByLevel symbology ensures that CDOT CADD standards are met by placing graphics ByLevel (the color, line style and weight assigned to that level in the level library).

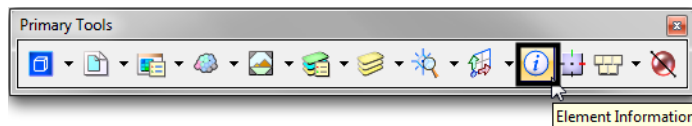
Note: When placing graphics using the CDOT Group Menus, the correct level, along with it's ByLevel symbology is automatically set for you.

Analyze an element

1. In the Key in box type **vi=intersect**, Enter the keyin and then <D> in view 1 to recall the alignment saved view.

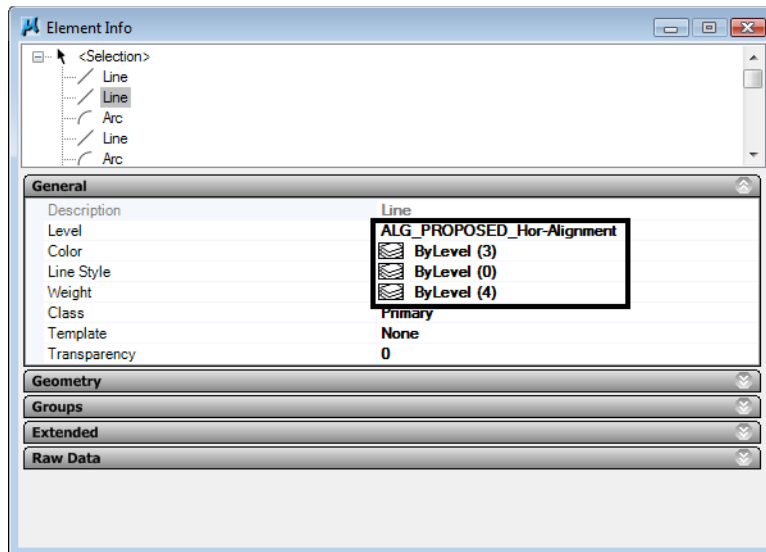


2. From the Primary toolbar, select Element Information.

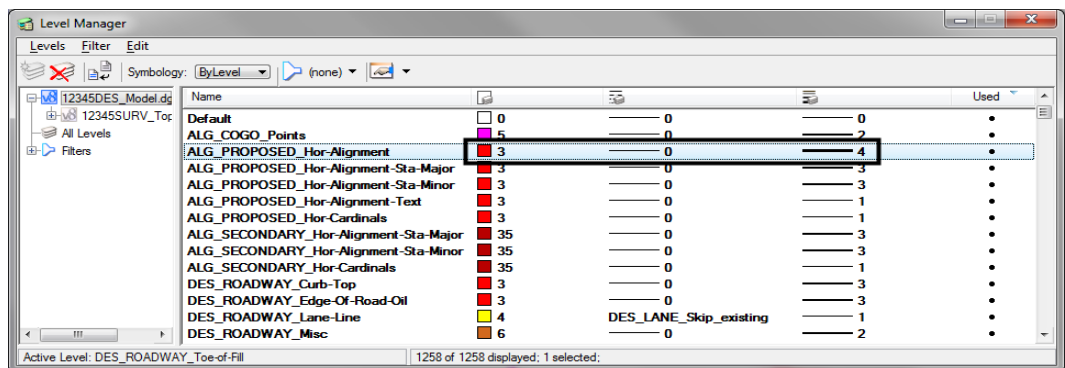


3. <D> on the horizontal alignment centerline graphic.

Element Information shows that the alignment was placed on **ALG_PROPOSED_Hor_Alignment** level and placed with **ByLevel** Symbology.

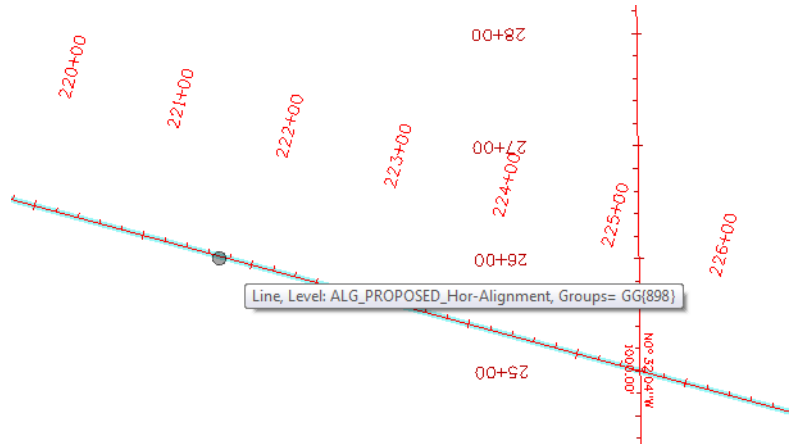


4. Exit out of the Element Information box.
5. Open the Level Manager box.
6. Find the **ALG_PROPOSED_Hor_Alignment** level and note the ByLevel Symbology is set up in the Level Manager.



Review Pop-up information

1. Hold your cursor over the centerline of SH 86 (the mainline alignment).



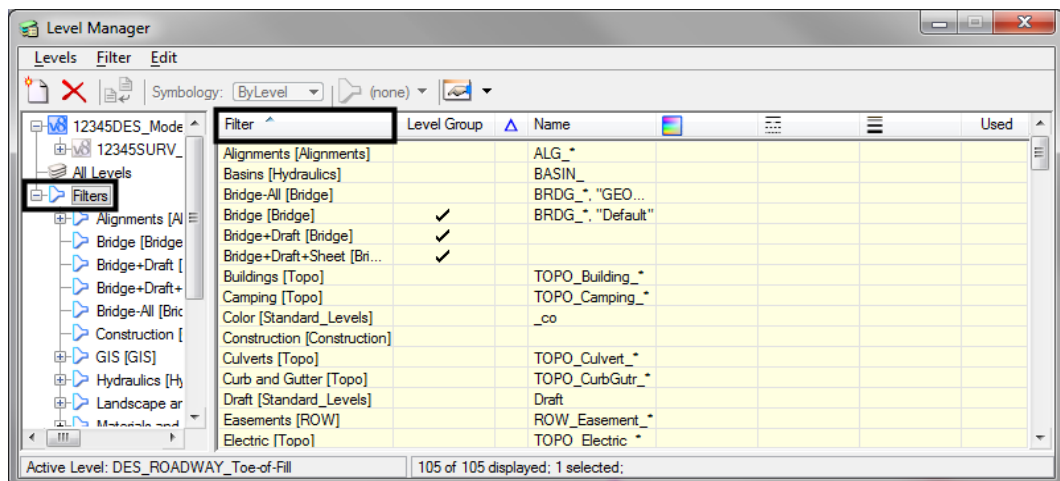
MicroStation’s “pop-up” information tells you the type of graphic (line) and the level on which it is placed (**ALG_PROPOSED_Hor_Alignment**.) Pop-up information is a quick way to determine what level graphics are on.

Level Filters

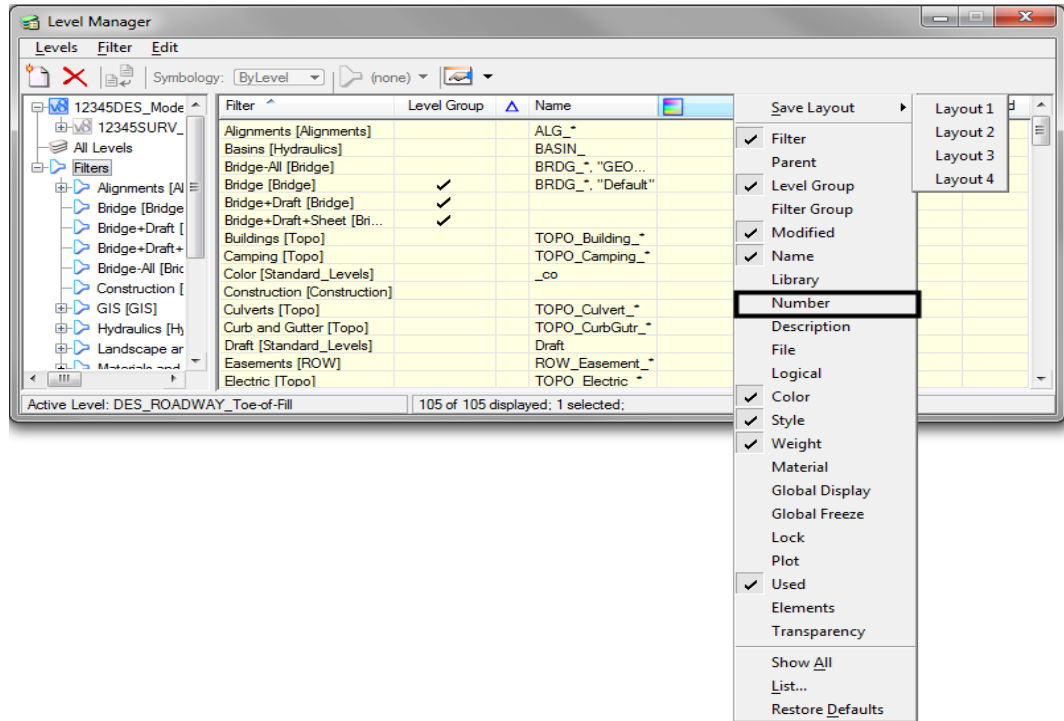
Level Filters are groups of levels created in the **Level Manager** by filtering on virtually any level criteria (name, number, color, etc.) and then naming the filter. These level groups can then be turned on/off using the filter.

Review the filters

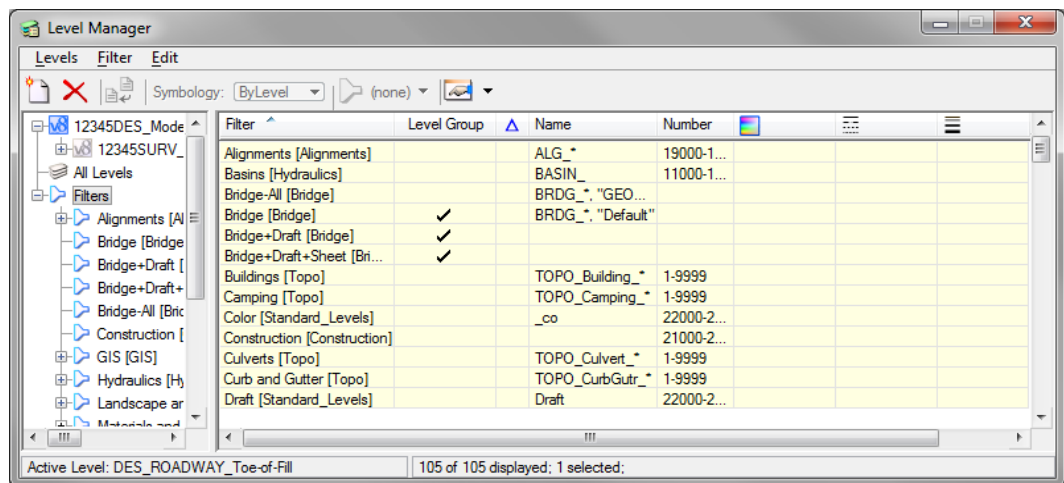
1. In the left pane of the **Level Manager** box, click on **Filters**.
2. Click on the column name **Filter** to sort alphabetically by filter name.



3. Turn on the **Number** column.



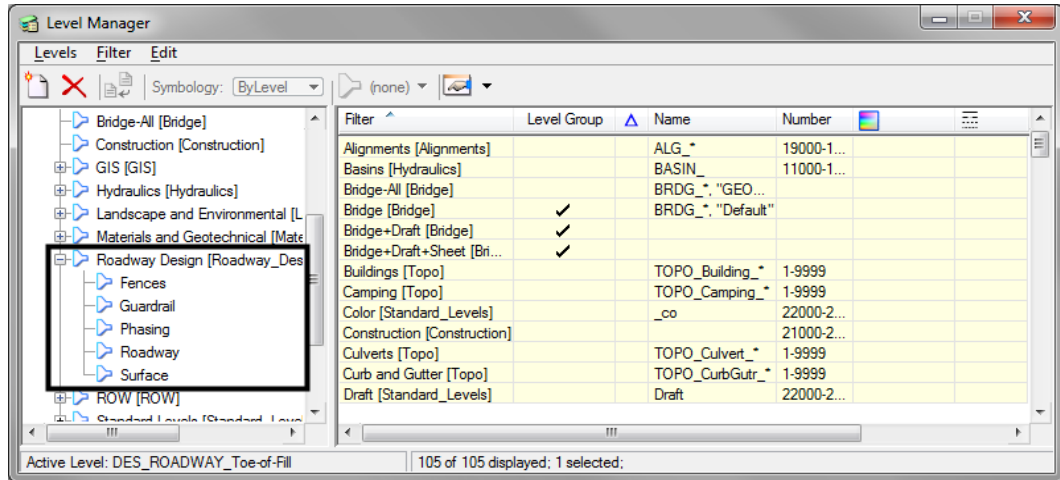
There are several standard CDOT filters, which are based on name and number. The CDOT standard level naming and numbering convention enables the efficient use of level filters.



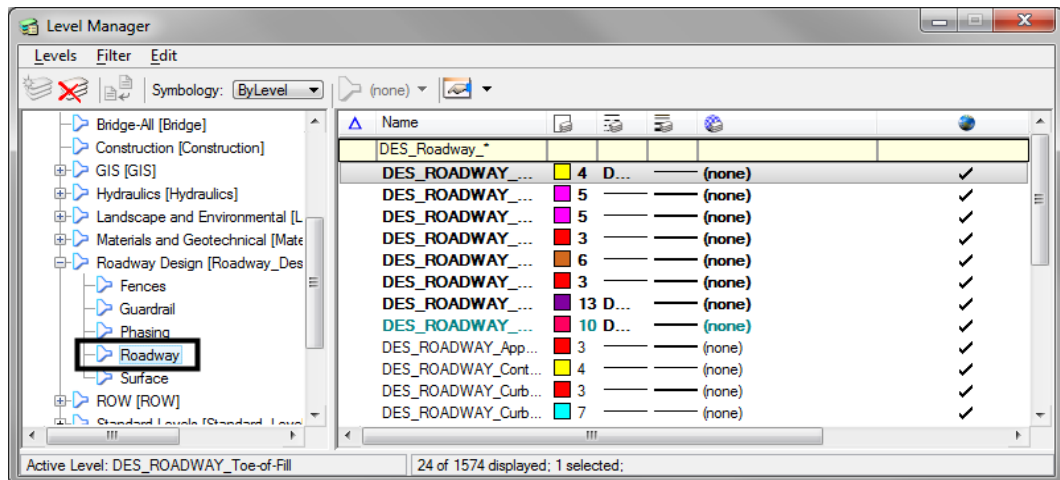
Note: Level filters are stored in level libraries (note the library name in brackets beside the filter).

4. In the left pane of the **Level Manager**, Click the + symbol next to the **Filters** to expand the list.

- Click the + symbol next to the **Roadway Design** to expand this list.

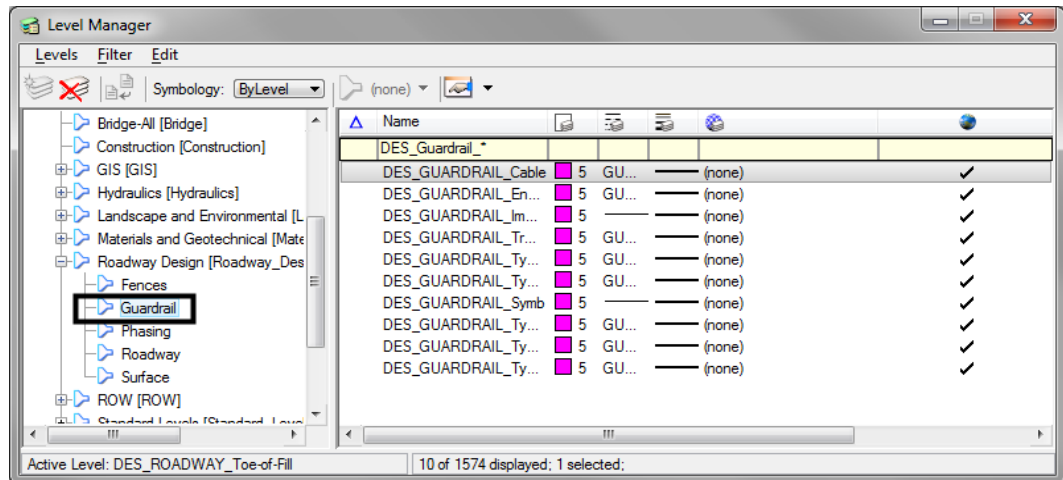


- Click on **Roadway** to review the levels that make up this filter (all design levels with Roadway in the name).



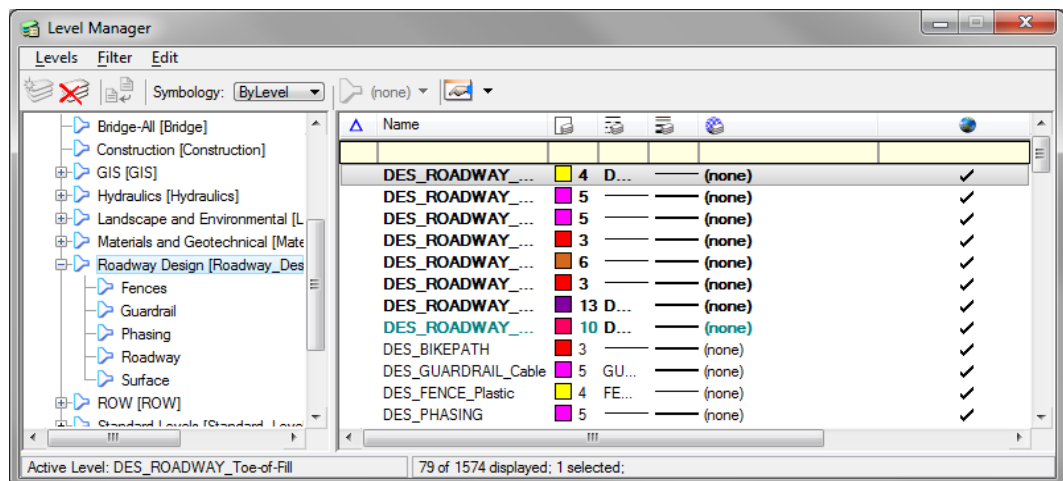
Note that this filter contains both used levels in the active file and unused levels in the library.

- Click on **Guardrail** to review all design levels with Guardrail in the name.



Note: This filter does not have any used levels in the active design file. All levels are from the library.

- Right-click in any column heading and turn on the **Number** column.
- Click on the upper level **Roadway Design** filter and review levels.



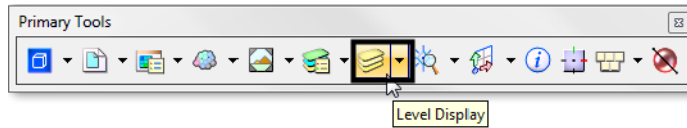
Note that this filter is not filtered on name, but instead contains all levels in the Roadway Design level number range (14000 – 14999). This includes all “children” filter levels like Guardrail and Roadway.

Use level filters to turn levels on/off

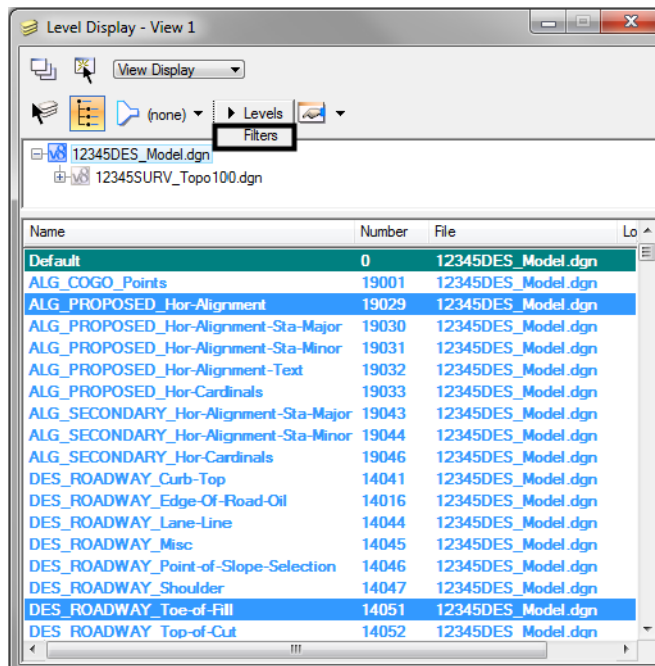
The level filters are stored in the level libraries, accessed via the **Level Manager**. However, to actually use the filters, you need to use **Level Display**.

- Close the **Level Manager**.

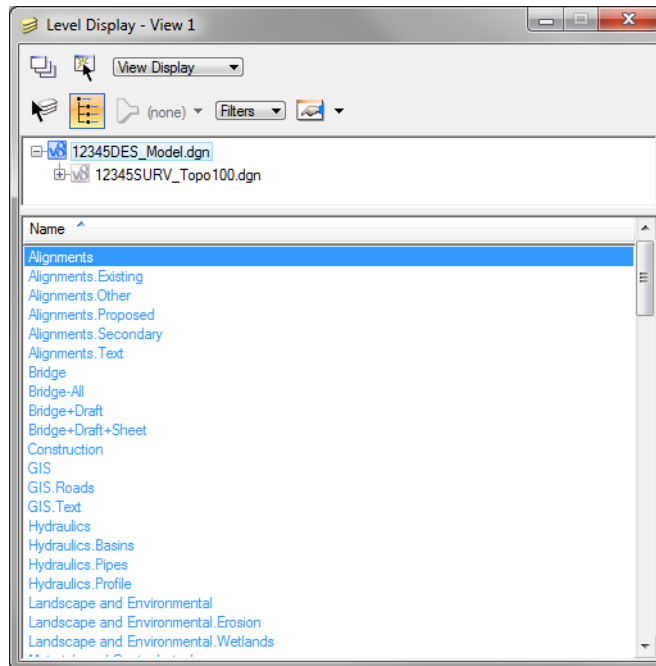
- Open the Level Display box from the Primary toolbar.



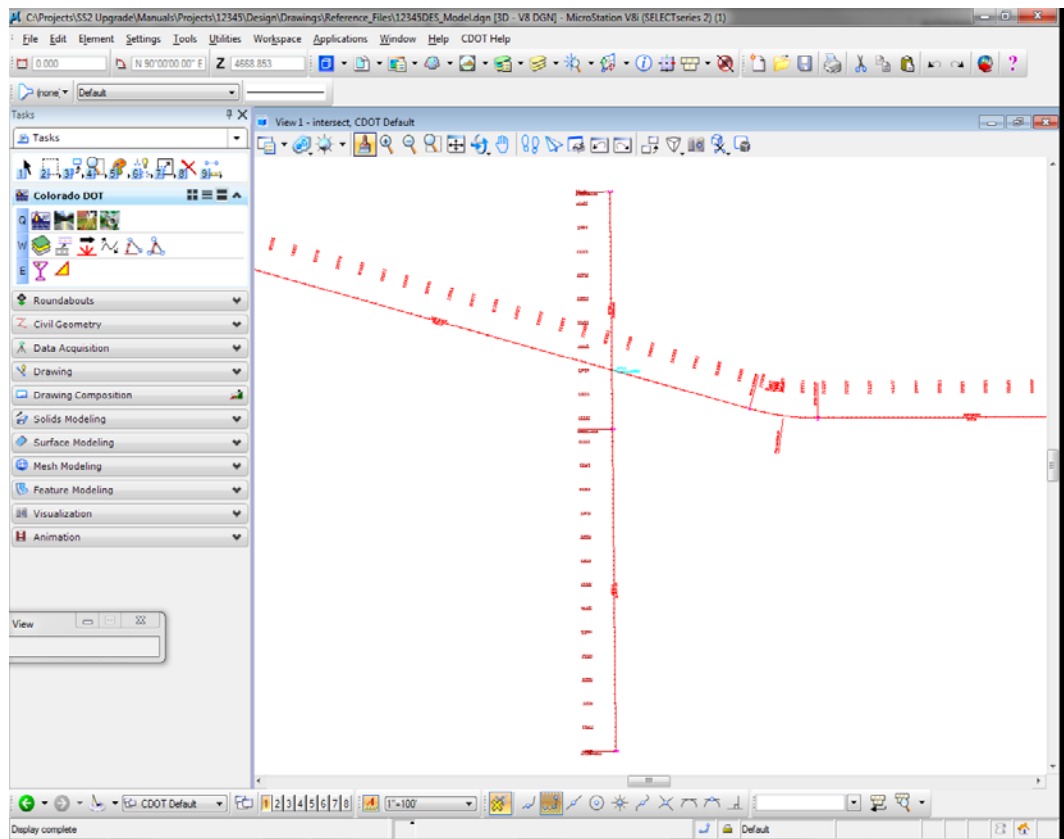
- Set the active level to **Default** by **double-clicking** it in the Level Display box.
- Turn **off** all levels.
- Change the **Show** option from **Levels** to **Filters**.



- Sort the Level filters alphabetically in ascending order.

7. Toggle **on** the **Alignments** filter.

Only the alignment levels (centerline and stationing levels) are turned on. Choosing the filter turns on all levels in the filter.



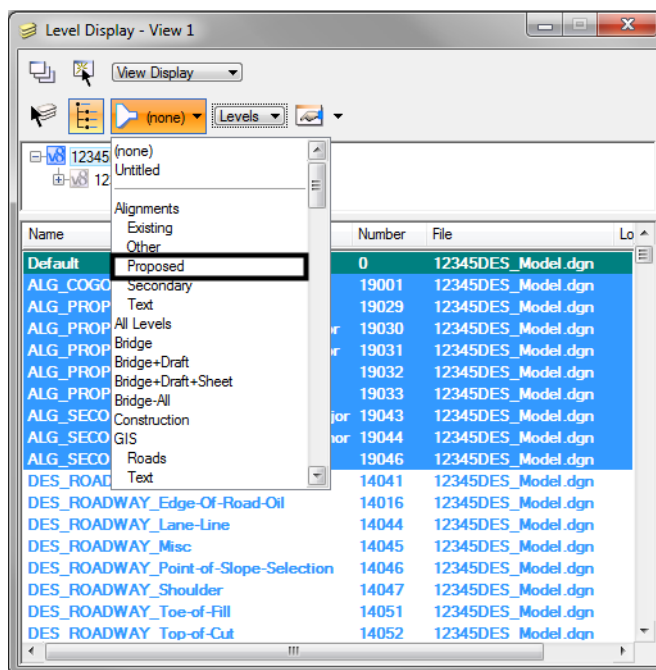
Note: If you toggle the filter off, it turns **all levels** on by default. However, selecting the filter again resets the filter and turns on only the filter levels.

Use level filters to select a group of levels

1. With the **Alignments** filter selected, change the **Show** option back to **Levels**.

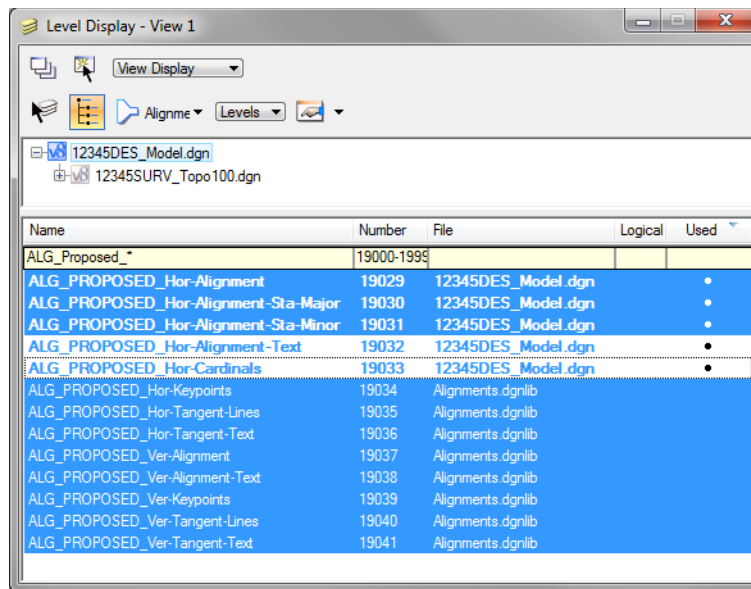


2. Change the List Filter from (none) to **Alignments > Proposed**.



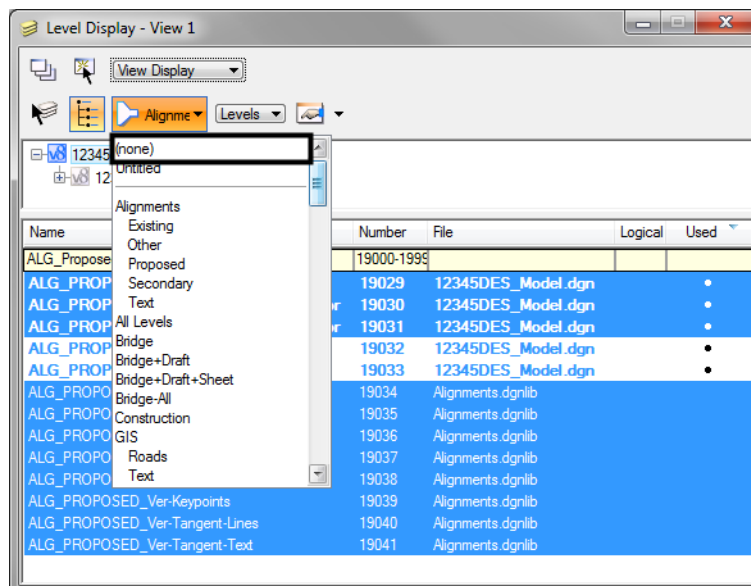
The list of hundreds of levels is filtered down to only a few (the levels contained in the Proposed Alignments filter).

- Turn off the **ALG_Proposed_Hor-Alignment-Text** and **ALG_Proposed_Hor-Cardinals** levels.



Note: Use **Level Filters** to improve your MicroStation efficiency when searching for levels. Setting the **List Filter** is an efficient way to work with levels. Instead of scrolling through hundreds of levels to find a level to turn on, off or set active, the filter breaks the levels down into a logical and manageable group.

- Set the **List Filter** back to (none) to show all levels in the Level Display list.



- Close the Level Display box.
- Fit View 1.
- Save your settings (**File > Save Settings**).

8. Exit MicroStation.