



# Navigating the Interface

*This course is suitable for the 2021 Release 1 version of:*

OpenRoads Designer CONNECT Edition

OpenSite Designer CONNECT Edition

OpenRail Designer CONNECT Edition

## About this Practice Workbook...

- This workbook is designed for use in Live instructor-led training and for OnDemand self study. OnDemand videos for this course are available on the [LEARNserver](#) and through [CONNECT Advisor](#).
- This PDF file includes bookmarks providing an overview of the document. Click on a bookmark to quickly jump to any section in the file.
- Both Imperial and Metric files are included in the dataset. Throughout this practice workbook Imperial values are specified first and the metric values second with the metric values enclosed in square brackets. For example: **12.0'** [3.4m].
- This course workbook uses the [Training and Examples](#) WorkSpace and the [Training-Imperial](#) or [Training-Metric](#) WorkSet delivered with the software.
- The terms “Left-click”, “Click”, “Select” and “Data” are used interchangeably to represent pressing the left mouse button. The terms “Right-click” and “Reset” are also used interchangeably to represent pressing the right mouse button. If your mouse buttons are assigned differently, such as for left-handed use, you will need to adjust accordingly.

## Have a Question? Need Help?

If you have questions while taking this course, search in [CONNECT Advisor](#) for related courses and topics. You can also submit questions to the Civil Design Forum on Bentley Communities where peers and Bentley subject matter experts are available to help.

## Course Overview

This course is designed for all users just getting started with the software. You will learn how to open a file, working with the ribbon interface, reviewing civil data, setting up views, working with models and analyzing civil data.

### Skills Taught

- Selecting a WorkSpace and WorkSet
- Opening a File
- Understanding the Ribbon Interface
- Setting Up User Preferences - Working Units and Mouse Button Assignments
- Using Element Selection
- Viewing Tooltips
- Selecting a Feature to Review and Edit Geometry
- Adjusting Manipulators and Other Settings
- Using the Civil Context Menu
- On-screen Heads-Up Prompts
- Understanding On-Screen Heads-Up Prompts
- Using Explorer and Properties
- Setting up Views
- Working with 2D and 3D Models
- Defining Profile Models and Cross Section Models
- View Controls
- Viewing Display Styles
- Analyzing Civil Data

## Exercise 1: Getting Started with the Interface

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### Description

In this exercise, you will learn how to start the software and review the interface.

### Skills Taught

- Starting the Software
- Selecting a Workspace and WorkSet
- Opening a Design File (.DGN)
- Reviewing the Ribbon and Workflows
- Customizing the Ribbon
- Searching the Ribbon
- Quick Access Toolbar
- BackStage and Help
- Design File Settings - Working Units
- User Settings - Mouse Button Assignments

## Start the Software

In this section, you will learn how to start the software and open a file.

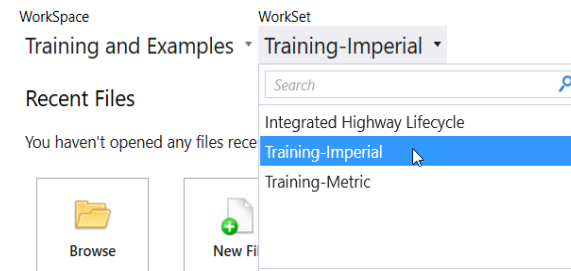
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1. Start the software.
2. Set the WorkSpace and WorkSet.

The WorkSpace and WorkSet define standards that are used by the software, and the ones used for this training are installed during the software installation.

Typically, the WorkSpace contains organizational standards and the WorkSet contains project standards.

- a. Select **Training and Examples** from the *WorkSpace* drop-down menu.
- b. Select **Training-Imperial** from the *WorkSet* drop-down menu.



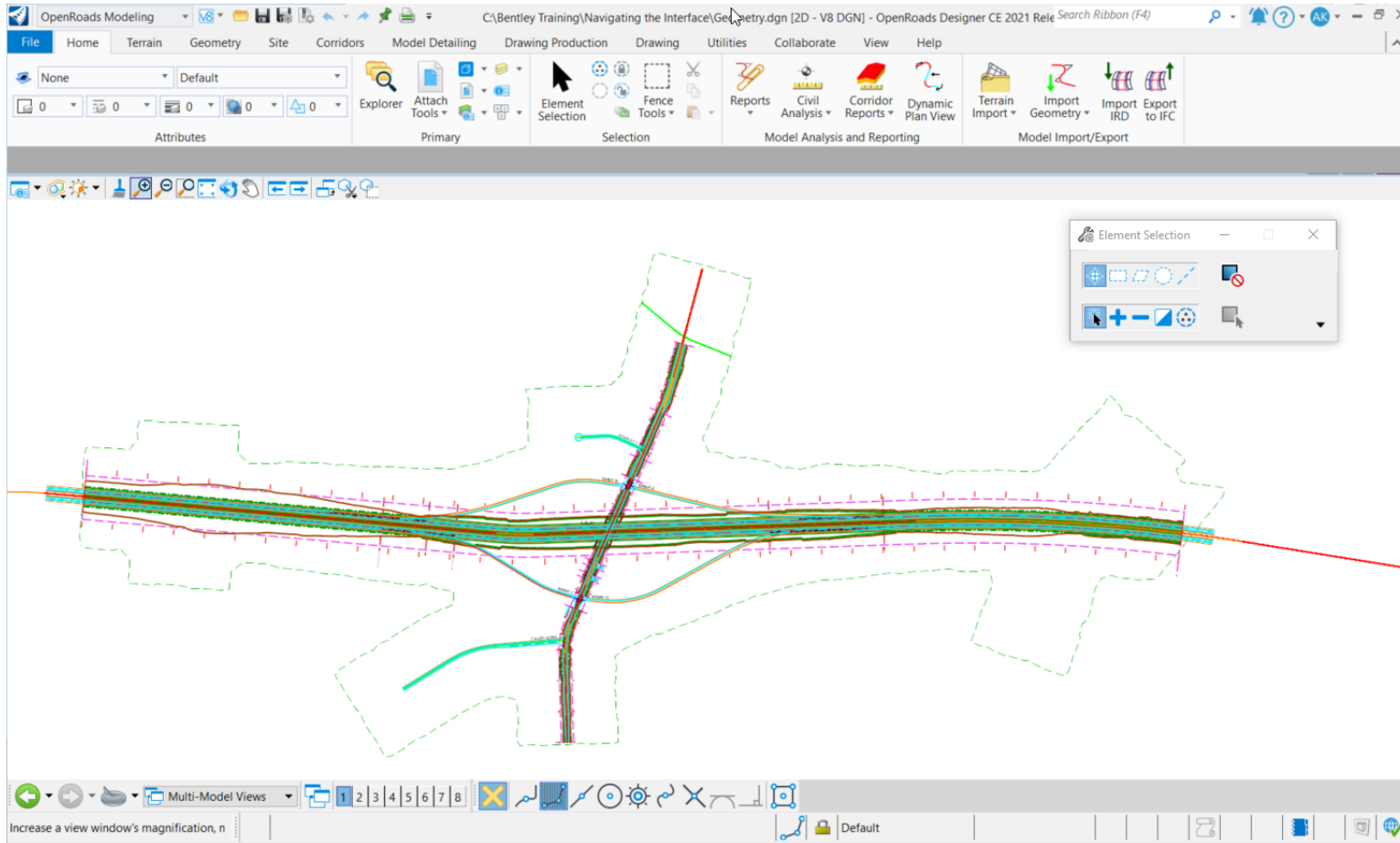
3. Open a Design File.



- a. Select **Browse**.
- b. Browse to *C:\Bentley Training\Navigating the Interface* or other folder where you unzipped the dataset files.
- c. Select the file named **Geometry.dgn** and click **Open**.

**Note:** If you get a message stating “Incompatible Civil Data”, this is because the training files are “aligned” to OpenSite Designer. Clicking **Yes** will align the file to the software you are using (OpenRoads Designer or OpenRail Designer). This will have zero impact for training. Note that in production, upgrading the file will make the file read-only in OpenSite Designer. Full information is available at [Bentley Communities - Product Realignment](#).

d. After the file is open, the interface and design file should look similar to that shown below.



- This dataset models a small highway project and this file contains the projects geometric elements. All of the other civil data you see displayed is referenced from other project related files (Terrain Models, Corridors, etc).
- Projects generally federate and reference data by type, segment, and/or phase. This results in a full data-rich experience while maintaining easy manageability.

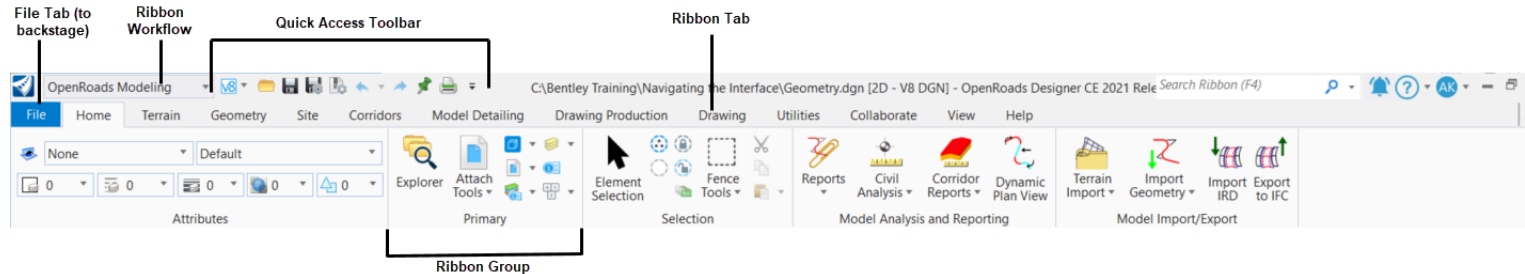
References (7 of 7 unique, 7 displayed)

Slot	File Name	Model	Description	Logical
1	✓ Geometry.dgn	Default-3D		Ref
2	Corridor-SR97.dgn	Default	Corridor S.R. 97	Corridor S.R. 97
3	Terrain_Existing.dgn	Default	Existing Ground Terrain Model	Existing Ground Terrain
4	Corridor-LondonRd.dgn	Default	Master Model	
5	Geometry-Control.dgn	Default	Horizontal Control Geometry	Horizontal Control Geo
6	Corridor-AbutmentWalls.dgn	Default	Corridor Abutment	Corridor Abutment
7	Corridor-Bridge.dgn	Default	Corridor Bridge	Corridor Bridge

## Review the Ribbon and Workflows

The main section of the interface is the *Ribbon* toolbar located at the top of the screen. The *Ribbon* toolbar is your primary access to tools. In this section, you will learn how to review and use the *Ribbon*.

### 1. Review the Ribbon.

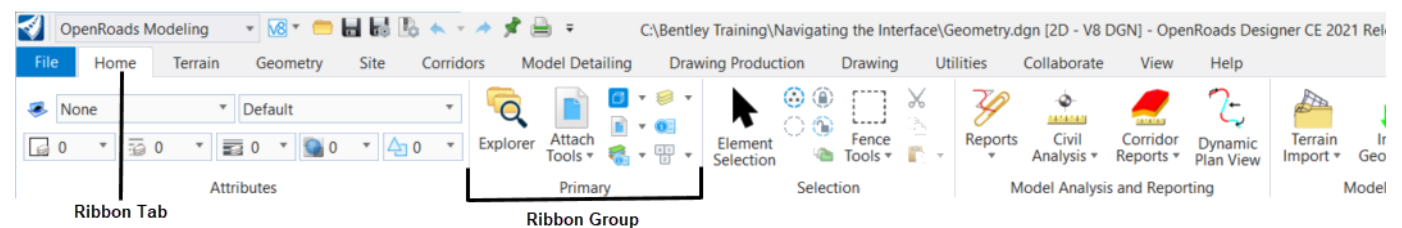
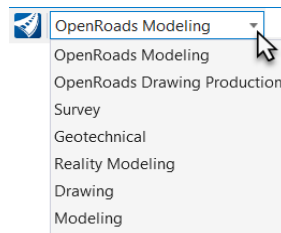
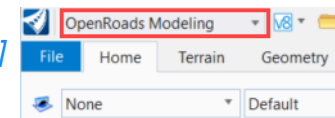


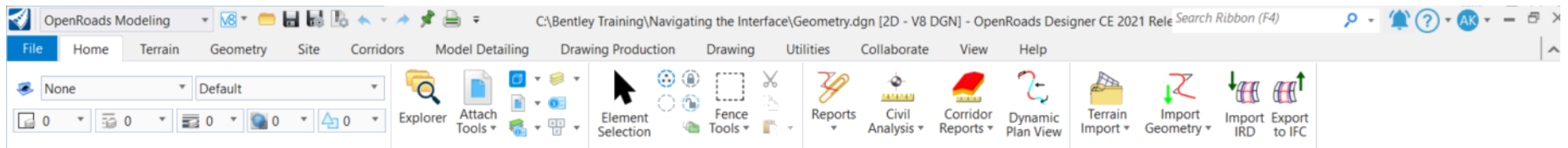
#### a. Review each area of the Ribbon by selecting each tab.

- The Ribbon functions in a similar manner to the Ribbon found in MicroSoft Office Products. Tools can be accessed by a variety of Ribbons and are arranged by *Workflows*, which are selected from a pull-down in the upper left corner of the software.
- The Ribbon tools displayed are dependent on the *Workflow* selected. For example selecting the **OpenRoads Modeling Workflow** will present a new set of tools.

### 2. Change the *Workflow*.

- Select the **OpenRoads Modeling Workflow\*** from the pick list in the upper left corner if it is not already active. *[Select OpenSite Modeling or OpenRail Modeling if you are using those products]*
- Notice how picking a different *Workflow* presents a different set of tools on the Ribbon. The ribbon menu will now show the corresponding tools that are part of the **OpenRoads Modeling Workflow**. The tools are organized into *Ribbon Tabs* and *Ribbon Groups*.

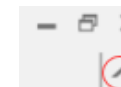




**Note:** Your Ribbon may vary from the image depending which version of software you have installed.

Each *Workflow* groups similar tools under *Ribbon Tabs*. They will vary a bit, depending on software used - OpenSite, OpenRoads or OpenRail Designer. Some tools, such as Element Selection, are on all the tabs. Common Tabs include:

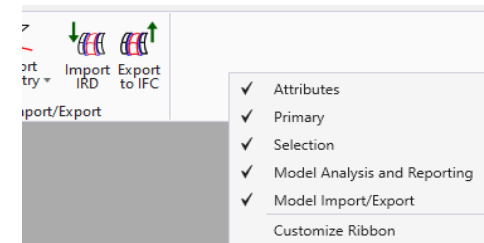
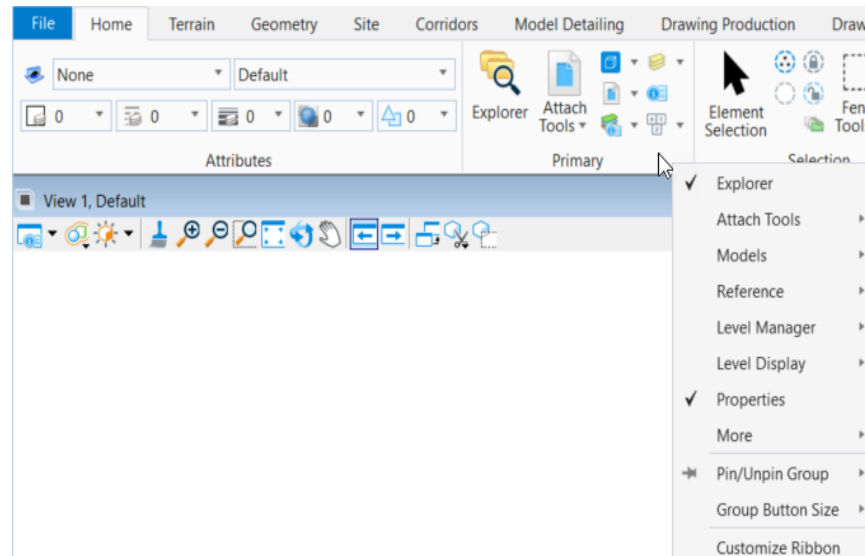
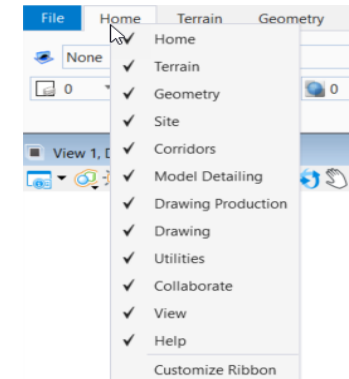
- **Home** - Common tools such as Attributes, Explorer, Attach Reference Tools, Models, Level Display and Element Selection.
  - **Terrain** - Terrain Creation, Editing, and Analysis tools.
  - **Geometry** - Horizontal and Vertical Geometry Review, Creation, and Management tools, including Standards and Civil AccuDraw.
  - **Site Layout** - Tools for the Integrated Automated Site Optimization platform.
  - **Corridors** - Template, Corridor, and Superelevation and Reviewing and Modeling tools.
  - **Drawing Production** - Saved views, notes, text, annotations, and plans production (cross section, plan, and profile) tools.
  - **Model Detailing** - Civil Cells, Linear and Surface Templates, and other 3D tools.
  - **Drawing** - Commonly used MicroStation drawing tools. A more complete set of MicroStation tools are available in the Drawing, Modeling (3D only) or Visualization (3D only) workflows.
  - **View** - Commonly used view control tools.
3. *Click* on each of the *Ribbon Tabs* and notice how each tab has a different set of tools.
  4. *Double-click* on any of the *Ribbon Tabs*. Notice the Ribbon tools will minimize and collapse. This is useful for when you need more screen space or you don't want to view all of the Ribbon tools.
    - You can also use the carret in the upper right corner to expand and minimize the Ribbon.
  5. Uncollapse the *Ribbon* and select **Home**. Use the mouse wheel to navigate between the tabs. This is useful to quickly navigate between each *Tab*.



## Customize the Ribbon

There are many options to customize the ribbon. You can add or remove tools, change the group button size and pin/unpin groups. To customize the ribbon simply right click in any area of the ribbon to access the customize menu. In this section, you will review some of the customize ribbon options.

1. Review the *Ribbon Tab* options.
  - a. Select the **Home** tab.
  - b. *Right-click* on the tab to access the ribbon tab options.
  - c. Experiment with turning off some of the options and notice how the ribbon tabs change.
2. Review the *Ribbon Group* options.
  - a. Select the **Primary** ribbon group.
  - b. *Right-click* to access the ribbon group options.



- c. To customize the *Ribbon Groups* shown in a *Ribbon Tab*, *right click* in the empty area of the ribbon.

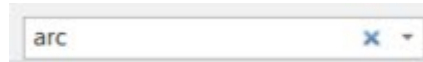


## Search Ribbon

A **Search Ribbon** tool is available at the right side of the title bar. To find a tool, type the command in the *Search Ribbon* field and a search will be performed across all ribbon menus. In this section, you will learn how to use the **Search Ribbon** to find tools and commands.

1. Use the *Search Ribbon* to find a tool.

a. Key in **Arc** in the *Search Ribbon* field.



b. Notice the results of the ribbon search are displayed in a dialog below the *Search Ribbon* field.

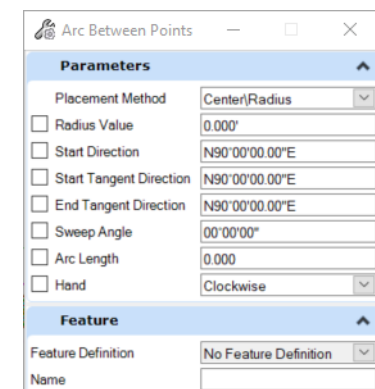
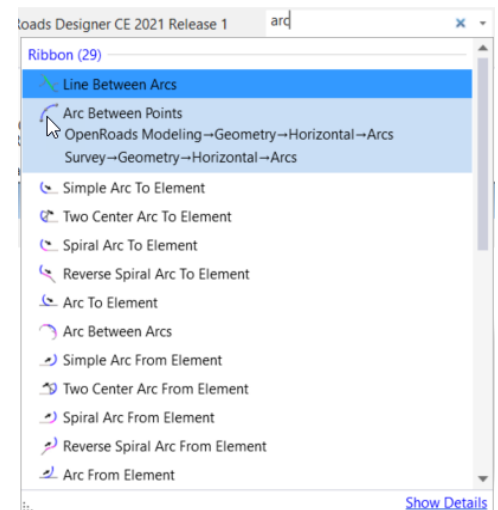
c. *Hover* over **Arc Between Points**.

The search results expand, showing where the **Arc Between Points** tool is located in the ribbons: **OpenRoads Modeling -> Geometry -> Horizontal -> Arcs**. You may have different or additional paths.

- If you click on one of these “Breadcrumbs”, the Ribbon will update to the appropriate Workflow and Tab.
- If you click on the tool, it opens the tool without changing the Ribbon.

d. In the Search Results dialog, **Left-click** *Arc Between Points* to open the tool.

e. *Right-click* to close the *Arc Between Points* toolbox.



## Quick Access Toolbar: Save, Save Settings, Undo and More

This section discusses the Quick Access Toolbar options.

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1. Review and explore the tools in the Quick Access Toolbar.



To the right of the *Workflow* list in the title bar, the **Quick Access Toolbar** contains common tools like Open File, Save, Save Settings, Compress File, Undo, Redo, Print, Explorer and Properties. These tools are always available, independent of the active workflow.



*Open* is used to open a file.



*Save* is used to save the file. Design File changes are automatically written to the file on the hard drive or server after every action. You generally do not need to manually *Save* or set a periodic Autosave. This is typically only used when working with other file formats such as: *.dwg*, *.dxf*, etc.



*Save Settings* is used to save “non-data” settings, such as view window positions, level display status, and other interface customizations (like column order in lists).



*Compress Options* are used to adjust settings for compressing a file. Compressing a DGN file reduces its size and clears the undo buffer.



*Undo* will undo a previous action or command.



*Redo* will redo a previous action or command.



*Set Mark* allows you to set a milestone to Undo to. When you’re about to try something “experimental”, set a mark, and when you’re through “experimenting” you can go to the Quick Access Toolbar and click Undo to Mark.



*Print* is used to print the file.



*Customize Quick Access Toolbar* is used to add or remove tools from the Quick Access Toolbar.

## BackStage and Help

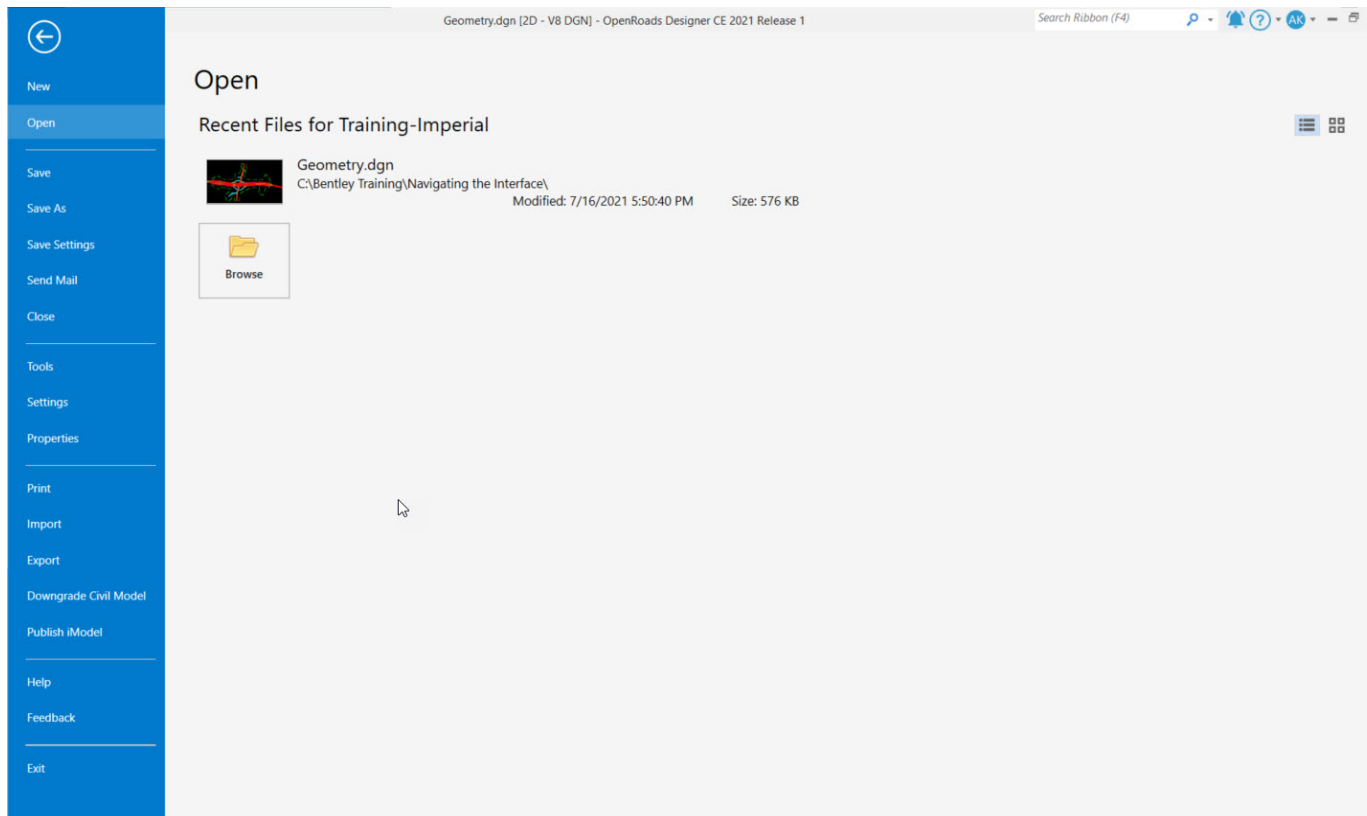
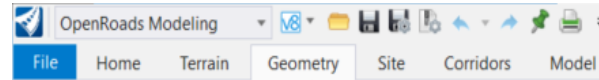
In this section, you will learn how to access the *BackStage* and review the various Help resources.

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1. Review the BackStage and Help Contents.

a. Open the *BackStage* by selecting the **File** tab.

- Notice the familiar options on this screen such *New, Open, Save, Save Settings, Settings, Help*, etc. While some of these “File” tools are available from the **Quick Access Toolbar**, the bulk of the **File** capabilities are here.

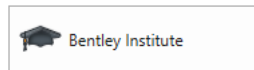


- b. In the *BackStage*, select **Help**.
- These are the available Help Resources.
  - If you need to know what version of software you are running, click on the **About** button.
- c. Select and review **Help Contents**.
- **Help Contents** is a link to live online Help
  - The Help Contents button opens the familiar interface of Indexed, Searchable and Hyperlinked topics.

d. Close the Help Contents after reviewing.

2. Review Bentley Institute (i.e. LEARNserver).

a. Select **Bentley Institute**.



- Your browser will open to the Bentley LEARNserver page.

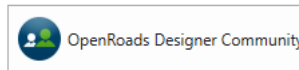
b. Review the LEARNserver.

- While the **CONNECT Advisor** serves up courses that are hosted on the **LEARNserver** (*learn.bentley.com*), you are encouraged to go the **LEARNserver** directly. Training can be found by Product Type and is organized into *Learning Paths*.

c. Close the LEARNserver page.

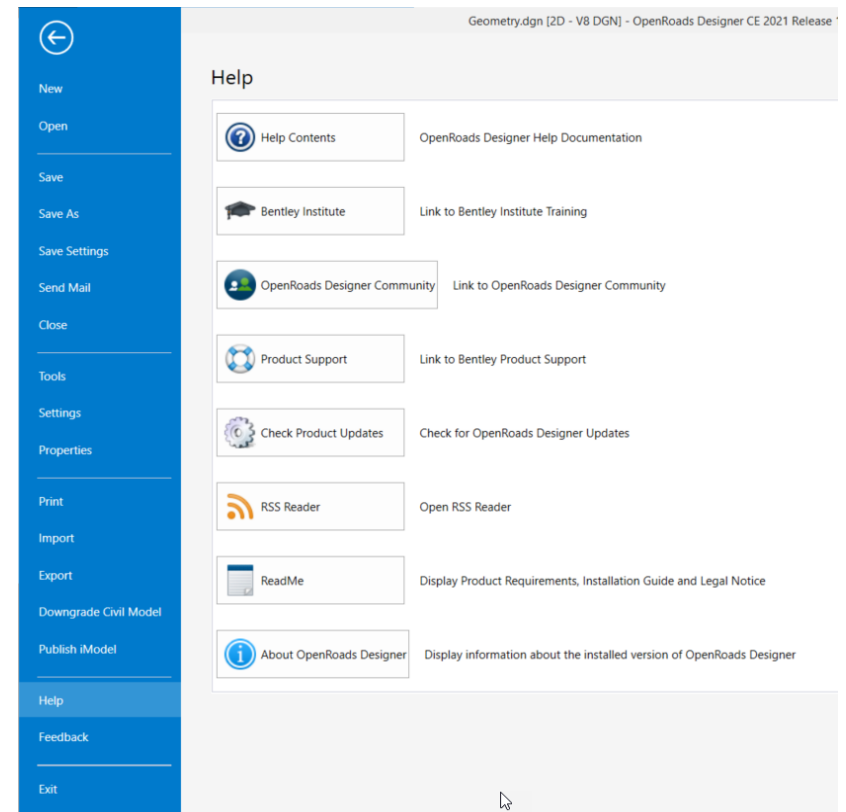
3. Review the OpenSite/OpenRoads/OpenRail Designer Community.

a. Select **OpenRoads Designer Community**.



b. Select **Wiki**, Select **OpenRoads | OpenSite Wiki**

- This will take you to the main page where you can see links to training and support topics.
- **Bentley Communities** provide product and discipline-based wiki's, forums, and interactive opportunities for solutions. User questions are posted and answered in a short time frame. Bentley Colleagues and users provide a broad range of solutions to common questions. Videos and white papers are prevalent. Because material can be posted much more quickly than through the **LEARNserver**, it is a great resource for new and experienced users.





c. Close the **Wiki** page.

d. *Click* the arrow in the upper left corner to return to the main interface.

**Tip:** The **<ESC>** key can be used to navigate back to the main interface as well.

## Design File Settings - Review Working Units

Working units are derived from the seed file that is chosen when a new file is created. You should always be aware of the proper working units for your project. In this section, you will learn how to review the Working Units of the design file.

### 1. Review Working Units.

a. Access the *BackStage* by clicking on the **File** tab.

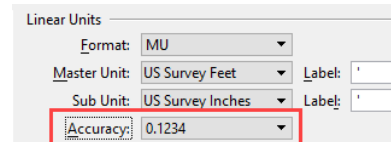
b. Select **Settings > File > Design File Settings**

c. Select the **Working Units** category. This will display the Linear Units and the Advanced Settings.

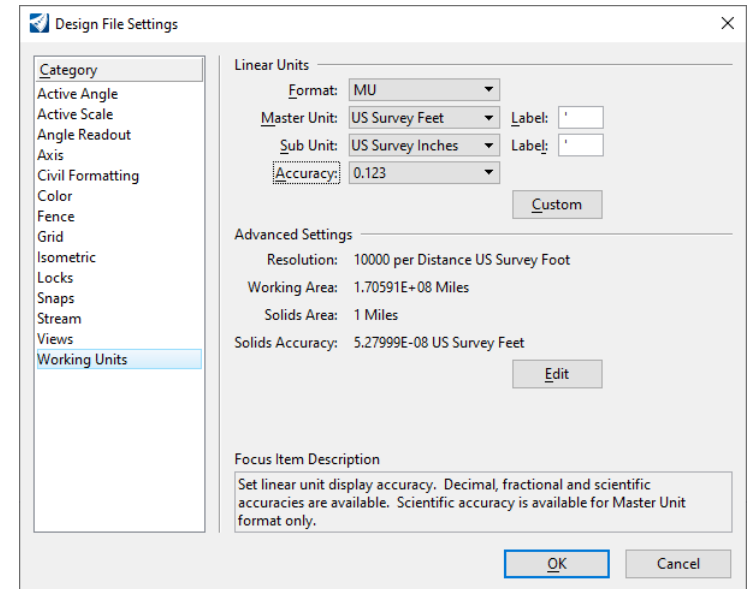
- Observe that Format is set as MU. This displays the Master Unit value which is set to US Survey Feet with an accuracy readout of 3 decimal places.
- The Labels shown do not affect measurements, but may be used with coordinate readout, labeling and dimensioning.
- The Advanced Settings define the real world units of resolution. In this case US Survey Foot.

### 2. Adjust *Linear Units* accuracy to 4 decimal places.

a. Select the *Accuracy* pulldown and set the accuracy to 4 decimal places.



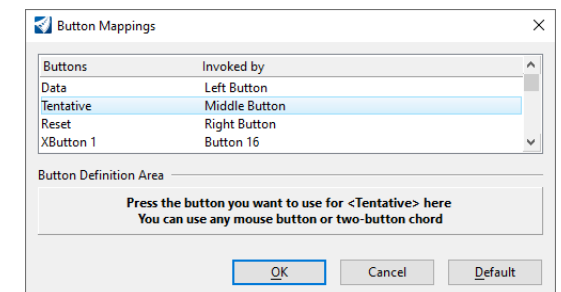
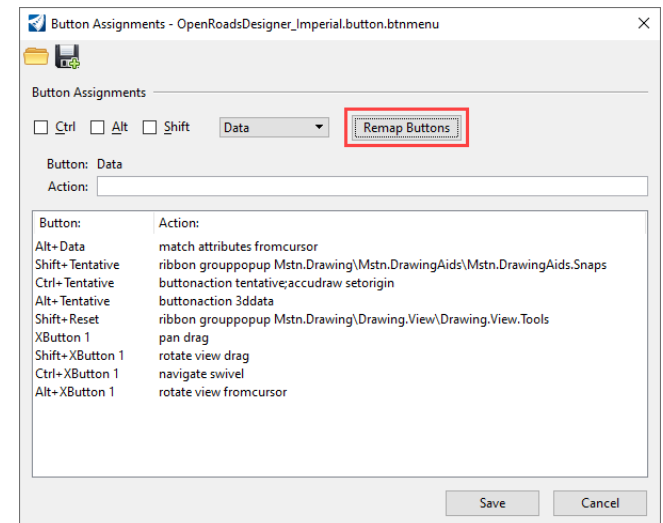
b. **DO NOT** click OK yet.



## User Settings - Button Assignments

User settings allow you to control the operation of the software without affecting other team members settings. One of the more common **User Settings** adjusted are the *Button Assignments*. In this section, you will learn how to change the **Button Assignments**.

1. Sometimes it's necessary to change the functionality of the mouse buttons. The default button mappings were designed assuming you have a two button mouse. Some users have a three button mouse so a common change users like to make is to map the middle button to function as the tentative snap button (we will talk about snaps later in the course).
2. Review and change the mouse button assignments (If you have a two button mouse disregard the next steps).
  - a. In the *BackStage* navigate to *Settings > User* and select **Button Assignments**.
  - b. Select *Remap Buttons*
  - c. In the *Button Mappings* dialog, select **Tentative** and then move your cursor to the *Button Definition Area*.
  - d. Press the middle mouse button. Now the middle mouse button will be used for Tentative functions such as snapping to elements.
  - e. **Click OK** to close the *Button Mappings* dialog.
  - f. **Click Save** to save the changes.
  - g. **Click** the arrow in the upper left corner to return to the main interface.



## Exercise 2: Using Element Selection to Explore Civil Elements and Features

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### Description

In this exercise, you will learn how the Element Selection tool can be used to get different types of information from civil data.

### Skills Taught

- Reference File Display
- Element Selection
- Tooltips
- Selecting a Feature to Review and Edit Geometry
- Adjusting Manipulators and Other Settings
- Civil Context Menu
- On-screen Heads-Up Prompts



## Reference File Display

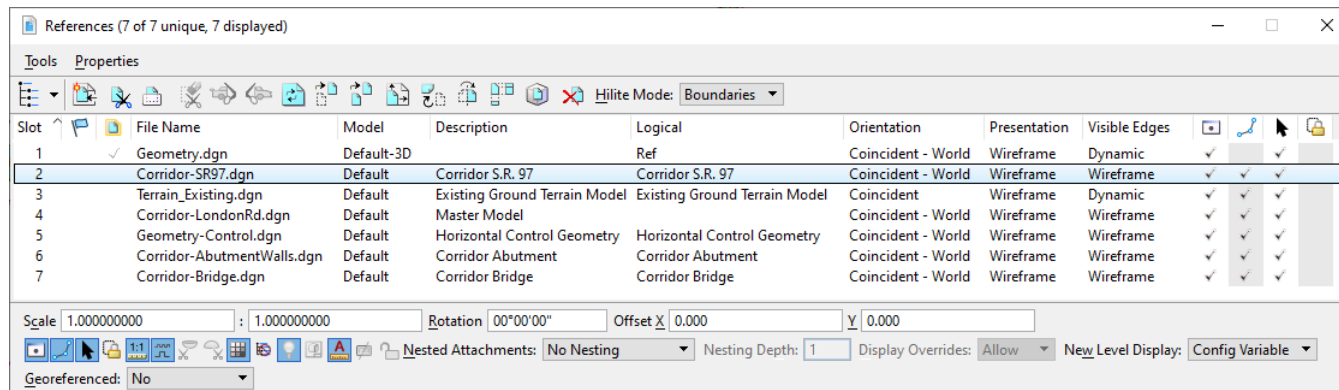
To begin this exercise, let's turn off some reference files to display only the geometric elements stored in this design file.

1. Turn Off Reference files.



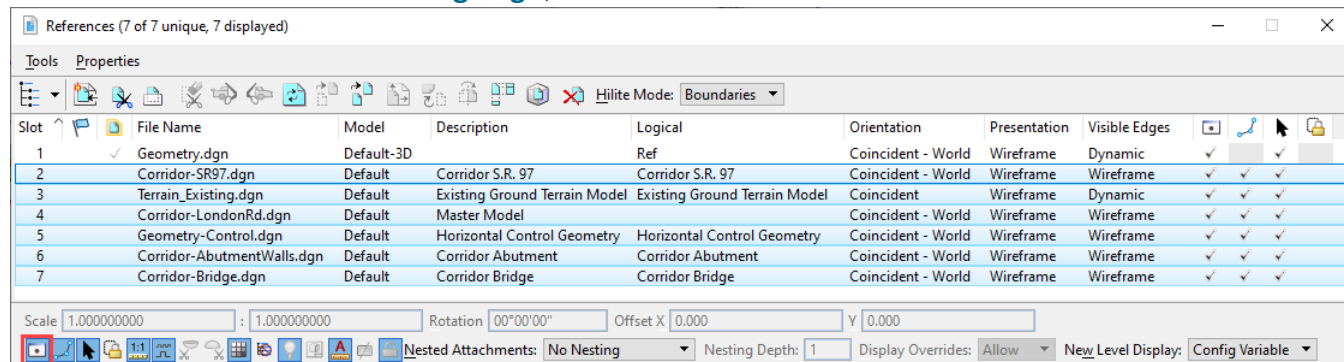
a. Click *Home > Primary > Attach Tools > References*

The *References* dialog opens. You use this dialog to attach/detach and manage reference files.



b. In the *References* dialog, select **Corridor-SR97.dgn**

c. Hold down **<Shift>** and select **Corridor-Bridge.dgn**, the other references will be selected.



d. Toggle **OFF** the display of the selected references by clicking the **Display** button and then close the *References* dialog.

## Element Selection

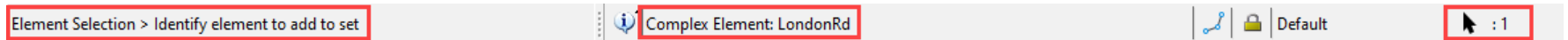
The *Element Selection* tool is a core tool. It is used to select a single element or multiple elements. In this section, you will learn how to use the Element Selection tool.

1. Practice using the *Element Selection* tool.

a. Select the *Element Selection* tool and *left-click* the **London Rd.** alignment (red north-south graphic) to select it.

- When the element is selected it will highlight in the view.
- Selected element(s) are considered to be a *Selection Set*.

b. Notice in the status bar the *Active Selection Set* indicator reflects how many elements are in the selection set (in this case only 1).



The Status Bar features the “prompt” on the left side of the status bar. The text in the prompt lets the user know what the current tool is and what to do next. In the example shown, the active tool is *Element Selection* and the prompt is **Identify element to add to set**.

c. Set the *Element Selection* mode to **Add**, then select the **Route 97-Extension** alignment (red west-east graphic). This element will be added to the selection set.

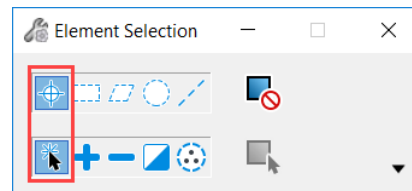


d. Select the **Clear** button to de-select the elements.

e. Select the **Select All** button. All elements in the active model (not in reference files) will be selected and highlight.

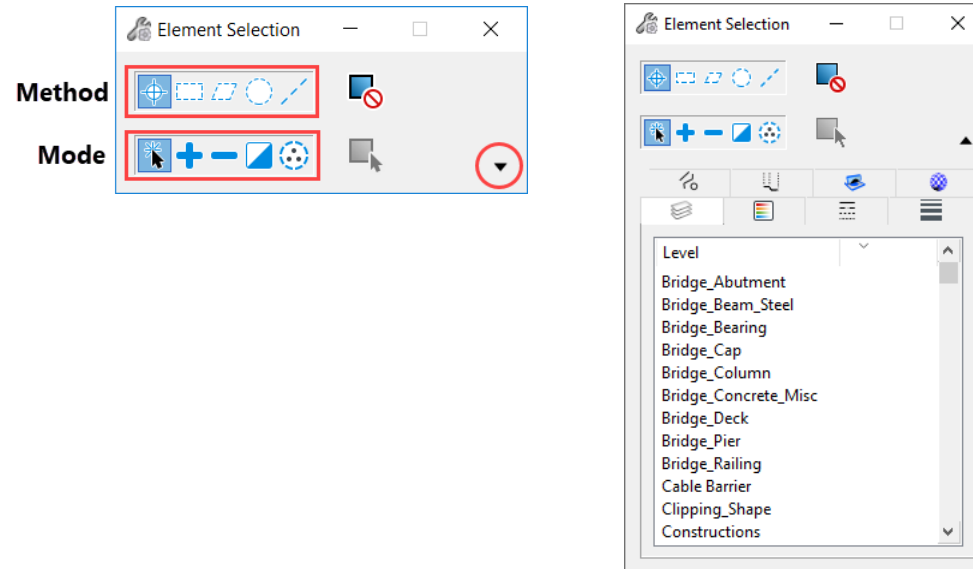
f. Select **Clear** to de-select all elements.

This will reset the *Element Selection* mode back to the default mode of *Individual* and *New*.



## Tips:

- When the *Element Selection* tool is active, the *Tool Settings* dialog has options for the selection **Method** (*Individual, Block, Shape, Circle and Line*) and **Mode** (New, Add, Subtract, Invert, Clear and Select All). Extended settings can be accessed via the drop arrow to select elements by MicroStation attributes like level, color, line style, etc.



- Multiple elements can be selected by a window selection by dragging the cursor, left-to-right for 'inside' the window, right-to-left for 'inside and overlapping' the window. The **<Ctrl>** key can be pressed to add or remove elements from the selection set.
- Sometimes multiple elements lie within the location area of the cursor. *Right-clicking* (reset button) will cycle through elements that lie in the tolerance circle.
- Selected element(s) are considered to be a *Selection Set*. To clear a *Selection Set*, click in an area where no elements are located ('in space') or by clicking the Clear mode button in the *Tool Settings* dialog.

## Tooltips

All civil data (terrain, geometry, corridors, etc.) is stored and managed in the **.DGN file**. A major component of the civil data is the **Feature Definition** which controls the name and symbology of civil graphical elements. A civil graphical element is known as a **Feature**, and a primary property of the **Feature** is the **Feature Definition**. When you hover your cursor over civil data in the **.DGN** file a tooltip with important information about the **Feature** will be displayed (Feature Type, Feature Name, Feature Definition, Level, etc.).

In this section, you will learn how to get information from the tooltips.

1. Review 2D and 3D Features using via the tooltips.

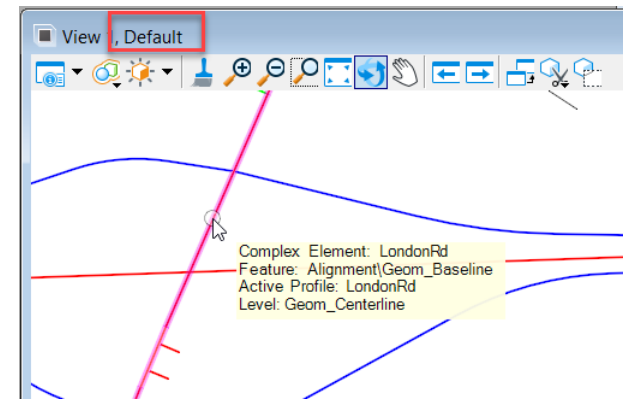


a. *Click* the **Element Selection** tool.

b. Make sure the 2D view is active by *left-clicking* in *View 1*.

c. *Hover* your cursor over the **London Rd.** alignment (red north-south graphic) in the active view to see a tooltip.

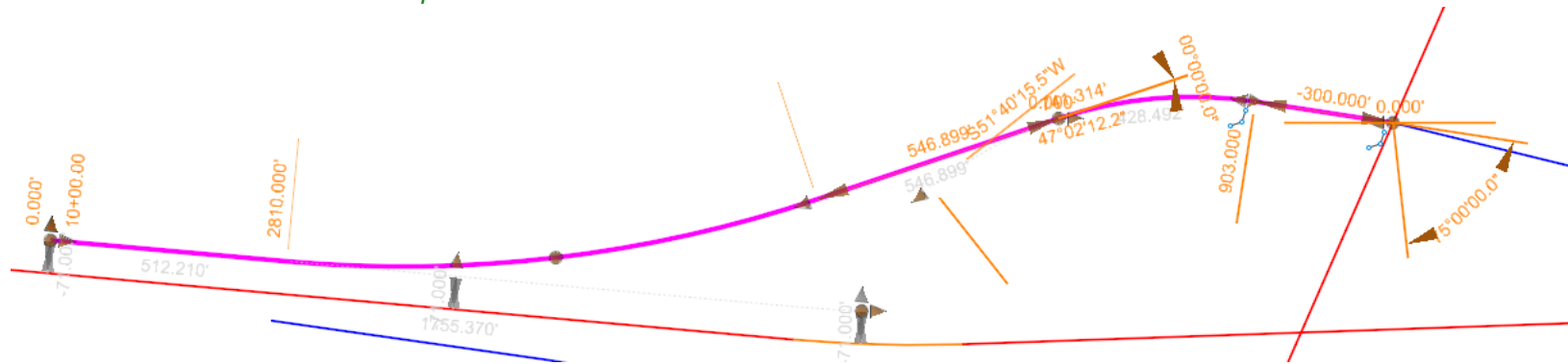
- Tooltips are pervasive throughout Bentley software. They almost always show the object *Type* and the *Level* it is on.
- We can see that this element is a *Feature* with a name of **LondonRd** and a *Feature Definition* of **Alignment\Geom\_Baseline**.
- You can also see that this is a *Complex Element* on the Level **Geom\_Centerline**.
- You can see that the name of the *Active Profile* is **LondonRd**.
- A primary property of horizontal geometry is the *Active Profile*. A horizontal alignment can have multiple vertical alignments but only **ONE** can be active at a given time.



## Selecting a Feature to Review and Edit Geometry

Selecting (single click on) a **Feature** displays editable text and element manipulators. It allows you to see geometry values, relationships and other properties instantly. Different controls show up depending on the tools used to create the **Feature**. You can instantly infer the Design Intent with which it was created. It is also a very robust editing interface.

1. Review geometry manipulators, rules and relationships.
  - a. Continuing with the **Element Selection** tool, *click* on the 2D View to make it active.
  - b. *Click* on the **Ramp B** alignment. Notice drag handle arrows, editable text manipulators, snap indicators, etc. are displayed for each element clicked.
  - c. *Click* on arrows and circles to move, click on text to key in new values. The arrows and circles are known as *Drag handles* and the editable text is known as *Text manipulators*.



Manipulators are presented as follows:

**Text manipulators** - These can be clicked to make them editable, which lets you type in new values. Examples of this are the distance and direction text manipulators in the previous image.

**Drag handles** - These are handles that you can click and drag to redefine the element.

- An arrow shaped drag handle - redefines the point with one or more directions constrained. In the previous example, the parallel arrows (that are parallel to the line) are constrained to change the distance only; the arrows that are perpendicular to the line are constrained to change the direction only.

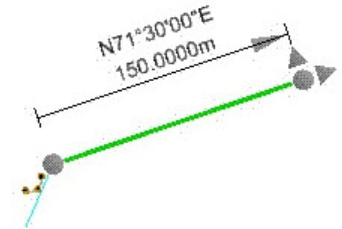


- A circular shaped drag handle - moves the points without constraint.
- Interval drag handle (not shown) - This type of drag handle is present any time one of the MicroStation Modify commands are used on a civil element. This drag handle is used to change the location of the interval end point.

**Snap icons** - If a point was created by a snap, the manipulator is shown as a circle with the appropriate snap icon next to it.

- Hovering over the end point reveals the drag handles, which can then be used normally as described above. Utilizing a revealed handle removes the snap and applies a new constraint to the point.

**Civil AccuDraw constraint** - A point that was created with a Civil AccuDraw constraint will show the appropriate Civil AccuDraw information in the form of text manipulators. Hovering over the point will reveal the drag handles which can then be used normally as described above. Utilizing a revealed handle removes the AccuDraw constraint and applies a new constraint to the point.



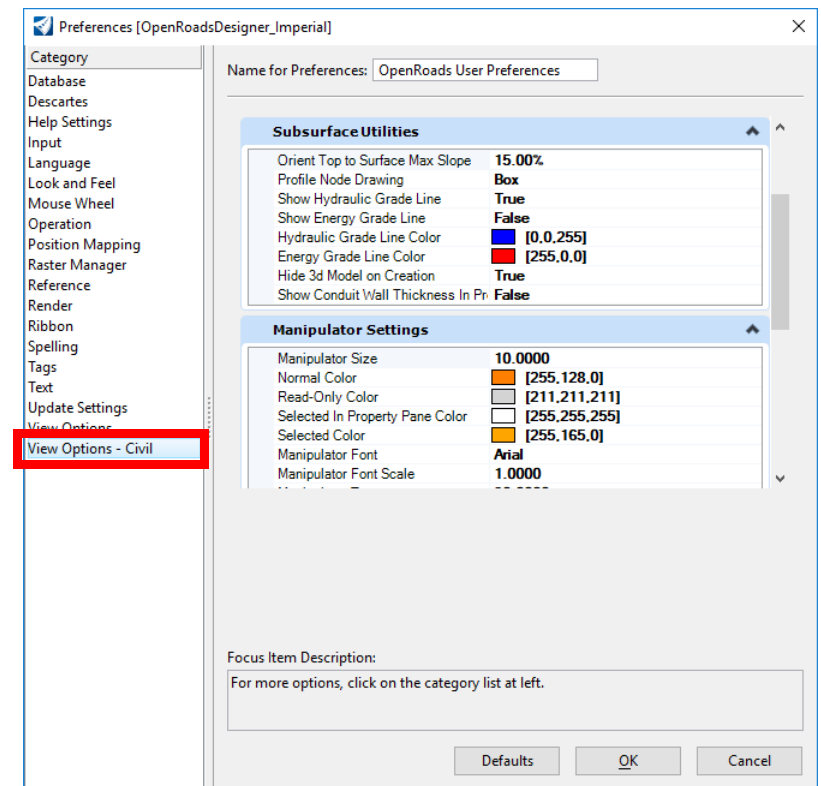
## Adjusting Manipulators and other Settings

The manipulators and other design file settings can be edited to suit your preferences in the *BackStage*. In this section, you will learn how to adjust the size and color of the manipulators and also how to adjust the formatting and accuracy of geometry.

1. Change the size and color of the manipulators.
  - a. Activate the *BackStage* by clicking **File** in the ribbon menu.
  - b. Select **Settings > User > Preferences**
  - c. **Click** on **View Options - Civil**.
    - The Manipulator Settings group is used to adjust how the Heads Up Display looks.
  - d. Change the *Manipulator Size* to **20.0**
  - e. Change the *Normal Color* [**255,0,255**]
  - f. Change the *Manipulator Font* to **Tahoma**.
  - g. **Click OK** to save any changes.
  - h. **Click** the arrow in the upper left corner to return to the main ribbon interface.
  - i. In *View 1*, select the **Ramp B** alignment and notice the manipulator sizes, colors and text font have now changed.

Also, note the formatting and accuracy of the geometry values and the station formatting and precision.

- The linear geometry formatting and accuracy is defined in *Design File Settings > Working Units*.
- The angular formatting and accuracy is defined in *Design File Settings > Angular Readout*.



- Station formatting and precision is set in *Design File Settings > Civil Formatting*.

2. Adjust the formatting and accuracy for linear geometry, angular readout and station formatting.

a. Navigate to the *BackStage* view.

b. Select *Settings > File > Design File Settings* to access the *Design File Settings* dialog.

c. Select *Working Units*

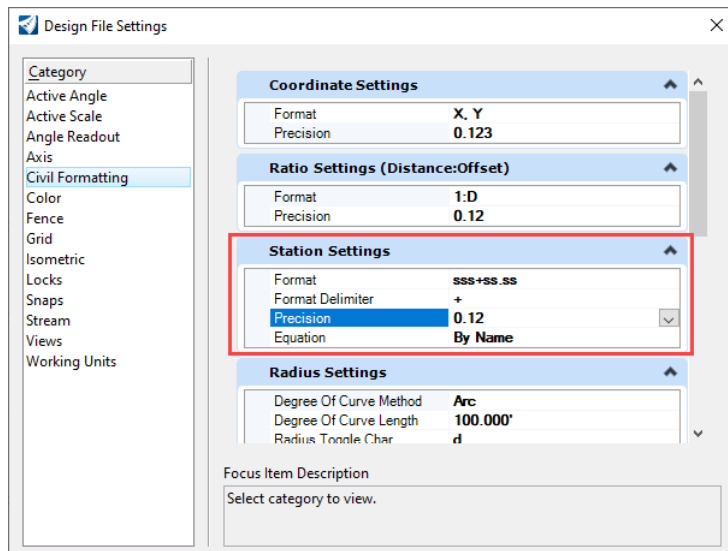
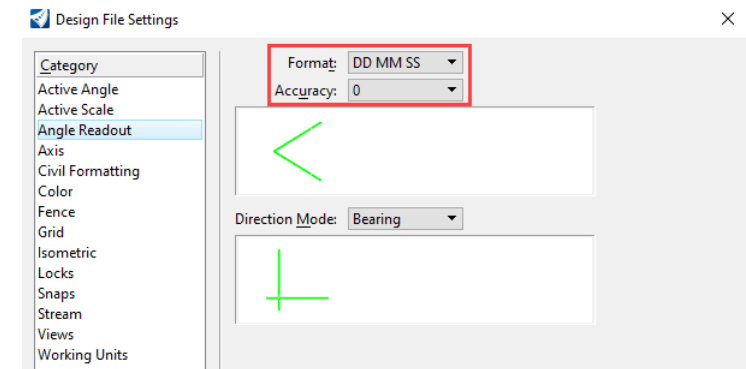
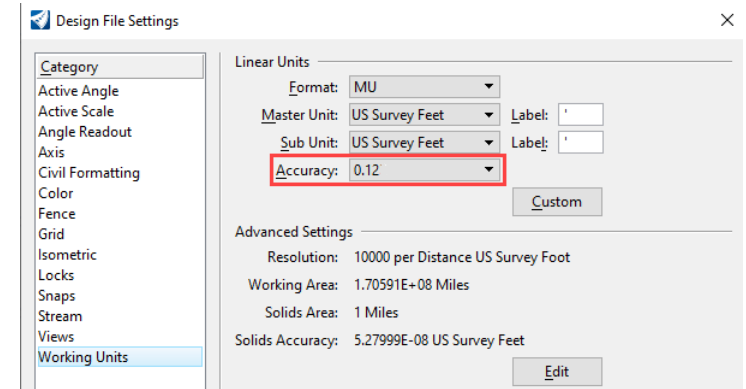
d. Set the **Accuracy** to be **2** decimal places

e. Select *Angular Readout*

f. Set the **Accuracy** to **0** decimal places.

g. Select *Civil Formatting*

h. Set the *Station Settings Precision* to be **2** decimal places.

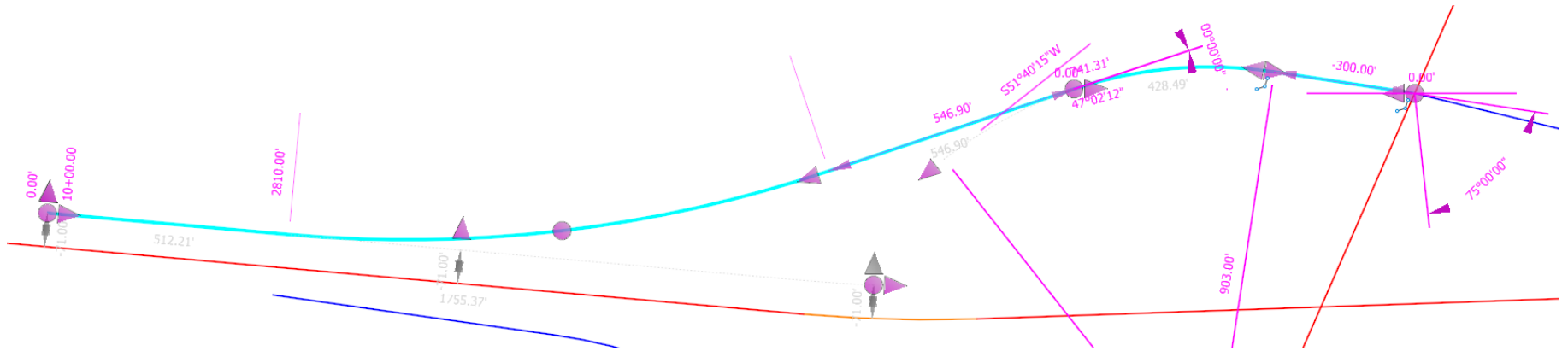


i. **Click OK** to complete.

j. Press **<ESC>** to return to the main screen.



k. Select the **Ramp B** alignment and note how the settings have now changed.



l. *Left-click* anywhere in empty space to clear the selection.

## Civil Context Menu

The Civil Context Menu is a shortcut menu to other tools that can be used with a selected element. In this section, you will learn how to access the Civil Context Menu.

1. Access and review the Civil Context Menu.

- Click on the 2D View to ensure it is active.
- Click on the long red east-west road named **Route97-Extension** so that it is selected.
- Leave the cursor on (or move the cursor back to) the selected feature. A semi-transparent Civil Context Menu appears.

**Tip:** If the cursor is on a manipulator, it thinks you want to use the manipulator rather than use the Civil Context Menu. You will need to hover over the feature in an area free of controls and manipulators. Zooming in closer may help.

d. Move the cursor into the Civil Context Menu. It will lose its transparency; you will be able to select a tool.

- Tools available depend on the Feature Type.
- Note that all tools shown in the Civil Context Menus are available from a Ribbon location as well.

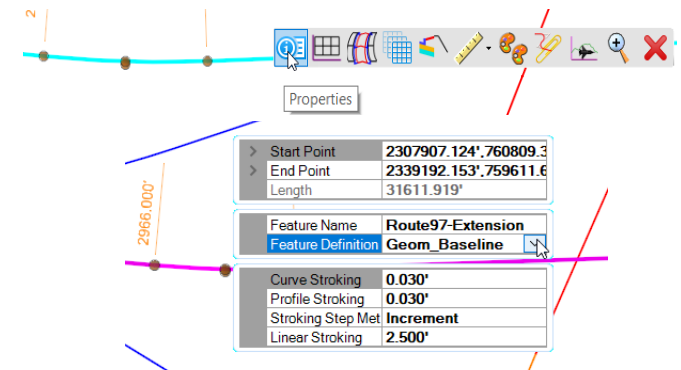
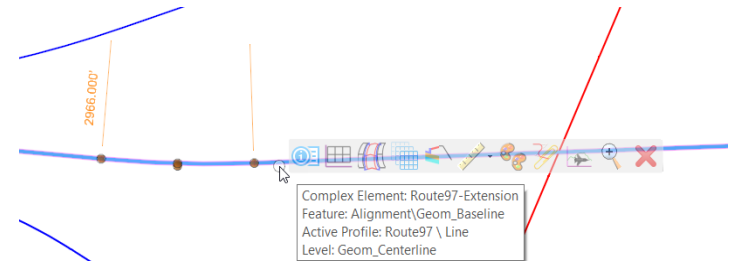
e. Click **Properties** tool.

A “temporary dialog” with some editable fields.

f. Move the cursor onto the dialog to keep it visible and review the **Properties**.

g. Change the **Feature Name** to **Route97**.

- Note any field that is gray cannot be edited or changed.

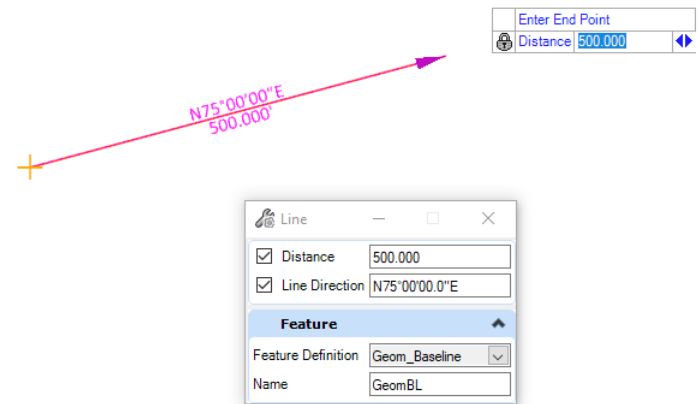


## On-Screen Heads-Up Prompts

All civil tools display on-screen heads-up prompts, which accept the inputs needed to create each element or object. Dynamic feedback is displayed while you are creating elements. It is another way of providing useful information while maintaining focus on the work. In this section, we will explore some of the on-screen prompts when creating elements.

### 1. Review on-screen heads-up prompts.

- a. Select *Geometry > Horizontal > Lines > Line Between Points*
- b. In the toolbox settings dialog set the *Feature Definition* to **Alignment > Geom\_Baseline**.
- c. The *Name* field is automatically populated with the default name **GeomBL**.
- d. Follow the on-screen heads-up prompts attached to your cursor:
  - *Enter Start Point:* **Left-click** anywhere in **View 1**.
  - *End Point: Distance:* Key in **500** and press **<Enter>** to lock the value.
  - Use the left or right arrow key to navigate to the *Direction* field.
  - Key in **N75:00:00:E** and press **<Enter>** to lock the value.
  - **Left-click** to complete the command.



As you can see information can be entered directly from the on-screen heads-up prompts attached to your cursor. You will also notice the toolbox settings dialog will appear when you choose a tool or command. You have the option of using the toolbox settings dialog or the heads-up on-screen prompts to enter values.

### Important information when working with on-screen prompts:

- **<Enter>** or **<Tab>** is used to lock values. **<End>** is used to unlock values.
- The left and right arrows are used to navigate to other fields in the command.
- **<ESC>** can be used to exit out of a tool or command completely. **Right Click** or **Reset** can be used to cancel a command.
- **Left-click** is used to advance to the next on-screen prompt in most tools.

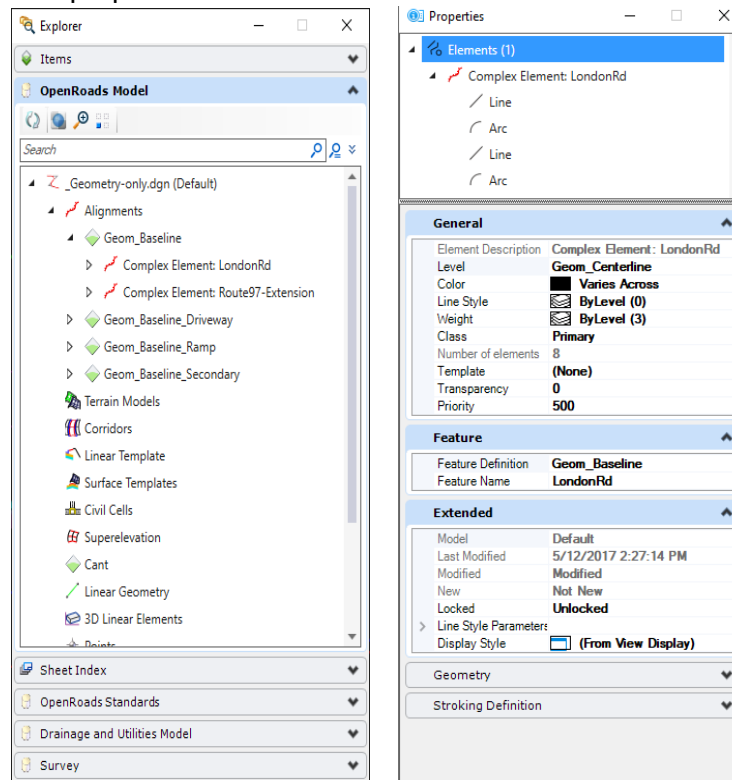
## Exercise 3: Element Properties and Explorer

### Description

In this exercise, you will learn how to review the properties of elements and how to use Explorer to review civil data stored in the design file.

### Skills Taught

- Navigating the Explorer's interface
- Opening and Reviewing Properties
- Reviewing some Features properties



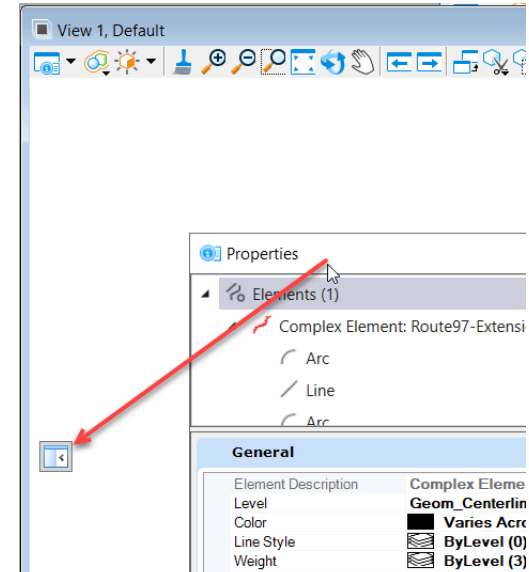
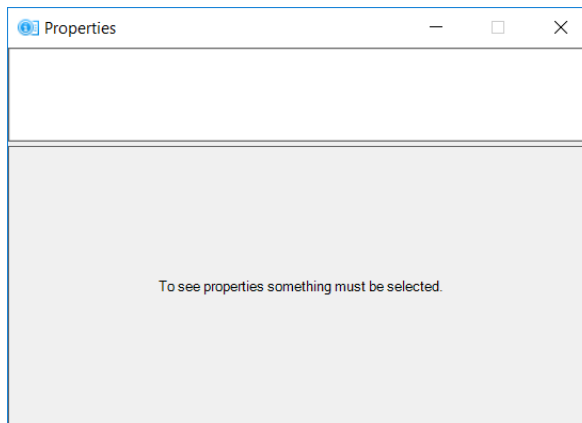
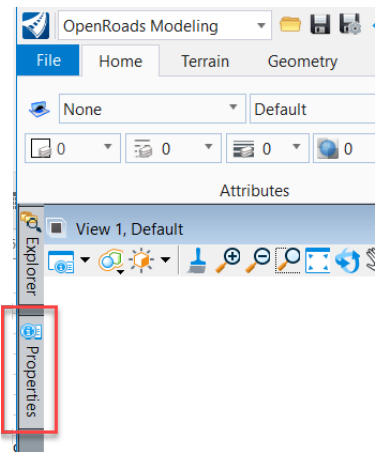
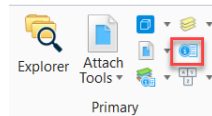
## Opening and Reviewing Properties


The *Properties* tool is used to get detailed information about an element. *Properties* work similarly to manipulators in that they display the design intent and rule data as well as other detailed information. Most data in the property pane can be edited to change the element definition. In most *Workflows*, the *Properties* tool is available in the *Home* tab and *Primary* group. In this section, you will learn how to use the *Properties* tool to review an element's properties.

1. Open and dock the *Properties* dialog.



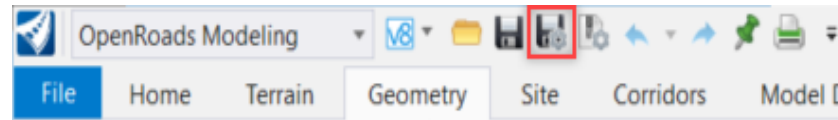
a. Click on *Home > Primary > Properties*.



b. To dock the dialog, drag it by the title bar to a “docking glyph”  ”.

- New and experienced users want fast access to it. Experienced users generally have it docked, but collapsed. This way, the dialog is never more than a mouse movement and a single click away.

c. Once you find a setting that you like, you can save by clicking the *Save Settings* tool.

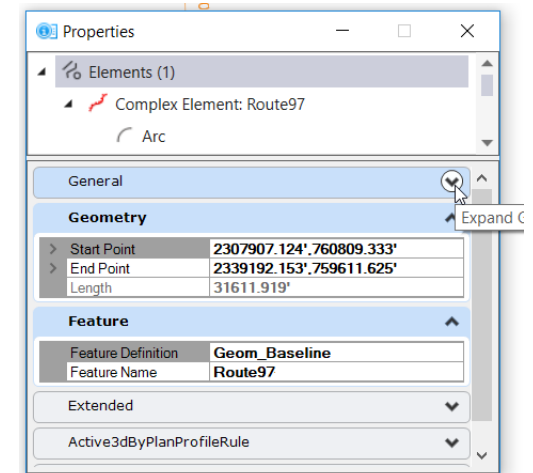


2. Review the properties of an element.

a. Click the *Element Selection* tool.

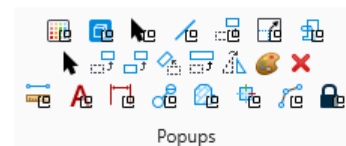
b. Click on the **Route 97** alignment. Review the *Properties* dialog.

- The dialog has a top panel that contains an object tree view - an expandable hierarchy that shows the parent, children, and dependencies of the graphic.
- Clicking on an element in the top panel will highlight it in the drawing if applicable. Right clicking objects provide context menu items.
- The bottom panel contains the element properties, grouped by Expandable and Collapsible Groups.
- Gray text is read-only. Other text may be editable or have a pull-down for item selection.



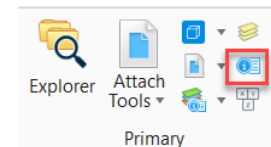
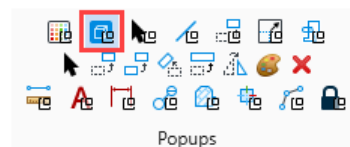
3. **Expert Tip:** Try using the spacebar to activate the popup shortcut menu. You can get directly to the *Properties* tool via the *Primary* button.

a. Press **<Spacebar>**, a popup menu will appear.



Keyboard Shortcut: Space

b. Select the *Primary* button, from here you can select *Properties*.



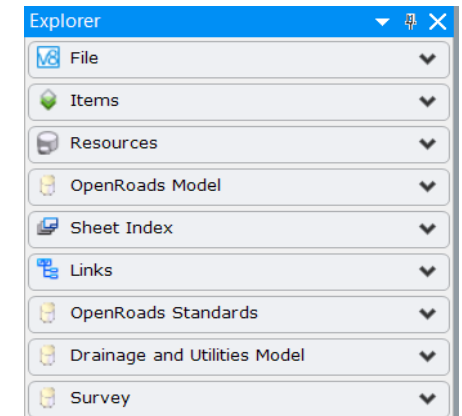
4. Close the *Properties* panel.

## Open the Explorer

The Explorer is an essential tool when working with the software. The Explorer dialog allows you to manage and control project content. It is a single interface that provides browsing function for Items, OpenRoads Model, Sheet Index, OpenRoads Standards, Drainage and Utilities Model and Survey. One of the key tools in Explorer is the OpenRoads Model which is used to manage and organize civil project data that is stored in the design. In this section, you will learn how to open Explorer and review the layout.



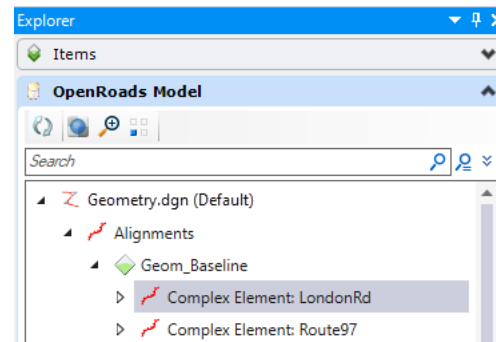
1. Open the Explorer and review the tools.
  - a. From the ribbon menu click *Home > Primary > Explorer*.
  - b. Expand and review each group by pressing the panel's down arrow.
    - The Groups may be organized by Panel or by Tab:
    - If you want to change its looks or behavior, go to *File > Settings > User* and click **Explorer Settings**
    - File - Displays data related to dgn file such as Display styles, element template, text styles, levels, models and so on.
    - Items - Displays non-graphical business data in a DGN file in hierarchical order.
    - OpenRoads Model - Displays civil objects stored in the design file, objects such as Alignments, Terrain Models, Corridors, and so on.
    - Sheet Index - Allows you to manage sheet indexing. A sheet index is an organizes and named collection of sheet models from one or more design files.
    - OpenRoads Standards - Used to create, edit or review horizontal and vertical geometry design standards, feature information, civil cells, annotation, and graphical filters.
    - Drainage and Utilities Model - Displays all the drainage and utilities data stored in the design file.
    - Survey - Displays all survey data that is stored in the design file.



## Explore the OpenRoads Model

The OpenRoads Model group displays civil content in categories such as Alignments, Terrain Models, Corridors, and so on. Expanding each category lists items within that category or further sub-categories. It is usually a good idea to have the OpenRoads Model open so that you can clearly see the civil data stored in the design file. In this section, you will learn how to review Alignments using the OpenRoads Model.

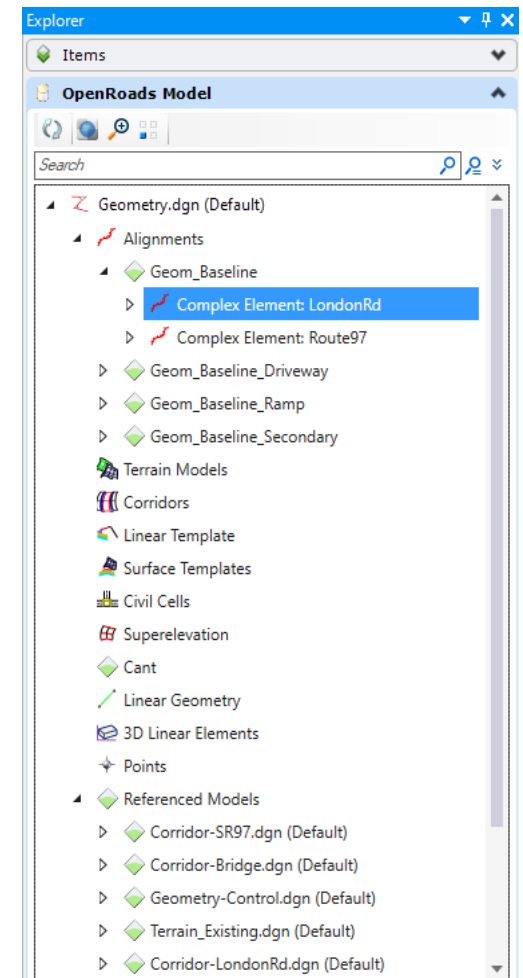
1. Review the Alignments via Explorer.
  - a. *Click* the small arrow next to *Alignments* to expand the list to the Alignment Feature Definitions used in the Active Design file.
  - b. *Click* the small arrow next to *Geom\_Baseline* to the expand the list.



- Clicking on a Feature will highlight it in the View. Select *Complex Element: LondonRd*, observe that the London Rd. alignment is selected and highlighted in *View 1* (or any 2D model).

This is an example of how **Explorer** can be used to locate and select an alignment in the design file.

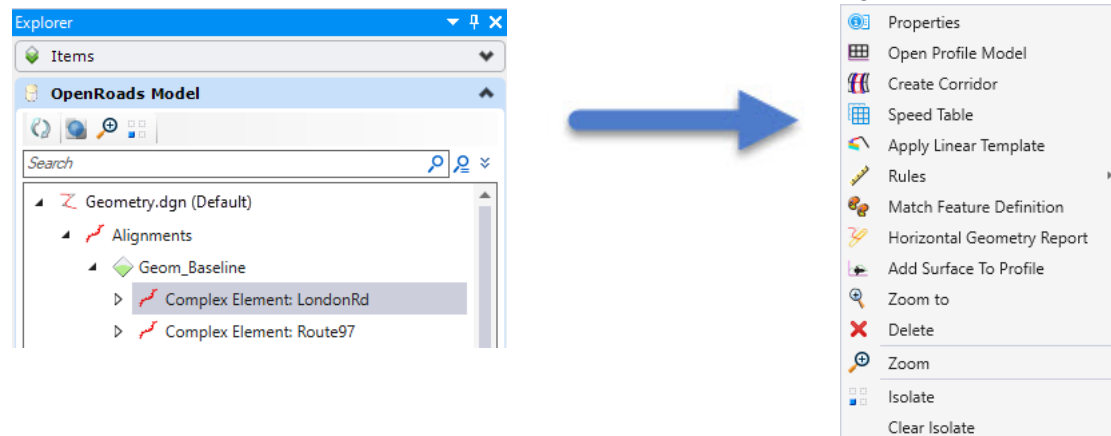
Notice the bottom portion of the OpenRoads Model panel shows the other civil data that is referenced into this design file.



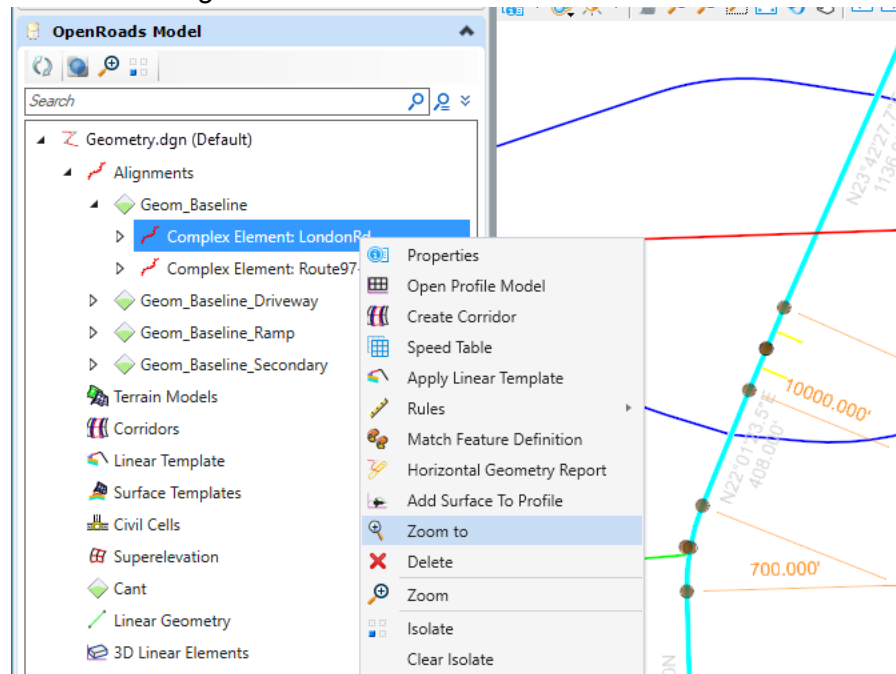


2. Accessing tools via the right-click menu.

a. *Right-click* on *Complex Element: London Rd.* to review other tools related to the alignment. Different object types offer different tools.



b. *Click Zoom to* or *Zoom*. Both center the alignment in the active 2D View.



c. Experiment with using the *Isolate* tool to isolate the London Rd. alignment. Notice how isolate turns everything off except the isolated alignment. Select *Clear Isolate* when done. *Left-click* in the view to de-select the alignment.

## Exercise 4: Navigating Multiple Views and Models

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### Description

Design Files often have multiple views and models in one file. In this exercise, you will explore the multi-model 2D/3D design file foundation.

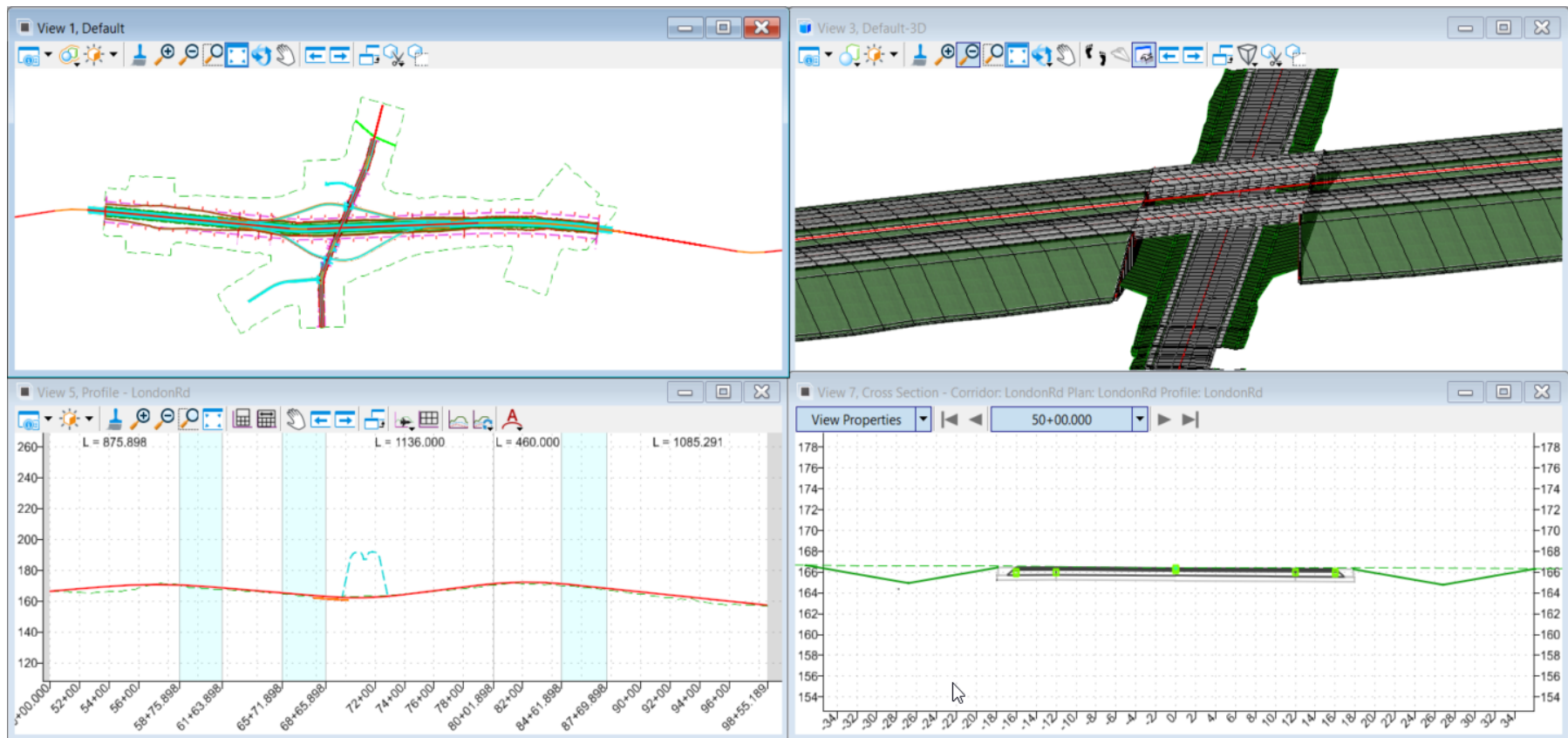
### Skills Taught

- Reviewing the 2D and 3D Models and Views
- Views and View Groups
- Defining Profile Model View and Cross Section Model Views
- 2D & 3D View Controls
- Profile Model & Cross Section Model View Controls
- Viewing Display Styles
- Analyzing Civil Data

## Models and Views Overview

The software often *requires* multiple models and views in one file. Understanding how to work with models and views is an essential skill for anyone working with the software. If you are opening up a file with civil data in it, expect to see multiple models and views. Multiple models are used to create and manage horizontal, vertical, 3D and cross section data:

- *2D Model* is used for Horizontal Geometry.
- *Profile Model* is used for Vertical Geometry.
- *3D Model* is used for 3D Geometry, Corridors, Survey Data and Terrain Models.
- *Cross Section Model* is used for Cross Sections.



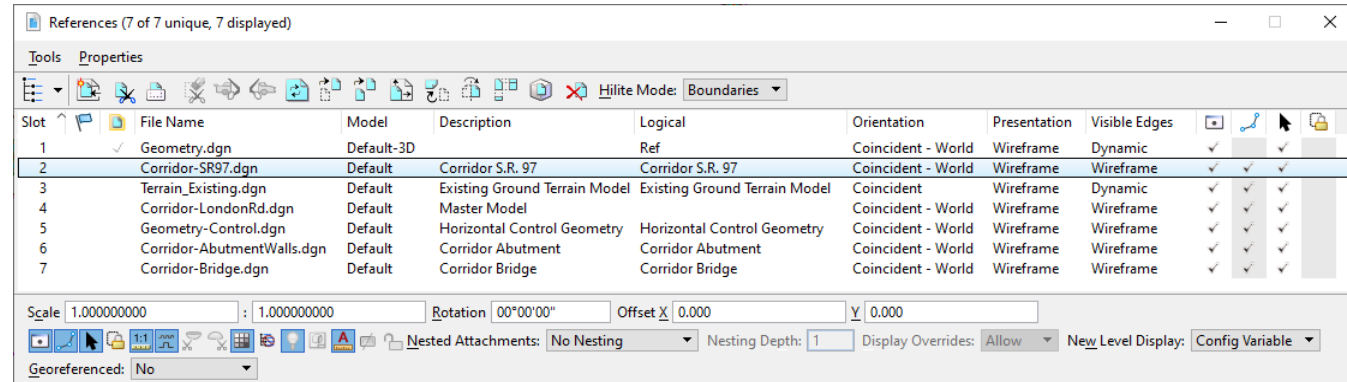
To begin this exercise, turn ON all the reference files so that you can see all the civil data for the project.

1. Turn **ON** Reference files.



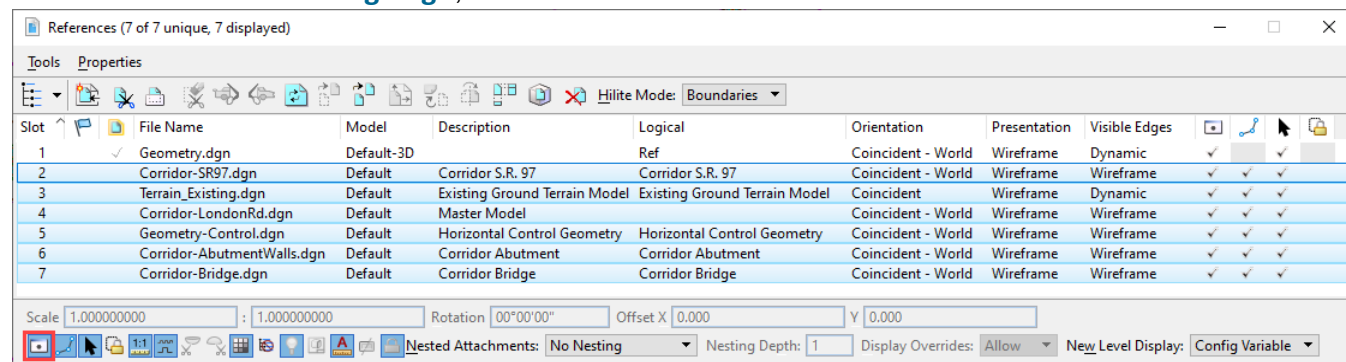
a. Click *Home > Primary > Attach Tools > References*

The *References* dialog opens. You use this dialog to attach/detach and manage reference files.



b. In the *References* dialog, select **Corridor-SR97.dgn**

c. Hold down **<Shift>** and select **Corridor-Bridge.dgn**, the other references will be selected.



d. Toggle **ON** the display of the selected references by clicking the **Display** button.

e. Close the *References* dialog.

## Review the Models and Views

Most Design Files contain a 2D and 3D Model, often named *Default* and *Default-3D*. 2D Elements such as horizontal geometry are created, stored and managed in a 2D Model. 3D Elements are created, managed and stored in the default 3D Model. In this section, you will learn how to review the 2D and 3D models.

1. Open the Models dialog.



a. Click *OpenRoads Modeling > Home > Primary > Models*.

- This file has a 2D Model named Default and a 3D Model named Default-3D.
- There is always one Active Model. It is indicated by the green highlight.

b. Leave the dialog open.

2. Review Models and Views.

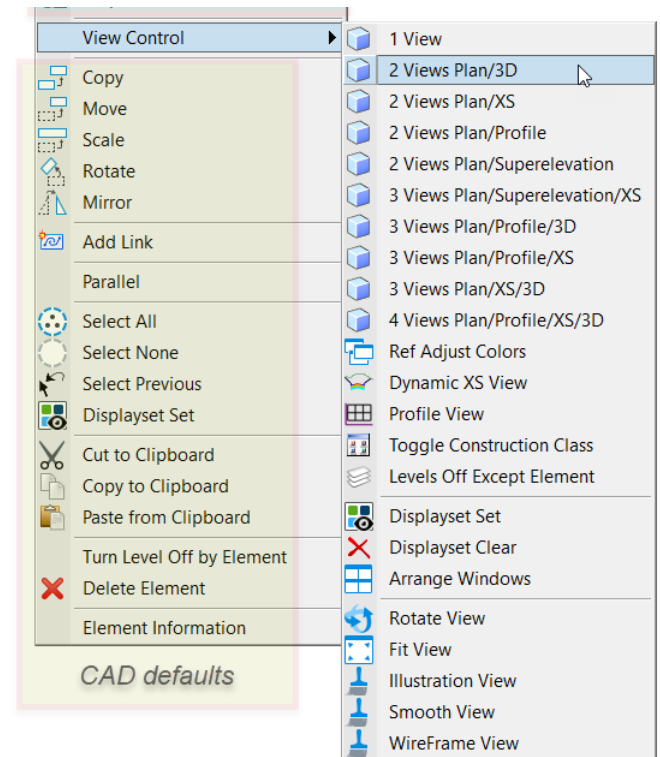
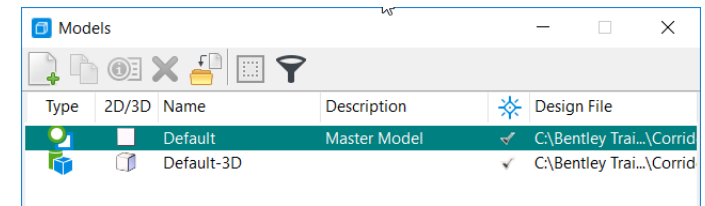
a. *Right-click* in *View 1* and hold down the right mouse button. A menu will appear with commonly used commands as well as special view controls.

b. *Click* on the *2 Views Plan/3D* item.



- *View 1* and *View 2* will appear tiled (side by side).
- *View 1* is the **Default 2D** model view and *View 2* is the **Default-3D** model view.

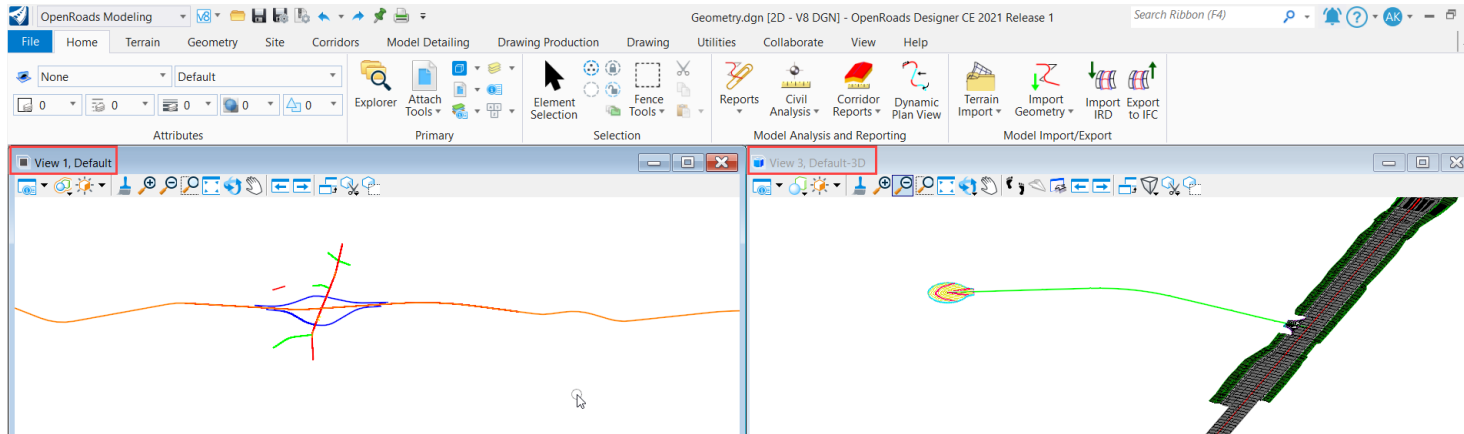


c. Select the **Fit View** tool and click in each view to fit the view.

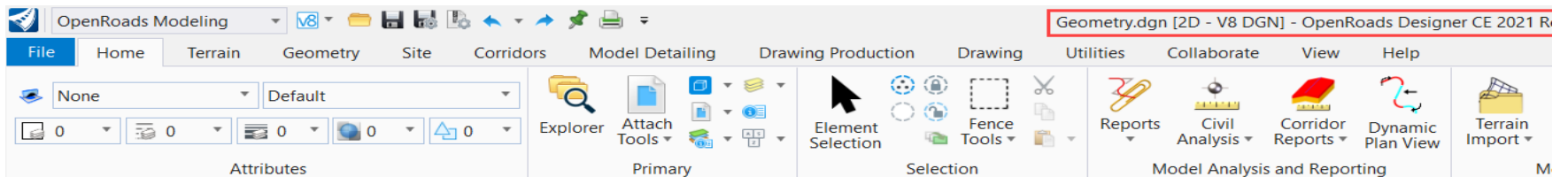


d. **Click** on each of the **Title Bars** of the open Views to make them active.

- The Model dialog will reflect the Active Model, updating as each view is clicked.
- Note the View Title Bar lists the view number, the name of the model it is viewing and the model 2D or 3D status via an icon for 2D  or 3D .



- The applications main title bar lists the name of the file and the Active Model 2D or 3D status in this format: Filename [2D/3D - (generation)].



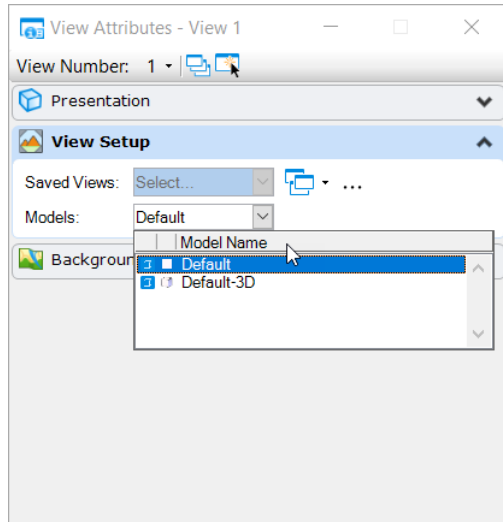
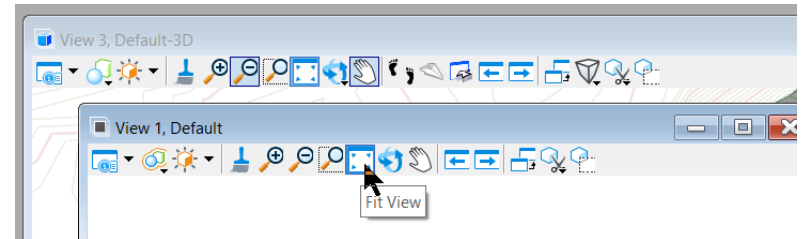
- When clicking a view and making it active, its model becomes the Active Model. The main title bar is consistent with this.



e. Review the contents of each view. **View 1** is the *Default* 2D model view and the other is **View 2** *Default 3D* model view.

- The Active View Title Bar is darker than inactive views.
- The View Number (1 through 8) and the Model's Name.

**Note:** If the views in your file differ from what is described here, turn on additional Views. Remember that you may have to point them to the appropriate Model via *View Attributes > View Setup > Model*

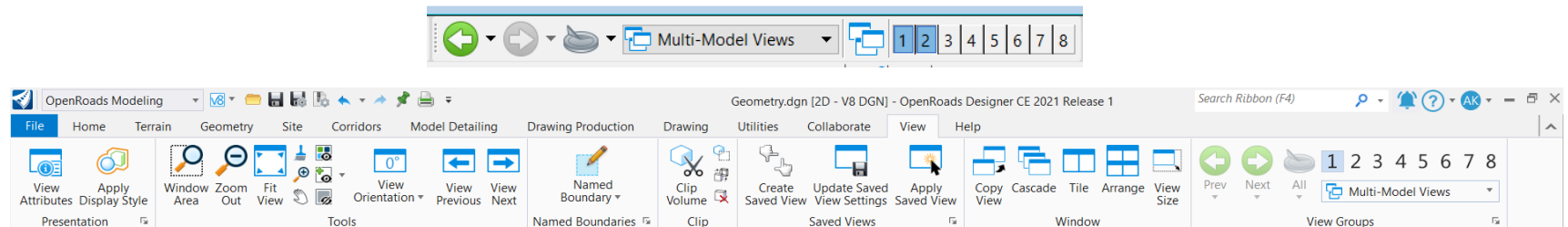


## Views and View Groups

The software supports up to eight simultaneous view windows. The View Controls and behavior will differ depending on the model type, but **any view can view any model**. In this section, you will learn how to work with multiple views.

### 1. Working with multiple views.

- The current file should have multiple Views open. It is important to know which of the open views is the active view.
- Views can be opened or closed from the *View Toggles* from the *Manage View Groups* toolbar. In the Training and Examples WorkSpace, it is docked in the lower left corner.

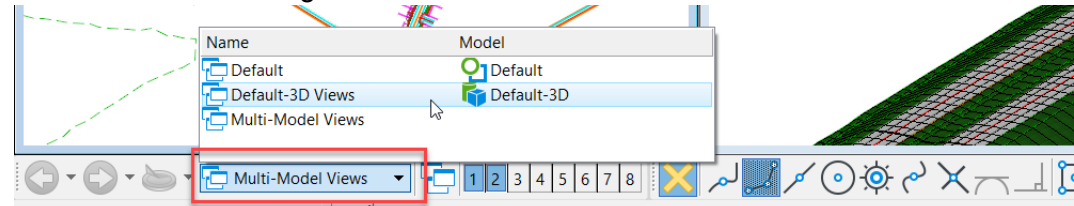


- The OpenRoads Modeling Workflow View tab also has the same View Toggles available.
  - a. *Click* on any of the 8 *View Toggles*.
    - Notice that Views Open or Close at your touch. They will open in different positions and may or may not show any graphics.
  - b. *Close* all the Views except for *Views 1* and *2*.
    - Any of eight available Views can view any model in the **.DGN** file. Each view is independently customizable in representation and perspective. Views can have different attributes enabled and levels can be turned on and off independently from other views.



## 2. Review Model views using the View Groups

- View Groups allow managing multiple views with their varied models and settings. At the left side of the status bar on the bottom, a pull-down lists the pre-defined Models. *Multi-Model Views* is generally the default view group most useful for civil design projects: both 2D and 3D models will be shown with this setting.



- From the View Groups list, select the **Default** view group.
- Select the **Default-3D Views**
- Select the **Multi-Model Views** to return to the 2D and 3D model view setup.

## Profile Models and Cross Section Models

So far, we have discussed 2D and 3D models. Now let's take a look at Profile Models and Cross Section Models. Profile Models are used to display and create profile data and Cross Section Models are used to display Dynamic Cross Sections. In this section, you will learn how to define a Profile Model view and a Cross Section Model view.

1. Set up Model views for Plan, Profile, Cross Section and 3D Model.

a. *Right-click* in **View 1** and hold down the right mouse button.

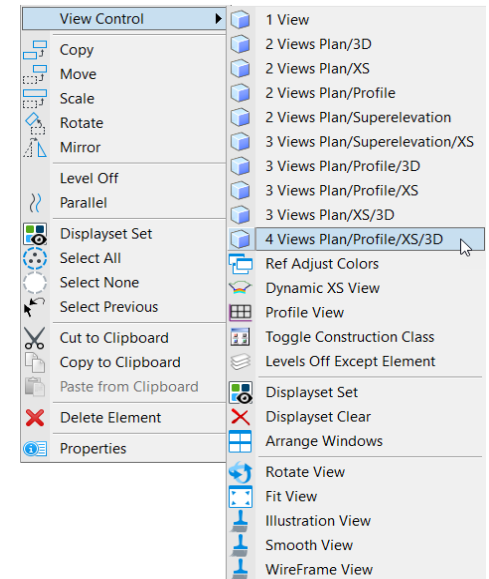
b. *Click* on the **4 Views Plan/Profile/XS/3D** item.

c. Follow the on-screen prompts:

- Select **OK** to create a Dynamic Profile View.
- *Locate Plan Element:* In **View 1**, select the **London Rd.** alignment (red north-south graphic).
- *Select or Open View:* *Click* in **View 5**
- Select **OK** to create Dynamic Cross Sections
- *Select Corridor or Alignment:* In **View 1**, select the **London Rd.** alignment (red north-south graphic).
- Follow the heads-up prompts, key in the values shown below and press **<Enter>** to lock the value, *left-click* to accept to move to the next prompt.

<input checked="" type="checkbox"/>	Left Offset	-150.000
<input checked="" type="checkbox"/>	Right Offset	150.000
<input checked="" type="checkbox"/>	Station	50+00.00
<input checked="" type="checkbox"/>	Interval	50.000

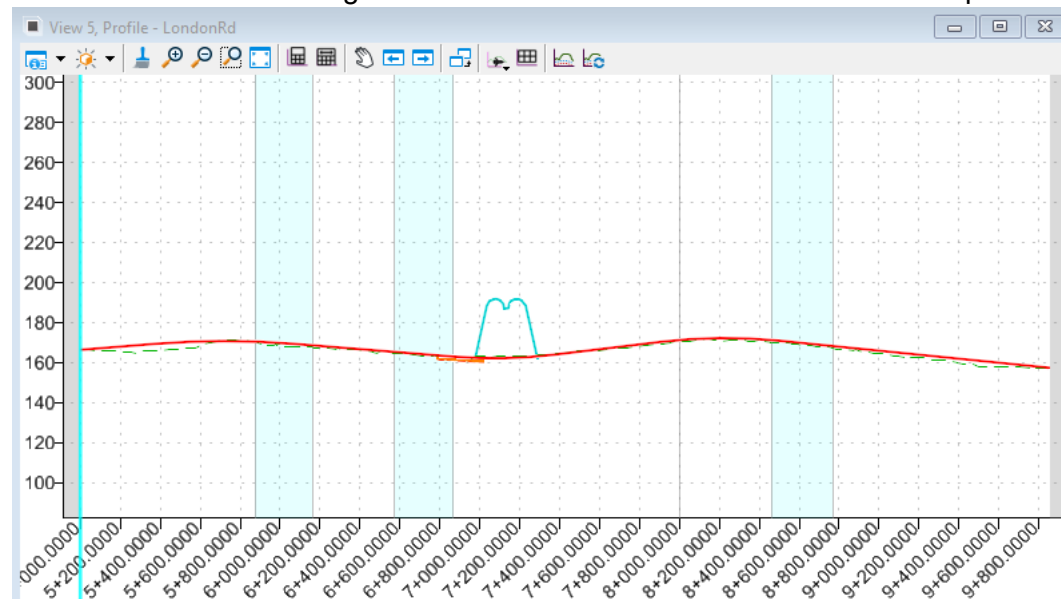
- *Select or Open View:* *Click* in **View 7**. Press **<ESC>** to exit the command.



Notice we have 2 new model views that appear: A Profile Model view and a Cross Section Model view. Profile Models and Cross Section models are special models only to view profiles and cross sections.

A Profile Model is used to create, edit and view vertical geometry. The Profile Model View has some unique characteristics:

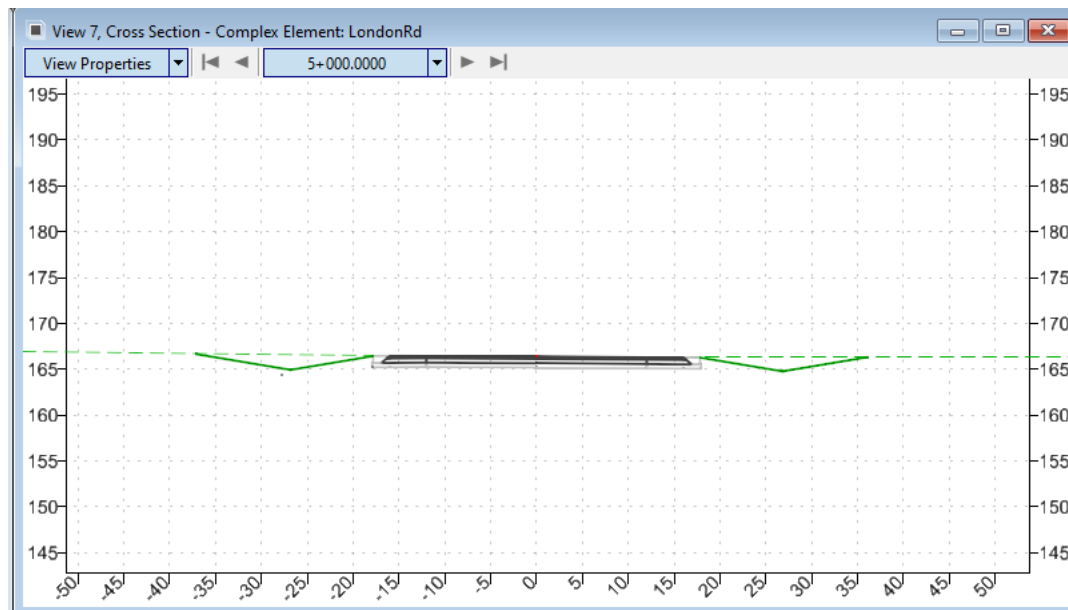
- A Profile Model corresponds to one and only one horizontal alignment.
- A Profile Model can display multiple profiles but only one can be active at any given time.
- Associated horizontal geometry name is in the title bar of the view.
- Elevation labels on left edge of the view and Station labels along bottom of the view.
- This is a true profile space whose coordinates are station, elevation instead of X,Y.
- The background colors indicate curvature of the horizontal alignment.
  - Normal background = straight
  - Cyan background = curve
  - Magenta background = spiral
- When using the vertical commands the cursor gives simultaneous feedback of location both in plan and profile.



A Cross Section Model is used to display the dynamic cross section views. The dynamic cross sections are “live” references taken directly from the 3D model.

The Cross Section Model view has some unique characteristics:

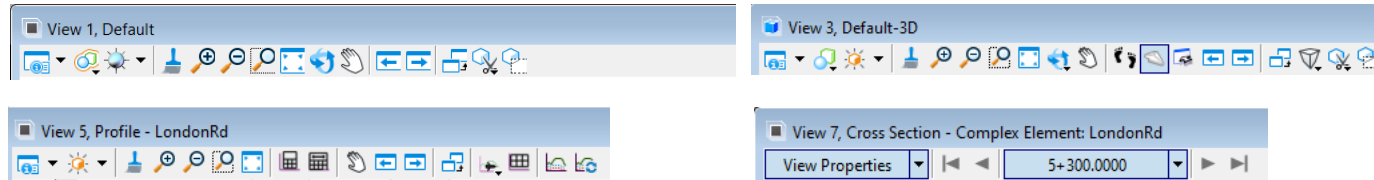
- Associated horizontal geometry or corridor name is in the title bar of the view.
- Elevation labels on left edge of the view and Offset labels along bottom of the view.
- Cross section station navigator tool at the top of the view window.
- This is a true cross section space whose coordinates are station, offset and elevation.



## View Controls

In this section, you will learn how to use the view controls to zoom, pan, and fit views.

Views, by default, have a View Control toolbar located at the top of each view window.



The exact tool layout varies by the type of Model that the View is displaying: 2D, 3D, Profile, Cross Section, etc.

The images shown above are the 2D, 3D, Profile and Cross Section view controls.

- Hovering over an icon will display its name.
- Note that view tools remain active until you *right-click* to exit them or until you click another tool.

1. Practice using **Zoom In** and **Zoom Out** in the 2D and 3D Views.

a. *Left-click* in the 2D or 3D View.



b. Select the **Zoom In** button to zoom in.



c. Select the **Zoom Out** button to out.



d. Select **Fit View**.

e. *Click* in the 2D or 3D View to set the focal point.

f. Use the mouse wheel to **Zoom In** and **Zoom out** of the view.

2. Practice using the **Pan** tool.

a. In 2D or 3D, select the **Pan** tool.



b. *Left-press*, pan to the left, right, up and down.



c. Fit the view when done.

## View Controls - Profile Model and Cross Section Model

Profile and Cross Section Model views have additional view controls such as Horizontal and Vertical Exaggeration. Horizontal and Vertical Exaggeration is often desirable when viewing vertical geometry and cross sections.

1. Review and change the default Profile Model Exaggeration.

- In the **Profile Model** view, select the *View Attributes*.
- Navigate to **Civil > Exaggeration**. Notice the default vertical exaggeration is set to **10**.
- From the drop-down list. Set the Exaggeration to **20**.

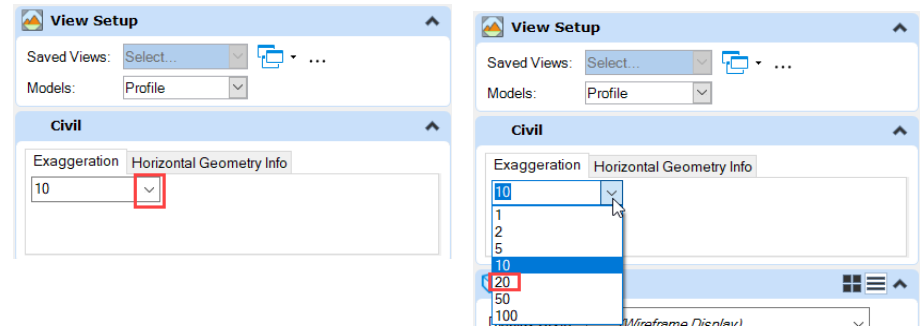
This option exaggerates the view vertically by a factor of 20.

Horizontal exaggeration and vertical exaggeration can be achieved using the mouse wheel.

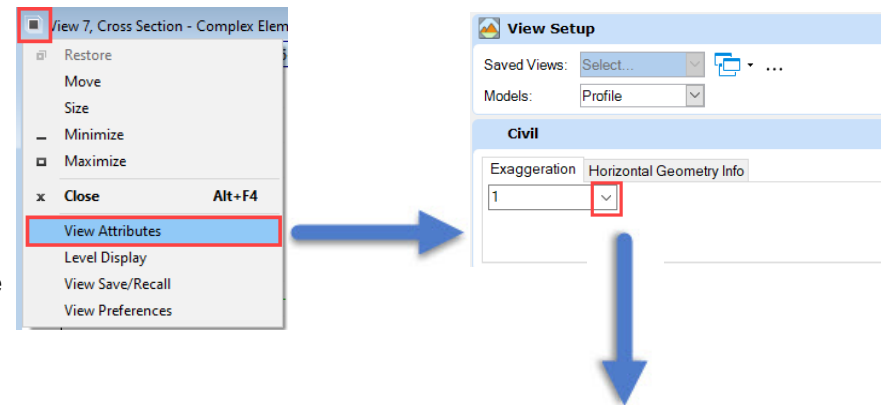
2. Let's take a look at how to change horizontal and vertical exaggeration using the mouse wheel.

- Click* in the **Profile Model** view.
- Position your cursor somewhere in the middle of the view to set the focal point.
- Use your mouse wheel to zoom in and out. Note this functions the same as it does in the 2D and 3D views.
- Press **<Ctrl>** and use the mouse wheel to adjust the horizontal exaggeration.
- Press **<Shift>** and **hold** then use the mouse wheel to adjust the vertical exaggeration.

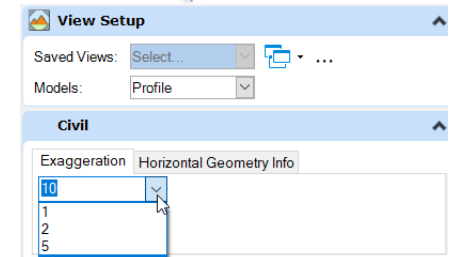
The cross section view controls function in a similar manner as the profile view controls.



3. Review and change the Cross Section Model Exaggeration.
  - a. In the Cross Section Model view, select the *View Attributes*.
  - b. Navigate to **Civil > Exaggeration** tab. Notice the default exaggeration is set to **1**.
  - c. From the drop-down list. Set the Exaggeration to **2**.

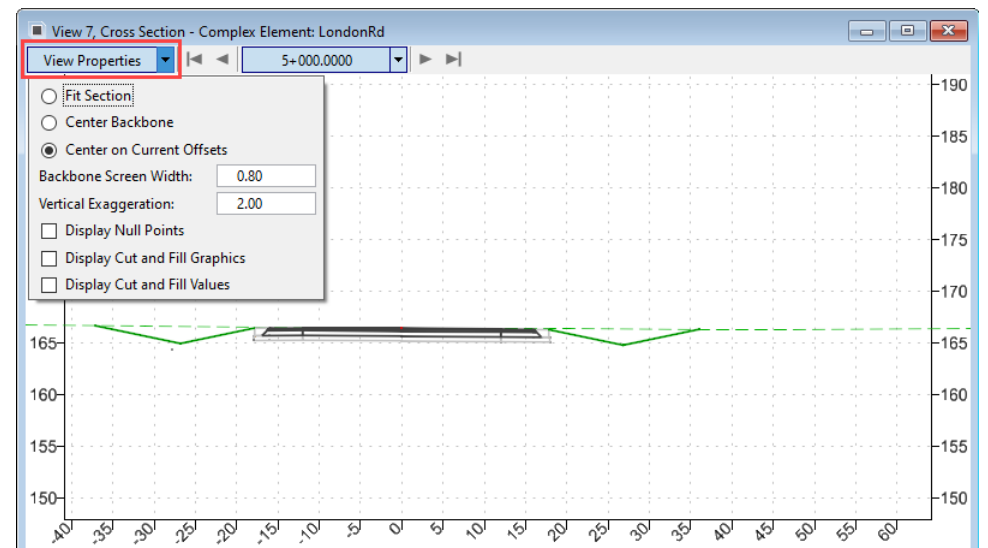


4. Horizontal and Vertical Exaggeration can also be set using the mouse wheel. Let's take a look at how to change horizontal and vertical exaggeration.
  - a. *Click* in the **Cross Section** view.
  - b. Position your cursor somewhere in the middle of the view to set the focal point.
  - c. Use your mouse wheel to **zoom in** and **zoom out**. Note this functions the same as it does in the 2D and 3D views.
  - d. Press **<Ctrl>** and use the mouse wheel to adjust the horizontal exaggeration.
  - e. Press **<Shift>** and use the mouse wheel to adjust the vertical exaggeration.



5. Review the Cross Section View Properties.
  - a. Select the **View Properties** drop-down list.

- Cross Section View Properties feature additional options for viewing the cross sections as you navigate the cross sections. Here you will see options to:
  - *Fit Section* - Fits the full width of the cross section into view.
  - *Center Backbone* - Centers the view around the cross section backbone.
  - *Center on Current Offsets* - Centers and holds the current view.



6. Navigate Cross Sections by Station



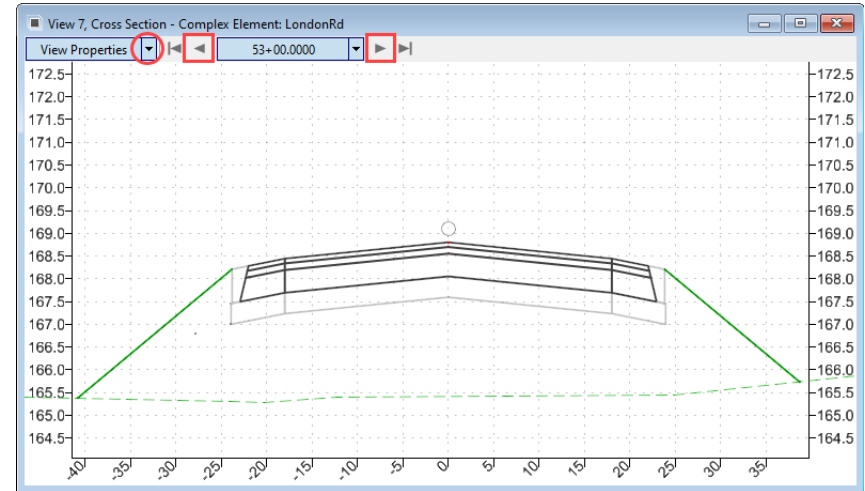
a. Using the cross section navigator buttons at the top of the view select the *First Station* button. This will move the current cross section station to the first cross section.



b. Use the *Next Station* button to advance the cross sections to station **53+00.00**.

Notice as you advance from station to station the cross section view is slightly zoomed out to fit the full width of the cross section.

This is an example of the *View Properties* being set to *Fit Section*.



7. Sometimes it's necessary to zoom into a specific focal point on the cross sections and navigate the cross sections zoomed and centered around this point. Let's take a look at how to accomplish this.

a. Set the cross section *View Properties* to *Center on Current Offsets*.

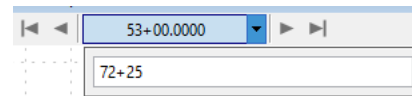
b. Place your cursor near the top of the cross section pavement at the zero offset.

c. Using your mouse wheel, **Zoom In** so until the side slopes fit within the view window.

d. Use the *Next Station* and *Previous Station* buttons to navigate through the cross sections. Notice the cross sections will remain zoomed and centered around the focal point.

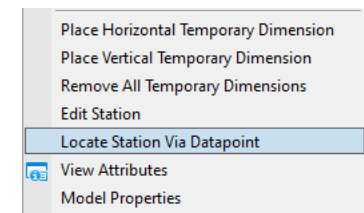
8. Now lets learn how to navigate to a single station at **72+25**.

a. Select the drop-down arrow next to the station, a key-in window will appear. Type in **72+25** and press **<Enter>**.



b. The cross section view will now advance to station **72+25**.

9. **Expert Tip:** *Right-click* in the cross section view to access other useful cross section tools such as *Place Horizontal Temporary Dimensions*, *Place Vertical Temporary Dimensions* and *Locate Station By Datapoint*.





## Rotating 3D Views

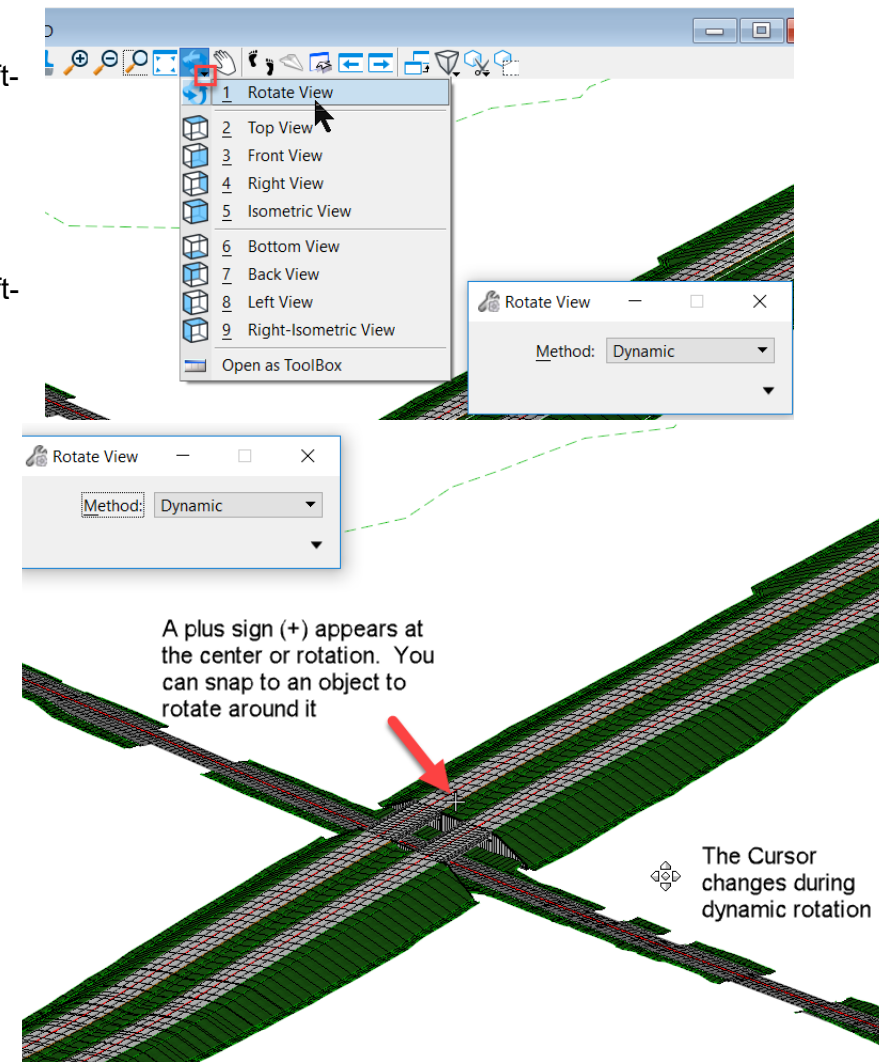
This section will explore the *View Rotation* tool. It behaves differently depending on whether the view is looking at a 2D or 3D model.

1. Rotate the 3D View to Top View.
  - a. In the *View 2 (3D View) View Control toolbar*, *left-press* (a long left-click) on the *View Rotation* tool and select **Top View** from the list.
    - The view will now be rotated to Top View.
2. Rotate the 3D View to Isometric View.
  - a. In the *View 2 (3D View) View Control toolbar*, *left-press* (a long left-click) on the *View Rotation* tool and select **Isometric** from the list.
    - The view will now be rotated to Isometric View.

Views can be rotated dynamically by using the *Rotate View* tool with the *Dynamic* method tool setting.

3. Rotate the View Dynamically.
  - a. In *View 2*, *left-press* on the *View Rotation* tool and select **Rotate View**
  - b. In the *Tool Settings* dialog, ensure the method is set to **Dynamic**.
  - c. **Rotate View 2** by clicking the left mouse button and moving the cursor. Click when rotated to your liking.

**Note:** You can click to initiate the rotation or click-drag to rotate dynamically. You can Snap to an object to make it the center of rotation.
  - d. **Reset (Right-click)** to end the command.



4. Rotate View 1 in 2D.

a. In the *View Control* toolbox click **View Previous** to return to previous rotations.

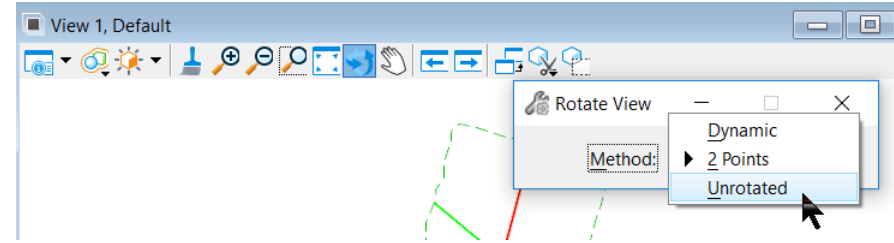


■ For 2D rotation, there are fewer options: *Dynamic*, *2 Points* or **Unrotated**.

a. In *View 1*, click the **View Rotation** tool.

b. Experiment with rotating this view.

c. When done, use the **Unrotated Method** to return to a normal “North Up” rotation.

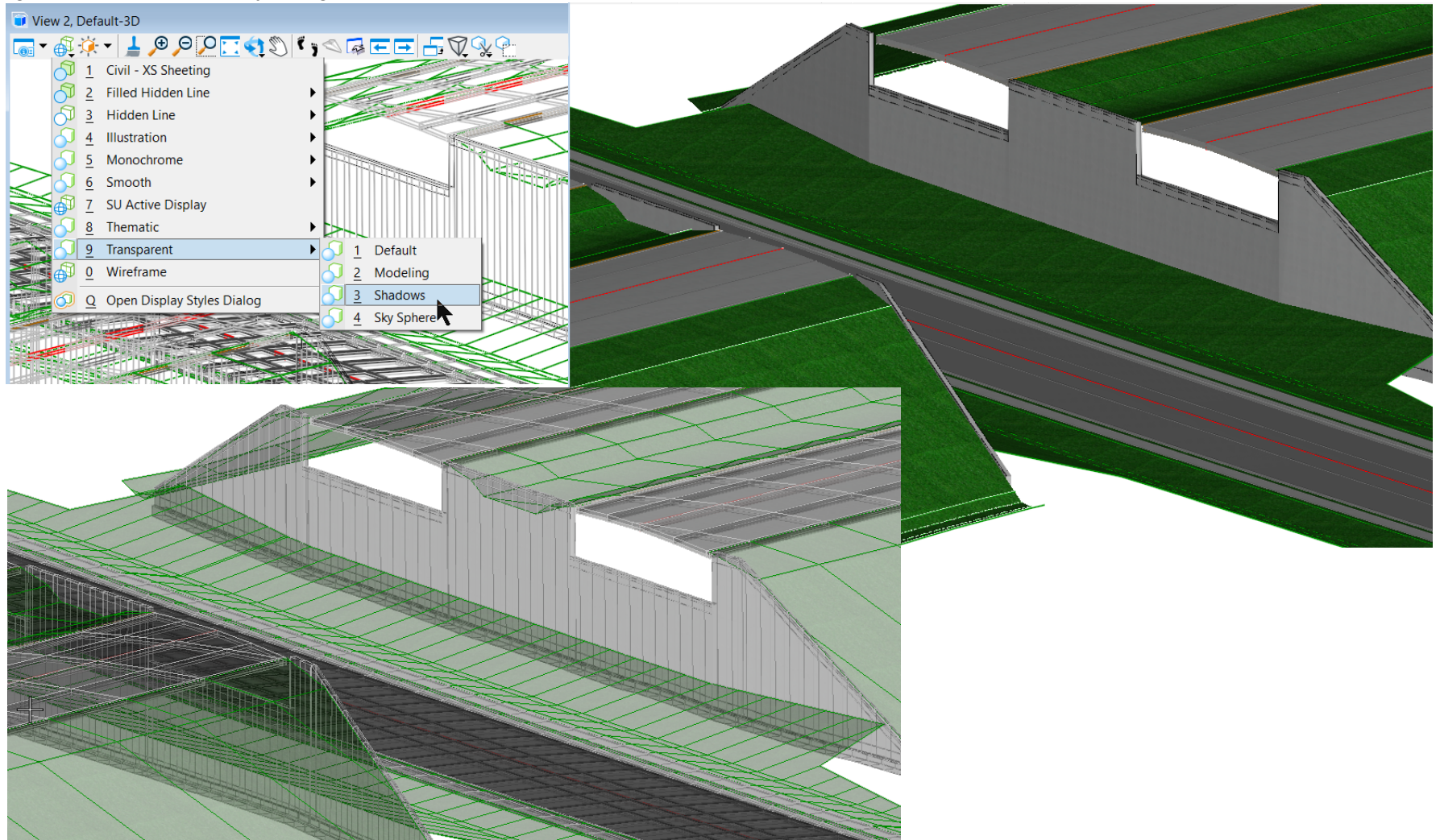


d. From the *Quick Access Toolbar* select **Save Settings**.

■ The next time the file is opened the views will be arranged as they were when a *Save Settings* was last applied.

## View Display Styles

*Display Styles* allow you to provide instant rendering of that data from wireframe to photorealistic *Display Styles*. Below shows the 3D model displayed 3 different ways (Upper left is Wireframe, lower left is Transparent, upper right is Smooth). In this section, you will learn how to change the 3D model display using *Display Styles*.



The data in a view can be displayed in many ways: from linework-only (*Wireframe*) to photorealistic rendering (*Smooth*).

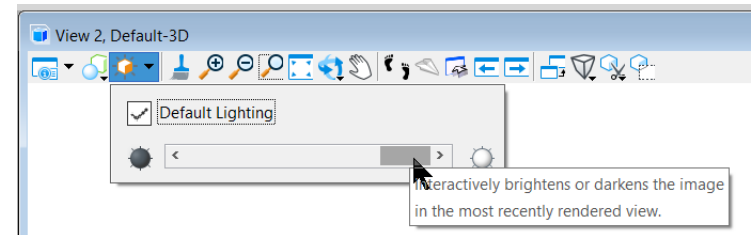
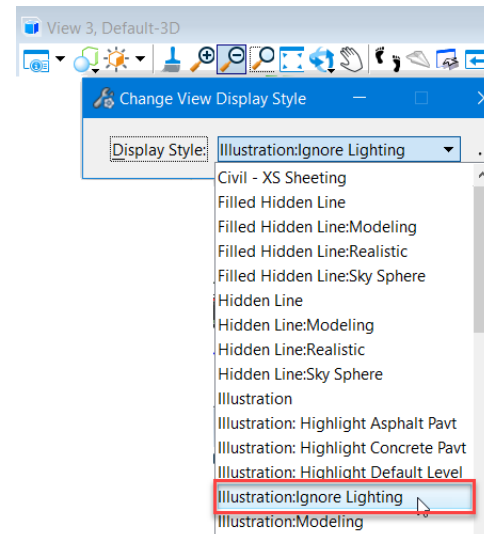
You can change the *Display Style* to predefined modes via the view toolbar.

Note: *Display Styles* are generally used more in 3D Models.

*Illustration > Ignore Lighting* is very useful. It provides a realistic look without having to adjust lighting. It still shows linework, which allows visual evaluation of engineering. For example, the lines shown at corridor template drops allow you to immediately confirm template spacing.

Other realistic *Display Styles*, such as *Smooth* and *Transparent* rely on the View's Lighting value. You'll likely want to brighten the view by moving the slider to the right.

1. Experiment with changing different *Display Styles* (Wireframe, Transparent, Illustration).
  - a. In the 3D View, *left-press* on the *Display Style List* and pick **Wireframe**.
  - b. Review the other *Display Styles*: **Smooth** and **Transparent**.
  - c. Adjust the lighting if necessary using *Adjust View Brightness* tool.
  - d. Set the 3D Model Display Style *Illustration > Ignore Lighting*



## Analyzing Civil Data

Knowing how to analyze civil data and information is an important skill needed for designing and reviewing projects. In this section, you will learn how to review coordinates and how to get station/offset/elevation information from civil elements.

### 1. Review Coordinates 2D.

- In the lower right section of the Status Bar, *right-click* the Show/Hide tools area.
- Toggle **ON** the **Running Coordinates**. Notice the XY coordinates now appear in the lower right section of the Status Bar.
- Click* in **View 1** and move your cursor around.
- Review the Running Coordinates in the status bar.
- Snap** to the beginning point of the **London Rd.** alignment.  
(Snap is performed by pressing the middle mouse button).
- Review the XY coordinates.

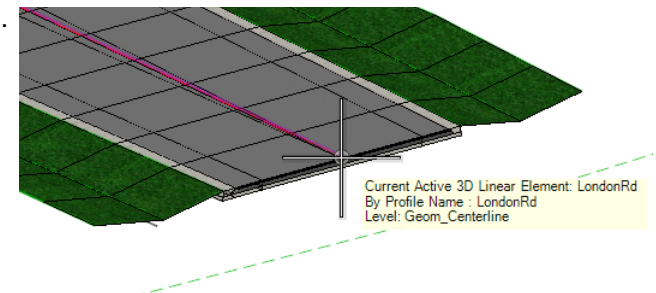
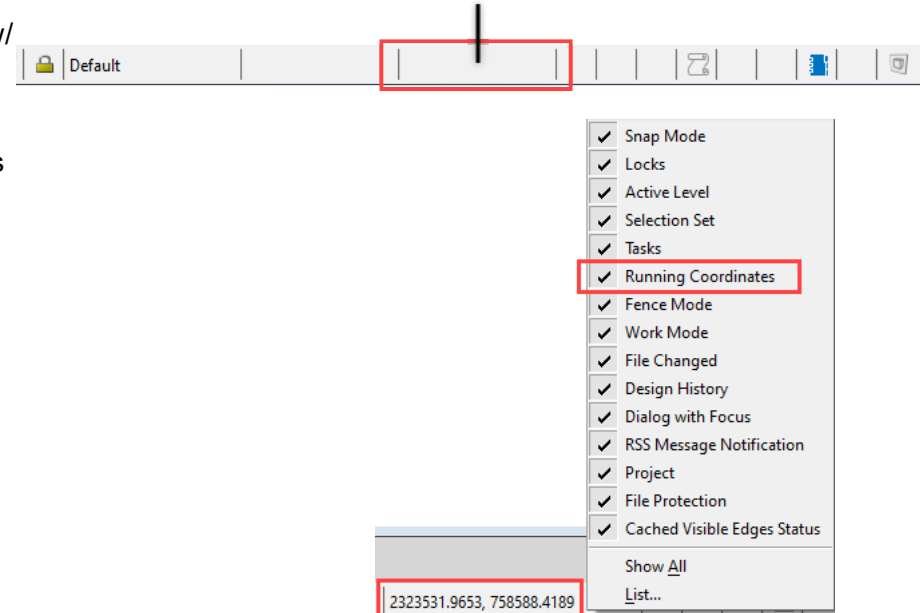


### 2. Review Coordinates in 3D.

- Click* in **View 3, Default-3D** and move your cursor around.
- Review the Running Coordinates in the Status Bar.
- Snap** to the beginning point of the London Rd. alignment feature in the 3D Model.
- Review the XYZ coordinates.

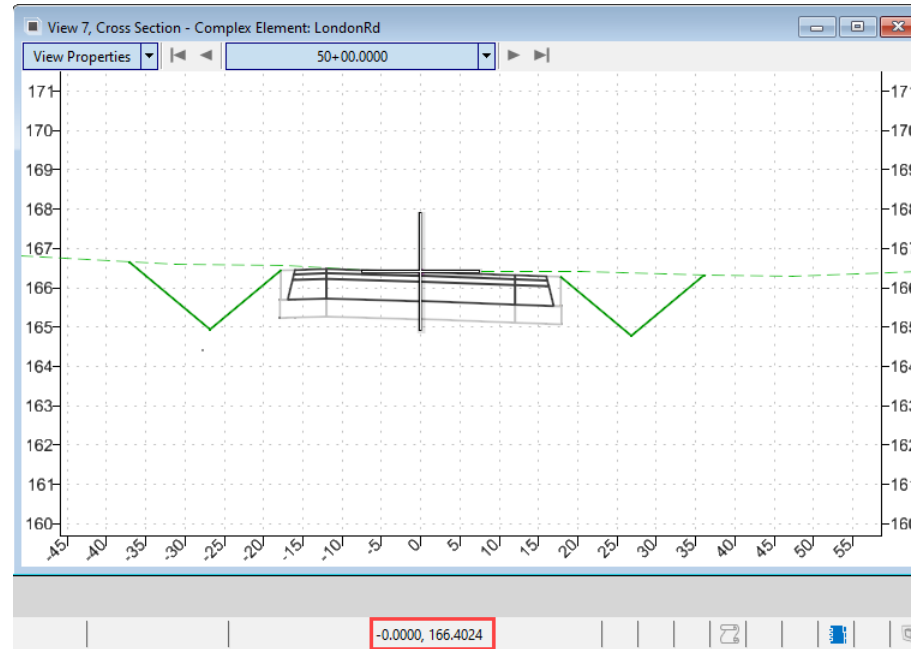


### Show/Hide Tools



3. Review Offsets and Elevations in Cross Section View.

- a. **Click** in the Cross Section View and move the cursor around. Notice how the running coordinates display offset and elevation in the Status Bar.
- b. Using the station navigation tools at the top of the view window, navigate to station **50+00.00**.
- c. **Snap** to the centerline point (zero offset) and review the offset/elevation.

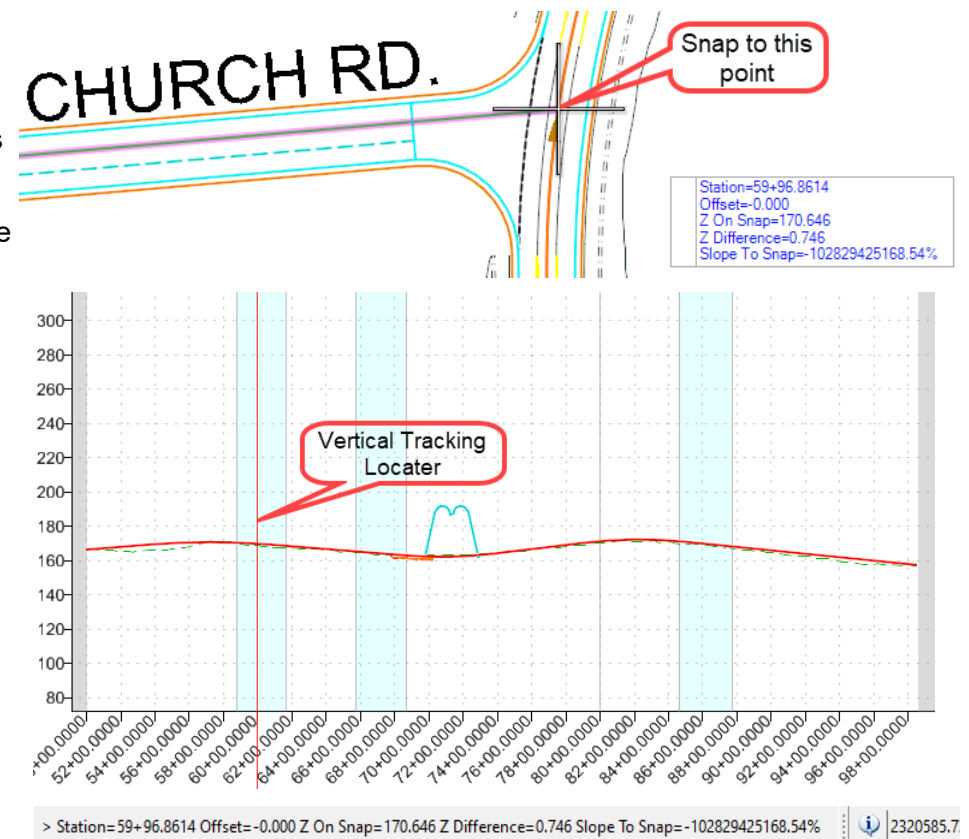


- d. **Snap** to other points on the cross section and review the offset and elevation information.

4. Use the **Analyze Point** tool to get station/offset/elevation information.
  - a. Select *Home > Model Analysis and Reporting > Civil Analysis > Analyze Point*
  - b. *Locate Element to Analyze Point*: Select the **London Rd.** alignment.
  - c. Move your cursor along the horizontal alignment and note the station/offset/elevation information is being displayed dynamically as you move your cursor.
  - d. *Click* in *View 5 Profile Model* and move your cursor along the profile. Note the station/elevation values and the vertical tracking bar in the profile view. Also, note that as you are tracking along the profile a crosshair graphic moves along the relative location in *View 1*.
    - As you can see this tool is useful for getting station/offset/elevation information from civil elements.
5. Use **Analyze Point** to get information at a specific point along the alignment.

- a. **Zoom** to the intersection of Church Rd. and London Rd.
- b. Continuing with the **Analyze Point** tool.
- c. **Snap** to the end point of the Church Rd. alignment. (Snap is performed by pressing the middle mouse button).
  - Note the *Station*, *Offset* and *Z on Snap* (this is the active profile elevation).
  - Note the vertical tracking locator in the profile model view.
  - Note the status bar mirrors the civil information from the cursor prompt.
- d. *Right-click* to remove the snap.

**Congratulations!** You have now completed this course.



## Skills Assessment

The questions below will test your retention of the skills covered in this course.

---

1. A design file can contain multiple models and views.
  - a. True
  - b. False
2. The WorkSpace and the WorkSet define the standards and configurations used by the software.
  - a. True
  - b. False
3. The Element Selection tool can be used to not only select civil elements but it can also be used to access tool tips, the civil context menu and geometry text manipulators and drag handles
  - a. True
  - b. False
4. The OpenRoads Model is used to manage and browse civil data stored in the design file.
  - a. True
  - b. False
5. The Cross Section Model displays a "live" references slice from the 3D model.
  - a. True
  - b. False
6. Profile Models and Cross Section Models Views can be exaggerated horizontally and vertically
  - a. True
  - b. False



7. Display Styles can be used to change the presentation of the 3D Model view.
  - a. True
  - b. False

## Skills Assessment - Answers

The answers to the skills assessment questions are highlighted below.

---

1. A design file can contain multiple models and views.
  - a. **True**
  - b. False
2. The WorkSpace and the WorkSet define the standards and configurations used by the software.
  - a. **True**
  - b. False
3. The Element Selection tool can be used to not only select civil elements but it can also be used to access tool tips, the civil context menu and geometry text manipulators and drag handles
  - a. **True**
  - b. False
4. The OpenRoads Model is used to manage and browse civil data stored in the design file.
  - a. **True**
  - b. False
5. The Cross Section Model displays a "live" references slice from the 3D model.
  - a. **True**
  - b. False
6. Profile Models and Cross Section Models Views can be exaggerated horizontally and vertically
  - a. **True**
  - b. False

7. Display Styles can be used to change the presentation of the 3D Model view.
  - a. **True**
  - b. False

## Summary

The goal of this course was to get you familiar with working with the interface, how to interact and review civil data and how to view and work with models and views.

Upon completion of this course you have now acquired the following skills:

- Selecting a WorkSpace and WorkSet
- Opening a File
- Understanding the Ribbon Interface
- Setting Up User Preferences - Working Units and Mouse Button Assignments
- Reference File Display
- Using Element Selection
- Viewing Tooltips
- Selecting a Feature to Review and Edit Geometry
- Adjusting Manipulators and Other Settings
- Using the Civil Context Menu
- On-screen Heads-Up Prompts
- Understanding On-Screen Heads-Up Prompts
- Using Explorer and Properties
- Setting up Views
- Working with 2D and 3D Models
- Defining Profile Models and Cross Section Models
- View Controls
- Viewing Display Styles
- Analyzing Civil Data