OpenRoads Designer User Manual

U.S. Department of Transportation
Federal Highway Administration

Glossary

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Glossary

0-9

2D Design Model : A 2-dimensional space that shows the design/survey graphics from a plan or "horizontal" view (top down). Most drawing and design operations are performed in the *2D Design Model* . Typically, a new ORD File will begin with only the *2D Design Model* , assuming a 2D Seed File was used. If a 3D Seed File was used, then the new ORD File will begin with only the *3D Design Model* . For more information, see *3B.3 The Seed File.*

3D Design Model : A true 3-dimensional space that shows the design/survey graphics from an isometric perspective. Primarily, the *3D Design Model* is used to for visualization of the proposed design. Typically, the User does NOT draw elements in the *3D Design Model* . An ORD File that uses a 2D Seed File will automatically generate a *3D Design Model* when a Terrain Model is activated. If a 3D Seed File was used, then the new ORD File will begin with only the *3D Design Model* .

3D Linear Element: Elements shown or drawn in the *3D Design Model* . Typically, 3D Linear Elements are NOT drawn directly in the *3D Design Model* . Instead, they are drawn/laid out in the *2D Design Model* . Next, a Profile is drawn and activated in the *Profile Model* . When the Profile element is activated, a 3D Linear Element is created.

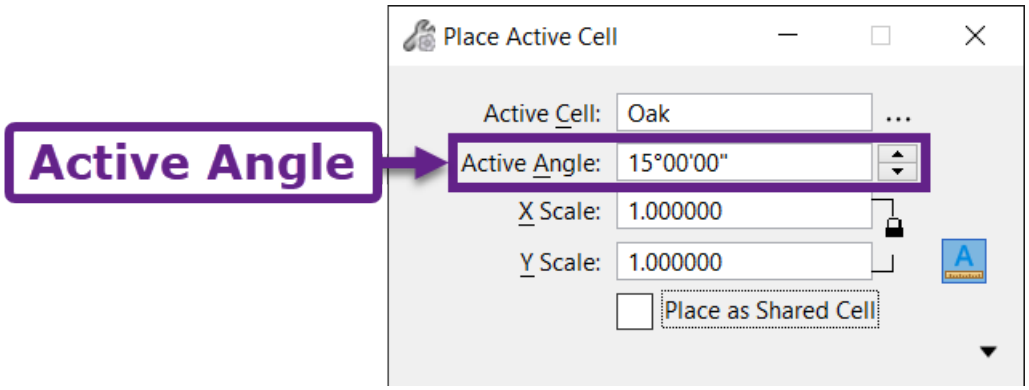
3D Linear Element (Corridor): When Template Points in a Corridor or Linear Template are processed, 3D Linear Elements are produced in the *3D Design Model* . 3D Linear Elements (Corridor) are NOT modifiable through grip-edits.

A

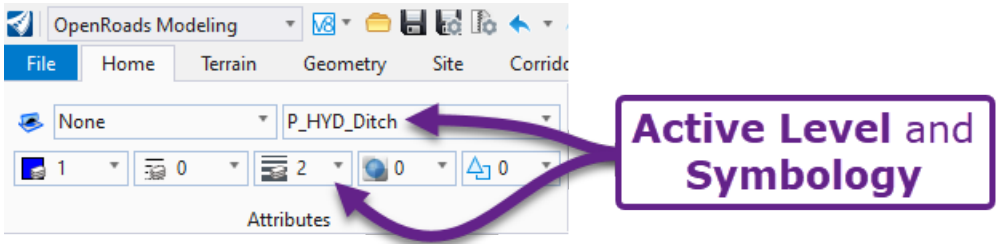
AccuDraw : A floating compass and coordinate system used to draw and manipulate elements in a precise manner. AccuDraw consists of two main components: the Compass, and the Tool Box. The Compass has two pointers for drawing elements orthogonally to the current rotation of the Compass. The Tool Box allows exact coordinate and distance values to be specified. For more information on AccuDraw, see *6B – AccuDraw*.

Active: The term "Active" is used in many different contexts in this manual and the ORD Software. In general, the term "Active" refers to a currently set parameter.

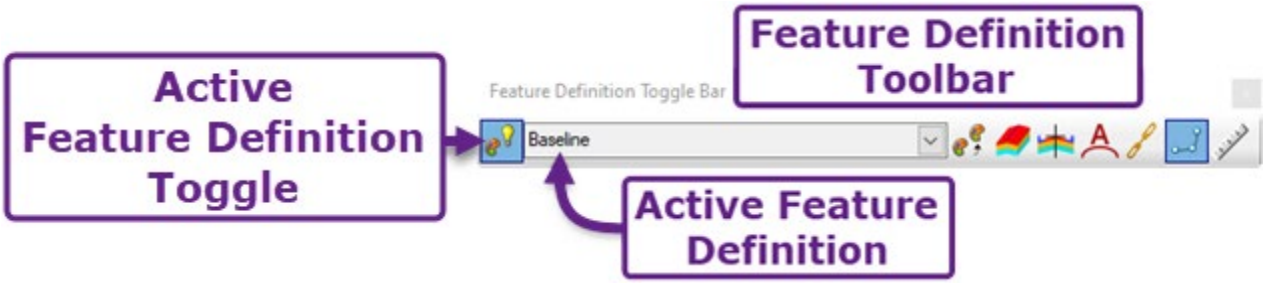
Active Angle: MicroStation tools that show an Angle parameter in the Dialogue Box are subject to the Active Angle value. Whenever an Angle value is set for a tool, it will be remembered for next use of any tool that uses an Angle value in the Dialogue Box. For example, if the *Rotate* tool is used to rotate an element by 15°, then 15° becomes the Active Angle value. After, if the *Place Cell* tool is used, the Active Angle for the Cell will initially be set to 15°.



Active Level/Color/Line Style/Line Weight: Also referred to as Active Attributes. Active Attributes are shown in the Attributes group in the Ribbon. When an element is drawn, it is assigned the Active Attributes shown in the Ribbon. The Attributes group is discussed in *6A.3 Set the Active Level and Attributes before Drawing*.



Active Feature Definition: The currently set (active) Feature Definition is shown in the Feature Definition Toolbar. When an ORD Element is drawn, it is automatically assigned to the Active Feature Definition, assuming the Active Feature Definition Toggle is ON. The Active Feature Definition Toggle must be ON for the Active Feature Definition to be used in drawing operations. For more information, see *7B.3 Feature Definition Toolbar*.



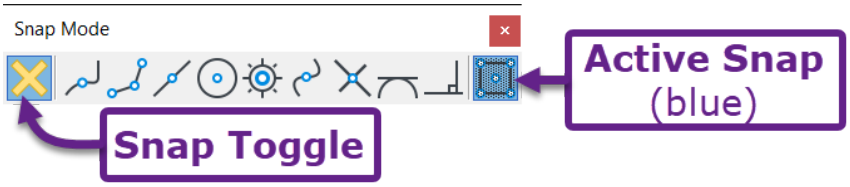
Active Model and Active View: An ORD File may contain several Models. However, only one Model can be active at a time. The Active Model corresponds with the Active View. The Active View is the last *View* window that was clicked in. ***TIP:*** The information shown in the References manager is ONLY applicable to the Active Model and View. For more information, see *1C.1 Active View*.

Active ORD File: The active ORD File refers to the currently opened ORD File.

Active Profile: Once a Profile element becomes active, the vertical information from the Profile is associated with the horizontal geometry to create a 3D Linear Element. For more information, see *7F – Create Vertical ORD Elements*. ***NOTE:*** Several elements can be drawn/displayed in the *Profile Model*. However, only one element can be *Active* at a given time. ***TIP:*** The Existing Ground Profile line in a *Profile Model* can be set as active. The result is a 3D Linear Element that is vertically draped on the Existing Ground Terrain Model.

Active Scale Factor: MicroStation tools that use scaling operations will be subject to the Active Scale Factor when the tool is initially executed. Whenever a scale value is set for a tool, it will be remembered for next use of any tool that uses an Active Scale value. For example, if the *Scale* tool is used to shrink an element by a set Scale factor of 0.5, then 0.5 becomes the Active Scale Factor. After, if the *Place Cell* tool is used, the Scale Factors for the Cell will be initially set to 0.5.

Active Snap: The Active Snap determines the snap type used during a drawing operation. Additionally, the Snap Toggle must be ON for a snap to be used in a drawing operation. For more information, see *7B.1 AccuSnap Settings*.



Active Terrain Model: An ORD File can ONLY have one Active Terrain Model at a time. Typically, the Existing Ground Terrain Model is set as the Active Terrain Model. Setting a Terrain Model as Active has two primary effects. First, in the *Profile Model* of any 2D-element, the profile elevation line of the Active Terrain Model is shown. Second, the End Condition Components of Corridors and Linear Templates seek out the Active Terrain Model to determine interception locations for cut and fill lines. The procedure for setting a Terrain Model as Active is shown in *3D.3 Activate the Existing Ground Terrain Model*.

Active WorkSet: Refers to the currently set WorkSet. When the ORD software is closed, the active WorkSet is remembered for the next time the ORD software is opened. If an ORD File that belongs to a different (not active) WorkSet is opened, then a Mismatch Alert message is shown. The Mismatch Alert message is discussed in *1A.1.a Mismatch Alert when Opening ORD Files*.

Alternate Surface: An Alternate Surface is a Terrain Model created from a User-defined string of Template Points. An Alternate Surface can be used to create Terrain Models from intermediate layers in the pavement section, such as "Red Tops" and "Blue Tops". For more information, see *22B – Alternate Surfaces (Intermediate Layers)*.

Annotation Group: Annotation Groups control the automatic labeling of Alignments, Profiles, and Cross Sections. An Annotation Group is a collection of labels that are applied to an element or grid when the *Annotate Element* tool or the *Annotate Drawing Model* tool is used. Editing Annotation Groups is discussed in *15D – Civil Annotations (Stationing & Profile)*.

Annotation Scale: A multiplier applied to size annotation elements. The Annotation Scale mainly affects elements placed in the *2D Design Model* or *Drawing Models*. Increasing the Annotation Scale causes annotation elements to increase in size. For more information, see *15A.2 Annotation Scale*.

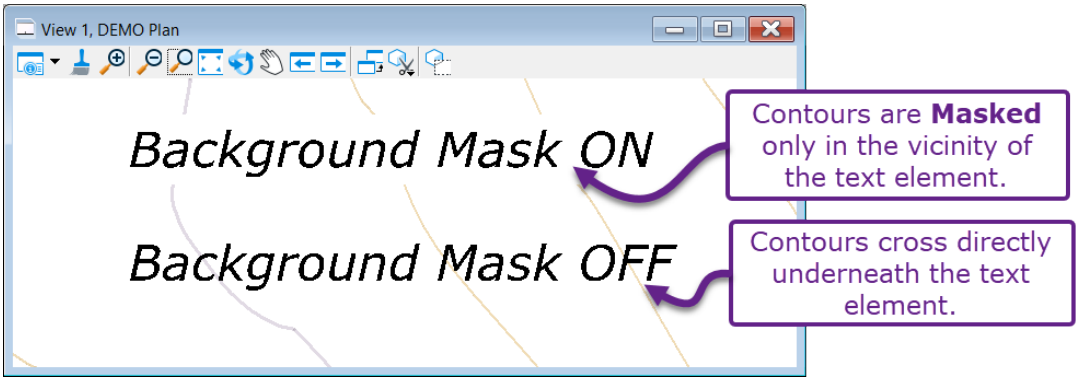
Attributes (Symbology): The term Attributes or Symbology refers to the Level, Color, Line Style, and Line Weight properties for an element.

Auxiliary Coordinate System (ACS): The Auxiliary Coordinate System works in conjunction with AccuDraw. By setting a custom ACS direction, the AccuDraw Compass can be quickly rotated to the custom ACS direction. This feature is useful when drawing a series of parallel/perpendicular lines that are skewed to up/down and left/right orientation of the *View* window. For more information, see *6I.3 Auxiliary Coordinate System (ACS)*.

AUX Levels and AUX Feature Definitions: The FLH Level and Feature Definition libraries contain a set of Levels/Feature Definitions named "AUX01" - "AUX10". Elements assigned to the AUX Levels/Feature Definitions will print in Color. The AUX Level/Feature Definitions will NOT be processed by the FLH Pen Table when printing in black, white, and grey scale. For more information on the AUX Levels and Feature Definitions, see *19D – The FLH Pen Table, Custom Levels, and AUX Levels*.

B

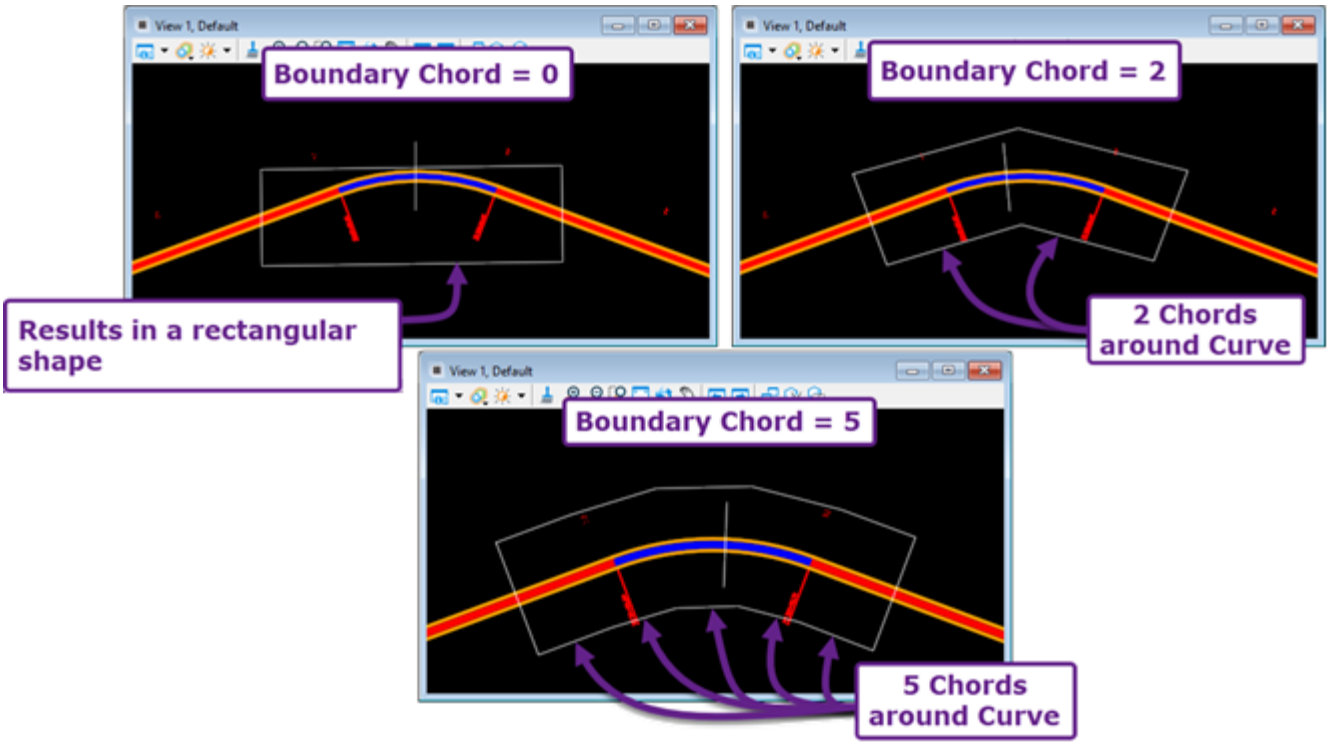
Background Mask: Background Mask is a Text Style setting that can be turned on for text elements. If a Background Mask is ON, then elements behind the text element are masked in the vicinity of the text element. Turning on a Background Mask is discussed in *15B.4.b.iii Add a Background Mask – Workflow*.



Backstage Menu (File Tab): The Backstage Menu is shown when the **File** tab is opened. The File tab is located in the upper-left corner of the ORD software interface window. The Backstage Menu is generally used to create a New ORD File or open an ORD File. Also, the Backstage Menu contains Settings Menus for customizing operation of the current file and general ORD Software behavior. For more information, see *1B.1.f File Menu* and *4D – User Settings and Preferences*.

Batch Print: Batch Printing is when multiple sheets are printed at the same time; opposed to printing sheets individually. Batch Printing is discussed in *19A – Plan Set Printing (Batch Printing)*.

Boundary Chords: The Boundary Chord setting is presented when creating PLAN *Named Boundaries* with the *Place Named Boundary* tool. The Boundary Chord value determines how the resulting PLAN *Named Boundary* element is shaped around curves in the Alignment. If the Boundary Chord value is set to 0, then the PLAN *Named Boundaries* will always be rectangular. For more information, see *14A.3.c.i Boundary Chords and the FLH Sheet Border*.



Break Line: Break Lines are used to created ridges, swales, and sharp changes of slope in a Terrain Model. Demonstrations of break lines are shown in *5A.1 How the Survey ORD File/Existing Ground Terrain Model is created* (Process 5 at the end of this section) and *11A.2.b Adding Break Lines to a Terrain Model*.

C

Calculated Features (Terrain Model Property): For a Terrain Model, Calculated Features include Major/Minor Contours, Flow Arrows, and Triangles. These features are automatically generated (calculated) by the Terrain Model. For more information, see *11B.2 Symbology Components: Calculated Features vs Source Features*.

Catchment: An element type used in Drainage and Utilities modeling. A Catchment represents a Drainage Area. For more information, see *25B.4 Create the Catchments (Drainage Area)*.

Cell: A pre-packaged group of graphical and/or text elements. The two most common types of Cells are Individual Cells and Pattern Cells. Individual Cells are a standalone group of graphics/text elements, such as a stop sign or turn arrow graphic. Pattern Cells are used to fill an enclosed area with a repeating graphical pattern, such as riprap or concrete graphics. For more information on Cells, see *6D – Cells*.

Cell Library: A Cell Library is a collection of Cells. A Cell Library is an external file with a ".cel" extension. For FLH plan set drafting, there are multiple Cell Libraries found in the FLH WorkSpace. For more information, see *6D.2 FLH Cell Libraries*.

Circular Fillet: A circular fillet is a circle/arc element that is automatically created between two selected elements. The circular fillet is created tangentially to the selected elements. The *Construct Circular Fillet* tool creates a MicroStation circular fillet element. See *6F.6 Construct Circular Fillet tool*. The *Simple Arc (Arc Between Elements)* tool creates an ORD circular fillet element. See *7D.1.b.v(a) Simple Arc From Element*.

Civil Annotations: Automatic labels applied to Alignments, Profiles, and Cross Sections. For example, stationing, curve data, and PC/PT labels are referred to as Civil Annotations. Civil Annotations are created with the *Annotate Element* tool and the *Annotate Drawing Model* tool. See *15D – Civil Annotations (Stationing & Profile)*.

Civil Cell: A pre-packaged modeling feature that consists of ORD geometry elements, Linear Templates, Terrain Models, and/or Surface Templates. Examples of features commonly modeled with Civil Cells include ADA sidewalk ramps and approach intersections. In placement of a Civil Cell, Reference Elements must be selected. The Civil Cell model is built around the Reference Elements. For more information on Civil Cells, see *Chapter 12 – Civil Cells*.

Civil Rule: Geometric constraints applied to ORD Elements. Civil Rules are automatically established when an ORD Element is created. If the ORD Element is modified, then the position of the ORD Element is automatically adjusted to maintain the Civil Rule constraint criteria. Civil Rules are explained and demonstrated in *7C.3 Civil Rules* and *12C.1.b Dynamic Relationships formed by Persist Snaps and Civil Rules*.

Clearing Limits and Construction Limits: The limits on each side of the project that establish the area disturbed by construction operations and beyond which no disturbance is permitted. Typically, the construction limits are the same as the clearing limits, except when additional clearing is required. Creating a Clearing Limits report is discussed in *23F – Clearing Limits Report*.

Complex Chain: A Complex Chain is a continuous string of MicroStation Lines and Curves that were joined together with the *Create Complex Chain* tool. See *6A.3. Basic Drawing Tools Workflows*.

Complex Element: A Complex Element is an ORD Element that consists of line, curves, and/or spiral segments. The term Complex Element can refer to either a Horizontal/Vertical ORD Element that is manually drawn or a 2D Linear Element that is generated by the Corridor. Both element types are called a "Complex Element" in the Properties box. However, the symbol shown next to the element type differs. For Horizontal Complex Elements, the symbol is shown in the Properties box. For Profile Complex Elements, the symbol is shown. These symbols indicate that the "Complex Element" was manually drawn and is editable. For Corridor-generated Complex Elements, the symbol is shown in the Properties box. This symbol means the "Complex Element" CANNOT be directly edited. ***NOTE:*** In this manual, 2D Linear Elements generated from the Corridor are also referred to as "Corridor Complex Elements" and "2D Complex Elements". For more information, see *9C.3.a Alignment Complex Elements vs Corridor Complex Elements*.

Complex Terrain Model (Merged): A Complex Terrain Model is created by merging two or more adjacent or overlapping Terrain Models. Creation of Complex Terrain Models is discussed in *22E – Merge Terrain Models*.

Components: Also referred to as "Template Components" in this manual. Components are shapes found in the Template of a Corridor, Linear Template, and Surface Template. Components represent real-world materials. The Feature Definition for a Component represents the material type. When quantities are calculated, the volume and surface areas of Components are summed together and reported by Feature Definition. For more information, see *8A.2 Basic Parts of a Template*.

Conduit: An element type used in Drainage and Utility modeling. A Conduit represents a closed pipe, culvert, utility line, or open-channel. For more information, see *25A.1 Drainage and Utilities Basics*.

Connection Client: The Connection Client is a license management software that is automatically downloaded with OpenRoads Designer or other Bentley products. The User must successfully sign-in to the Connection Client software before launching OpenRoads Designer.

Construction Limits: Construction Limits is the designated area which a construction contractor is allowed to operate. Typically, Construction Limits lines are created by offsetting the proposed Slope Stake Limits linework. Alternatively, Construction Limits points can be built into the Corridor Template.

Coordinate System: When creating a new ORD File, set the appropriate Coordinate System. Setting the Coordinate System ensures the ORD File is placed in the correct geographical location. The procedure for setting the Coordinate System is shown in *3D.1 Set the Coordinate System*.

Corridor: A 3D modeling element, typically used to model a roadway. Before creating a Corridor, an Alignment, Profile, and Template must be created. For more information, see *Chapter 9 – Corridor*.

Corridor Clip: A Corridor Clip is performed with the *Add Clipping Reference* tool. This tool clips out a portion of the Corridor by selecting an overlapping element or modeling feature. ***WARNING:*** Clipping the Corridor is generally discouraged. See *9G.10 Corridor Clipping References*.

Corridor Objects: Corridor Objects tools are used to manipulate the geometric position of Template Points in a Corridor. Some common Corridor Objects tools include Point Controls, Parametric Constraints, and End Condition Exceptions. All Corridor Objects applied to a Corridor are shown in the Corridor Objects Menu. For more information, see *9G – Corridor Objects – Manipulation of the Corridor*.

Corridor Reference: Corridor References work in conjunction with *Horizontal Feature Constraints*. For a *Horizontal Feature Constraint* to function, the target line or element must be added as a Corridor References with the *Add Corridor Reference* tool. For more information, see *9G.9 Corridor References*.

Cross Section Annotations: Refers to the automatically generated Labels and Grid elements used in Cross Section sheet production. Cross Section Annotations are created in CROSS SECTION *Drawing Models*  . A set or collection of Cross Section Annotations is called an Annotation Group. For more information, see *16D – Cross Section Annotation Basics*.

Cut/Fill Meshes: Cut/Fill Meshes are used to calculate earthwork volumes. Cut/Fill Meshes are NOT built into Corridor Templates. Instead, the *Create Cut Fill Volumes* tool is used to generate the Cut/Fill Meshes. After the meshes are generated, the Cut/Fill earthwork volume quantities can be calculated with *Quantity Report by Named Boundary* tool. For more information on Cut/Fill Meshes, see *20B.1 Cut and Fill Meshes*. Do NOT confuse Cut/Fill Meshes with Cut/Fill End Condition Components.

Cut/Fill End Condition Components: Cut/Fill End Condition Components are built into the Corridor Templates to tie in with the Existing Ground Terrain Model. Fill End Condition Components are used to set the embankment slope. Cut End Condition Components are used to set ditch and cut slope geometry. For more information, see *8D.1 Component Properties* and *8D.7 End Condition Component Properties*.

D

Data Point: The term "Data Point" is commonly shown in Prompt messages. A "Data Point" is a **left-click** at a specific point location in the *View* window. When the term "Data Point" is shown in the Prompt messages, Left-Click in the current *View* window to proceed with the action. For more information, see *1A.2 Mouse Operations*.

Design Models: Design Models are real-world spaces for drawing elements at a 1:1 scale. There are two types of Design Models: the *2D Design Model* and the *3D Design Model*.

Design Iteration: Design Iterations refer to the progression and modifications to a project over the course of the design process. For example, progressing the design from the 30% milestone to the 70% milestone is referred to as a Design Iteration. Editing a design will have rippling consequences on plan sheet and cross section sheets. For more information on cause-and-effect relationships that result from a Design Iteration, see *Chapter 13 – Design Iterations*.

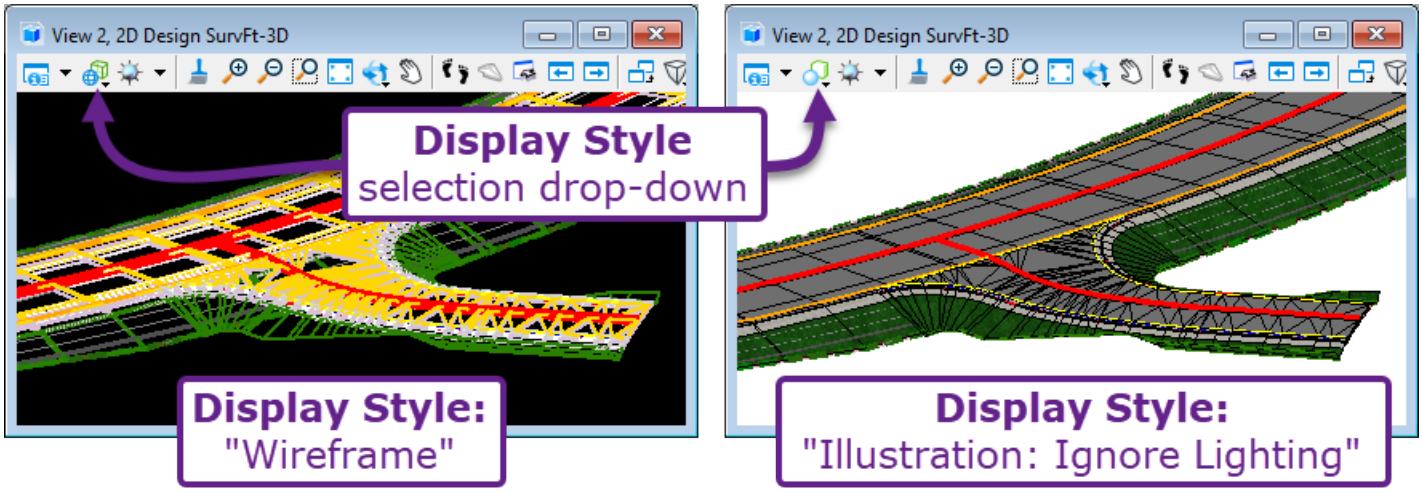
Design Meshes: All Template Components and Meshes have a Feature Definition property called the *Volume Option* which classifies the Component/Mesh type. For proposed Components/Meshes, the Volume Option is set to Design. The Design Volume Option controls how Components/Meshes are analyzed in creation of Proposed Terrain Models and calculation of earthwork quantities. For more information, see *20G.1 Design Volume Option*.

Dialogue Box: The Dialogue Box is used to set parameters relating to the operation of the current tool. The information and settings shown in the Dialogue Box is dependent on the selected tool. When there is NO tool in operation, the *Element Selection* settings are shown in the Dialogue Box. For more information, see *1B.3 The Dialogue Box and Prompts*.

Display Rules: Display Rules are used to eliminate or add a set of Template Components to the base Template configuration over a specified Corridor station range. Display Rules are used in conjunction with Null Points and Horizontal Feature Constraints. See *8D.2 Display Rules*.

Dimension Styles: For Note and Dimension elements, the Dimension style controls the appearance of the leader, terminators, and text position. For more information, see *15B.4 Text Styles and Dimension Styles*. ***NOTE:*** When creating Note and Dimension elements, setting an appropriate Element Template will automatically set the appropriate Dimension Style. It is unnecessary to manually set a Dimension Style for creating conventional plan notes and dimensions.

Display Style: The Display Style controls the color and lighting scheme for a *View* window. For the *3D Design Model*, the Display Style controls the appearance of 3D elements, such as Corridors and Terrain Models. For example, the "Illustration: Ignore Lighting" style shows 3D elements with a "realistic" appearance.



Drawing Model: A 2-dimensional model that is used in sheet production only. A *Drawing Model* is a clipped and framed portion of a Design Model. *Drawing Models* are referenced into *Sheet Models* to show design and survey graphics. For more information, see *Chapter 14 – Plan Sheet Production*. There are three types of *Drawing Models*:

> **PLAN Drawing Model:** Shows a clipped portion of the *2D Design Model* for display in a *Sheet Model*.
>
> **PROFILE Drawing Model:** Shows a clipped portion of a *Profile Model* for display in a *Sheet Model*.
>
> **CROSS SECTION Drawing Model:** Shows a "slice" of the *3D Design Model* at a specific Alignment station. CROSS SECTION *Drawing Models* are used in the production of Cross Section Sheets. See *Chapter 16 – Cross Sections*.

Drawing Scale: In plan sheet production, graphics drawn to real-world size in the *2D Design Model*, but must be shrunk (scaled) down to fit on an 11" x 17" sheet size. The Drawing Scale refers to the scale factor applied to the reference of the *2D Design Model* graphics for appropriate display in a *Sheet Model*. An example of a Drawing Scale is 1" = 50'. For this drawing scale, an element that measures to 1" on the final printed sheet has a real-world length of 50'.

Drawing Seed: A Drawing Seed must be specified when using the *Place Named Boundary* tool for sheet production. A Drawing Seed is a pre-configured template for creation a particular type of sheet. Drawing Seeds must be correlated with the Drawing Scale to be used for the sheet (i.e., 1"=50'). For more information, see *14A.3.c Plan Named Boundary Options*.

Drop: To break up a compound element into simpler component elements. Dropping an element is performed with the *Drop Element* tool. See *6H.7 Drop Element tool*.

Dynamic Views: A 2-dimensional space that displays the *3D Design Model* from a cross-sectional or profile perspective. Dynamic Views are essentially a "slice" of the *3D Design Model*. There are two types of Dynamic Views: *Profile Models* and *Dynamic Cross Section Views*.

> **Profile Model:** Every horizontal element drawn in the *2D Design Model* has a corresponding *Profile Model*. The *Profile Model* is a 2-dimensional grid with the x-axis representing stationing along the horizontal element and the y-axis representing elevation. Proposed profiles are drawn in the *Profile Model*. After a Profile is drawn and *activated*, the element is defined in all 3-dimensions and a corresponding 3D Linear Element is automatically created in the *3D Design Model*.
>
> **Dynamic Cross Section View:** Every Corridor and Linear Template has a corresponding *Dynamic Cross Section View*. The *Dynamic Cross Section View* shows the Corridor/Linear Template from a cross-sectional perspective at incremental station positions along the Alignment.

E

Element Templates: To conform with FLH Drafting Standards, an Element Template must be set before adding Text, inserting a Note, or Dimensioning an element. The Element Template automatically sets the Text Height, Font, Level, Line Style, Line Weight, and Color attributes for the next annotation element to be created. For more information, see *15A.3 Element Templates*.

End Condition Exception: An End Condition Exception is a Corridor Object tool used to reconfigure End Condition Template Points for a set station range. End Condition Exceptions can be used to reconfigure ditch geometry or change the embankment slope value. For more information, See *9G.6 End Condition Exception*.

Explorer: A menu that contains 9 sub-menus for various usages. The Explorer is discussed in *1H – Explorer*. The most commonly used sub-menus are:

> **OpenRoads Model:** The OpenRoads Models menu lists ALL elements that contain a Feature Definition in the current ORD File. For more information, see *17A.2 Featurized Elements in the Explorer (OpenRoads Model)*.
>
> **Sheet Index:** The Sheet Index is used to organize and number sheets in a plan set. Each project WorkSet has a corresponding Sheet Index. For more information, see *Chapter 18 – Sheet Index*.
>
> **OpenRoads Standards:** The OpenRoads Standards menu is primarily used to modify Feature Definitions and Annotation Groups. For more information on modifying Feature Definitions, see *17C.1 Feature Definition Settings and Editor*. For more information on modifying Annotation Groups, see *15D.5 Editing Alignment (Plan) Annotation Groups*.

F

Feature Definition: A Property assigned to ORD Elements ONLY. Similar in concept to Levels, Feature Definitions organize ORD Elements into categories based on function and/or material type. Feature Definitions control the appearance of an ORD Element, in terms of Level, Color, and Line Type.

Feature Definitions are found on the following ORD Element types: Alignments/Profiles, Linear Elements, Terrain Models, Corridors, Linear Templates, Surface Templates, and Template Components (Meshes).

In quantities calculations, ORD Elements of the same Feature Definition are summed together. Feature Definitions are discussed in *Chapter 17 – Feature Definitions*.

Feature Name: Every ORD Element (i.e., Alignments, Corridors, Surface Templates) has a Feature Name shown in the Properties box. When creating ORD Elements assign an appropriate Feature Name. See *3F – Naming Convention For Proposed ORD Features*.

Feature Symbology: In the Explorer, every Feature Definition is assigned a Feature Symbology. The Feature Symbology controls Level, Color, Line Weight, and Line Style for a Feature Definition. Additionally, the Feature Symbology sets which Annotation Group, 3D geometry, and Cells are associated with the Feature Definition. For more information, see *17C.1 Feature Symbologies and Element Templates*.

Fence: A Fence is a temporary selection box or shape. Commonly, a Fence shape is placed for clipping or masking a Reference. Also, a Fence can be placed to designate an area to be printed. For more information, see Chapter *1B.4 Place Fence Tool*.

Fields: Dynamic, self-updating text. Fields have a wide variety of applications. For example, a Field can point to a specific geometric Property for an element and display that value. If the geometric element is modified, then the Field text will automatically update to reflect the new Property value. As another example, Fields are embedded into the FLH Border found in a *Sheet Model*. The border Fields perform simple tasks such as updating the date and file path of the ORD File. For more information, see *15C.1 Fields*.

Floating Prompts: For some tools (but not all tools), Floating Prompts are shown near the mouse cursor. Floating Prompts display the action to be taken for execution of the tool. Also, input data can be entered when a Floating Prompt is displayed. The input data shown in the Dialogue Box and Floating Prompts are coordinated. Input data can be entered in either location with the same results. For more information on Floating Prompts and the Dialogue Box, see *1B.3 The Dialogue Box and Prompts*.

H

Horizontal Element: Any element drawn in the *2D Design Model* (plan view). The term Horizontal Element includes both MicroStation Elements and ORD Elements.

Horizontal Feature Constraint: Horizontal Feature Constraints operate identically to Horizontal Point Controls. See Point Control. A Horizontal Feature Constraint is used to move a Corridor Template Point to match the position of an element drawn in the *2D Design Model*. The element drawn in the *2D Design Model* must be added as a Corridor Reference. For more information, see *8C.6.a.xiv Horizontal Feature Constraint*.

K

Key Station: A Key Station is used to process a Template Drop at a User-specified Corridor station. For more information, see *9G.3 Key Station*.

Key-In: Every tool in the software has a corresponding Key-In. Typically, tool operation is initiated by locating the tool in the Ribbon or Search Bar. However, the Key-in tool provides an alternate method for initiating a tool operation. To use the Key-In tool, the exact Key-In name for a tool must be known. For more information, see *4C.2 Determine Key-In Names*.

Keyboard Shortcut: A tool or operation that is programmed to a keyboard key. When the shortcut key is pressed, then the corresponding tool is executed. Default Keyboard Shortcuts and programming custom Keyboard Shortcuts is discussed in *4B – Keyboard Shortcuts and Function Keys*.

L

Level : The Level property organizes elements into categories based on function or material type. FLH has a library of Levels. Every element should be assigned to an appropriate Level. When a Level is toggled OFF, then all elements assigned to the Level are hidden. Levels are toggled ON/OFF in the Level Display box. Levels are modified in the Level Manager. For more information on Levels, see *1G – Levels*.

Linear Template: A Linear Template is a 3D modeling element that functions similar in concept to Corridors. Linear Templates are used to create 3D models that are linear in nature, but are generally used for minor site layout features. Corridors are intended for major modeling features, such as a road. In contrast, Linear Templates are intended for minor modeling features, such as a Curb/Sidewalk/End Condition template that follows the perimeter of a parking lot. For more information, see *11A – Introduction to Site Modeling*.

Linework: The term "Linework" generally refers to graphical elements drawn with MicroStation tools.

M

Mesh Elements: 3D Volumetric shapes that represent existing or proposed materials. A Template Component is extruded as a Mesh element when the Corridor is created.

MicroStation Elements: MicroStation Elements are primarily found under the "Drawing" tab. MicroStation Elements are generally used for drafting basic linework. MicroStation Elements are simple and have less functionality when compared to ORD Elements. For more information, see *7A.1 ORD Elements vs MicroStation Elements*.

Model : A unique 2D or 3D space within an ORD File. Most ORD Files contain multiple models. There are 4 types of Models: Design Models, *Drawing Models*, *Sheet Models*, and Dynamic Views. All Models contained in an ORD File are listed and accessible in the Models manager. For more information on Models, see *1D – Model Types*.

Models Manger: The Models manager is a menu that lists all Design Models, *Drawing Models*, and *Sheet Models* found in an ORD File. Switching between different Models can be accomplished through the Models manager. ***NOTE:*** Dynamic Views, such as *Profile Model* and *Dynamic Cross Section View* are NOT shown or accessible in the Models manager. For more information, see *1C – Views and Models*.

N

Named Boundary Element: Used in plan sheet production to create *Drawing Models* and *Sheet Models*. A Named Boundary is a closed shaped element placed in a *2D Design Model*, *3D Design Model*, or the *Profile Model*. The area inside the Named Boundary is used to create a corresponding *Drawing Model*. The *Drawing Model* is referenced into a *Sheet Model* to show graphics from the *2D Design Model*, *3D Design Model*, or the *Profile Model*. For more information, see *Chapter 14 – Plan Sheet Production*.

Nested Attachment (Reference): Nested Attachments are a series of indirect references. For example, ORD File "A" is directly referenced into ORD File "B":

ORD File "A" (Direct Reference) → ORD File "B"

ORD File "B" is directly referenced into ORD File "C":

ORD File "B" (Direct Reference) → ORD File "C"

If Nested Attachments are NOT used, then ORD File "A" will NOT be shown as a Nested Reference to ORD File "C". If Nested Attachments are used, then ORD File "A" is indirectly referenced into ORD File "C" as a Nested Attachment.

ORD File "A" (Nested Reference) → ORD File "B" (Direct Reference) → ORD File "C"

Nested Attachments are automatically formed when creating *Drawing Models* and *Sheet Models*. For more information, see *1E.4 Nested Attachments in Drawing Models and Sheet Models*.

Node: An element type used in Drainage and Utilities modeling. Nodes represent inlets, outlets, openings, outfalls, structures, manholes, and other important locations in a drainage or utility network. A Node element must be placed on each end of a Conduit element (i.e., a culvert). For more information, see *25A.1 Drainage and Utilities Basics*.

Null Point: A Null Point is a Template Point that is NOT associated with any Template Components. Null Points may appear "floating" or disconnected from the Template Components. Null Points are commonly used to represent features that are difficult to characterize with planar or volumetric components, such as guardrail. In Advanced Template Creation, Null Points are used to trigger Display Rules. For more information, see *8C – Template Points* and *8D.2 Display Rules*.

O

OpenRoads Models (Explorer menu): See Explorer.

OpenRoads Standards (Explorer menu): See Explorer.

ORD Element: ORD Elements are primarily found under the "Geometry" tab. ORD Elements are generally used for 3D modeling purposes. Use ORD Elements when creating Alignments, Profiles, Corridors, Linear Templates, Surface Templates, and Terrain Models. Unlike MicroStation Elements, ORD Elements contain Feature Definition and Feature Name properties. Also, Persist Snaps and Civil Rules apply to ORD Elements. For more information, see *7A.1 ORD Elements vs MicroStation Elements*.

Horizontal ORD Elements: Horizontal ORD Elements are ORD Lines, Curves, and Complex Elements that MUST be drawn in the *2D Design Model* .

Vertical ORD Elements: ORD Lines, Arcs, and Complex Elements that MUST be drawn in the *Profile Model* .

ORD File: A file that Contains a ".dgn" extension and used with the OpenRoads Designer (ORD) software. A project will require the creation of many ORD Files. Each ORD File has a specific function for survey, design, plan set production, quantity calculations, etc. For more information, see *1A – ORD File Types and Opening the Software*. ORD Files can be broadly categorized into three types: Survey ORD Files, Design ORD Files, and Plan Sheet ORD Files:

Survey ORD File: The ORD File that contains the Existing Ground Terrain Model and surveyed linework for mapping existing site features. For most projects, there is a single Survey ORD File that contains all survey data. However, some project may split up survey features into different Survey ORD Files. For example, existing Right-of-Way linework may be placed in a dedicated Survey ORD File.

Design ORD Files: A type of ORD File that is specifically used to draw and model proposed features. A project will require the creation of several Design ORD Files. Create a Design ORD Files or each unique design feature. For example, do NOT model an intersecting approach road or driveway in the Corridor ORD File. Create a new ORD File for the modeling of the approach.
BEST PRACTICE: Do NOT create plan sheets (*Sheet Models*) in a Design ORD File. Create plan sheets in a Plan Sheet ORD File.

Plan Sheet ORD Files: A type of ORD File that is specifically used to create and annotate plan sheets. Plan Sheet ORD Files contain *Sheet Models* , which represent plan sheets.
BEST PRACTICE: Do NOT draw proposed elements in a Plan Sheet ORD File.

> ***NOTE:*** The three ORD File types listed above broadly categorize most ORD Files used in a typical FLH project. However, supplementary files that do NOT fall within these categories may be created for assorted tasks.

ORD File Naming Conventions: Each Federal Lands Highway division has a different prescribed method for naming ORD Files. The file name signifies the type and function of the ORD File. For more information, see *3C - ORD File Naming Conventions*.

ORD Tools and MicroStation Tools: There are two types of tools for drawing geometric elements: ORD Tools and MicroStation Tools. For example, a line can be drawn with either ORD Tools or MicroStation Tools. If an ORD Tool is used, then the Line is considered an ORD Element. If a MicroStation Tool is used, then the Line is a MicroStation Element. For more information, see *1B.1.a ORD Tools and MicroStation Tools*.

P

Parametric Constraints: Used in Corridor modeling. A Parametric Constraint is used to override the default Constraint Value for a Template Point over a specified station range. For example, the Horizontal Constraint value for a point can be changed from 12' to 10' for a station range using Parametric Constraints. In the Template Point Properties menu, Parametric Constraints are setup with the "Label" setting. For more information, see *9G.4 Parametric Constraints*.

Pen Table: For most printing applications, a Pen Table is used in the background of the printing process. A Pen Table analyzes the Level of each element being printed. In the Pen Table, each Level is assigned a specific color to print to. FLH has a "black.tbl" Pen Table for printing in black/white/greyscale and "color.tbl" Pen Table for printing in color. For more information on the FLH Pen Tables, see *19D – The FLH Pen Table, Custom Levels, and AUX Levels*.

Persist Snaps: A dynamic relationship formed between two elements. A Persist Snap relationship is formed when an element is snapped to a previously-created element. If position of the previously-created element is modified, then the element that contains Persist Snaps is automatically repositioned to maintain the snap location. Persist Snaps can ONLY be formed on ORD Elements. Persist Snaps are explained and demonstrated in *7C.2 Persist Snaps* and *12C.1.b Dynamic Relationships formed by Persist Snaps and Civil Rules*.

Planar Template Component: In the Template Editor, Planar Template Components appear as an open line segments. In quantities calculations, Planar Templates Components produce a surface area quantity. Planar Template Components do NOT produce a volume quantity. For more information, see *8A.2 Basic Parts of a Template*.

Point Control: Point Controls are used to manipulate the horizontal and/or vertical position of a Template Point to match the position of a User-created element. For more information, see *9G.5 Point Control*.

Pop-Up Icon Menu: The Pop-Up Icon Menu is a convenient location for accessing tools that are commonly used with the selected element. To summon the Pop-Up Icon Menu, select an element and hover the mouse-cursor over it. For more information, see *1A.2.c Pop-Up Icon Menu*.

Print Set File (.pset): The Print Set File (.pset) is used to organize multiple sheets for batch printing. Print Set Files (.pset) are created in the *Print Organizer* menu. For a typical project, a single Plan Set File (.pset) is created and used to organize all sheets in the plan set. See *19A – Plan Set Printing (Batch Printing)*.

Print Organizer: The Print Organizer menu is used to create a Print Set File (.pset) and batch print from it. For more information, see *19A – Plan Set Printing (Batch Printing)*.

Profile: The term Profile refers to a vertical alignment drawn in the *Profile Model*  . Multiple Profile elements can be drawn in a *Profile Model*  . However, only a single element can be *activated* at a given time. When a Profile is activated, the vertical geometry becomes associated with the horizontal (Alignment) geometry to create a 3D Linear Element. For more information, see *7F - Create Vertical ORD Elements*.

Profile Shift: A Profile Shift occurs when a Profile cannot fit within the vertical boundary of a *Named Boundary* element. As a result, two profile grids are shown on the same sheet. For more information, see *14A.3.d.i Profile Shift Strategies*.

ProjectWise: ProjectWise is a server for accessing and organizing ORD Files and projects. Currently, only Western Federal Lands (WFL) uses ProjectWise. CFL and EFL use traditional network servers to access ORD Files. Several consultant contractors to FLH also use ProjectWise. ***NOTE:*** ProjectWise Users may send ORD Files to non-ProjectWise Users and vice-versa. Creating new ORD Files within ProjectWise is discussed in *2C – Working In and Outside of ProjectWise*.

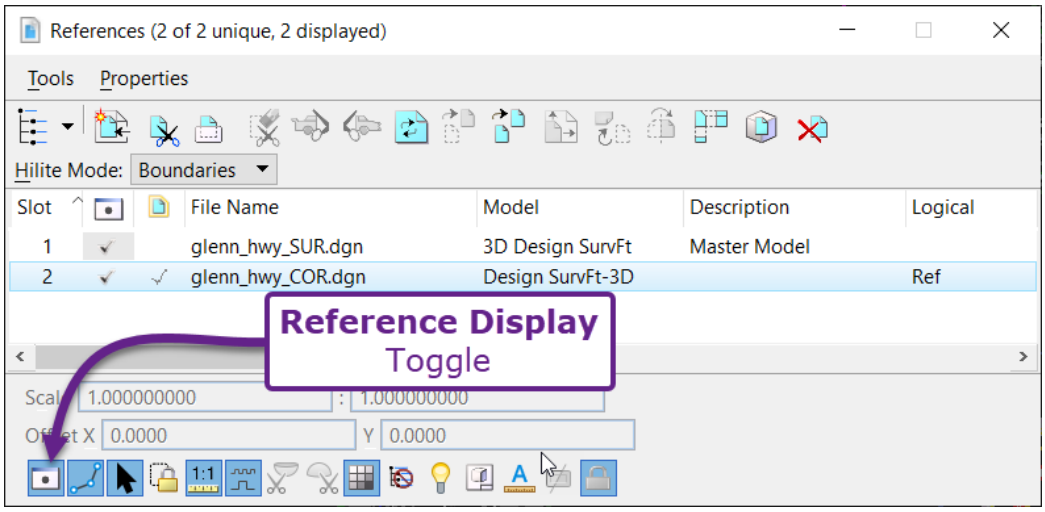
Prompts: Prompt messages show the action to be taken in each step of a tool operation. Prompts are shown in the bottom-left corner of the software window or around the mouse-cursor. For more information, see *1B.3 The Dialogue Box and Prompts*.

Properties : All elements have internal Properties that control appearance, behavior, and functionality. Properties are viewed in the Properties box when an element is selected. For more information on Properties , see *1F – Properties*.

R

Reference : References are used to display and overlay graphics from a different Model into the active Model. References are created, listed, and modified through the References manager. References are discussed in *1E – References*.

Reference Display (Toggle): The Reference Display toggle is used to turn ON/OFF the display of a Reference. For more information, see *1E.3 Reference Toggles and Settings*.



Reference Scale: If set to a value other than 1, the Reference Scale will shrink or enlarge the size of the Reference. Typically, the Reference Scale is set to 1 for References made in the *2D Design Model* . For references in *Sheet Models* , set the Reference Scale to correspond with the Drawing Scale (i.e., 1"=50'). For more information, see *1E.3 Reference Toggles and Settings*.

Reset: The term "Reset" is commonly shown in Prompt messages. A "Reset" is a **right-click**. A "Reset" is commonly used to proceed to the next step in a tool operation. However, if the term "Reset" is NOT currently shown in the Prompt messages, then right-clicking will abort the active tool. For more information, see *1A.2 Mouse Operations*.

Ribbon: The Ribbon is located at the top of the ORD software interface window and is used to select tools. Tools in the Ribbon are organized into Workflows, Tabs, and Groups. For more information on the Ribbon, see *1B.1 Ribbon and Tools*.

S

Save Settings : The Save Settings button does NOT save the ORD File. Instead, this tool saves the current positions of the *View* windows and the current Level settings (i.e., which Levels are toggled ON/OFF). For example, if the "AUX_01" Level is toggled OFF, then use the *Save Settings* tool to ensure this Level remains toggled OFF when the ORD File is opened again. If the *Save Settings* tool is NOT used, then the "AUX_01" Level will be toggled back ON when the ORD File is opened again. For more information, see *1G – Levels*.

> ***TIP:*** In the Preferences Menu, the "Save Settings on Exit" setting can be enabled. If enabled, then the *Save Settings* action is automatically performed when the ORD File is closed. By default, this setting is disabled and the *Save Settings* action is NOT performed when the ORD File is closed. To toggle ON the "Save Settings on Exit" setting, see *4D.5 Automatically Save Settings When the ORD File is Closed*.

Secondary Alignment: A Secondary Alignment is used in Corridor modeling to skew the angle which Template Drops are processed. For more information, see *9G.2 Secondary Alignments*.

Seed File: A Seed File must be set when creating a new ORD File. The Seed File sets geo-spatial parameters relating to the Survey Units (Survey Feet or International Feet) used for a project. FLH has a specific set of Seed Files to be used for Survey Feet project and a set of Seed Files to be used for International Feet projects. **Use the correct Seed File when creating a new ORD File. Selecting an incorrect Seed File will place the new ORD File in the wrong geographical position**.

Also, there are 2D Seed Files and 3D Seed Files. When a 2D Seed File is used in file creation, then the ORD File will begin with ONLY a *2D Design Model*. When a 3D Seed File is used, then the ORD File begins with a *3D Design Model*. For more information on Seed Files, see *3B.3 The Seed File*.
NOTE: 2D Seed Files are used for most ORD Files. In design workflows, 3D Seed Files are generally only used to create the Proposed Terrain Model ORD File or other types of 3D Modeling files. Using a 3D Seed File to create the Proposed Terrain Model ORD File is shown in *Chapter 22 – Proposed Terrain Model Creation*.

Set Mark and Undo To Mark: The *Set Mark* and *Undo To Mark* buttons are found at the top of the ORD interface window. These tools are used in conjunction. Push the *Set Mark* button to create "mark". Push the *Undo To Mark* button to undo all operations performed after the "Mark" was set.
WARNING: Using the *Undo To Mark* button to undo ORD modeling operations may crash the software.

Sheet Border Text Fields: In the upper-right corner of Sheet Borders, text fields are used to automatically populate the Project Number, Sheet Number, and NPS PMIS information. The Project Number and NPS PMIS information is linked to the project WorkSet, see *2D.1 Create WorkSet Properties for Sheet Borders – Workflow*. The Sheet Number text field is linked to the Sheet Index. See *18A – Introduction to the Sheet Index*.

Sheet Model : A 2-dimensional model that represents a single sheet in a plan set or exhibit. *Sheet Models* are printed to create plan or exhibit sheets. An ORD File may contain several *Sheet Models*. To show design and survey graphics, *Design Models* and *Drawing Models* are referenced into a *Sheet Model* and scaled down to fit on a sheet of paper. For more information, see *Chapter 14 – Plan Sheet Production*.

Sheet Index: In ORD, the Sheet Index is a menu used to organize sheets and assign sheet numbers. See Explorer for an expanded definition of the ORD Sheet Index. In civil design nomenclature, a Sheet Index is a listing of sheets for the plan set.

Slope Stake Limits: Slope Stake Limits refers to both the Cut and Fill lines generated by a Corridor or Linear Template.

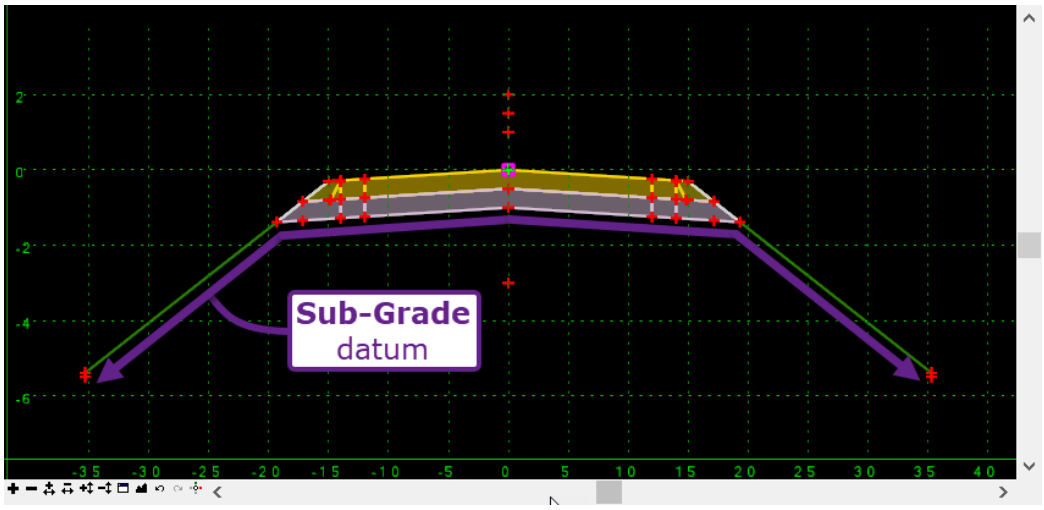
Snaps: Also referred to as AccuSnaps. Snaps are used locate a precise point an element. AccuSnaps are discussed in *7B.1 AccuSnap Settings*.

Source Features (Terrain Model Property): Source Features are elements used to create a Terrain Model. Source Features provide horizontal and vertical definition to a Terrain Model. Example of Source Features include the Boundary element, Break Lines, Voids, and Spot Elevations. For more information, see *11B.4 Source Features and the Add Feature tool*.

Standard Road Template: Standard Road Templates are pre-made road Templates found in the FLH Template Library. If possible, modify a Standard Road Template to meet project conditions instead of creating a road Template from scratch. For more information, see *8B.2 The FLH Template Library*.

Stroking Definition: Stroking Definition is a property only available to 2D Elements that contain an Active Profile. The Stroking Definition sets the interval frequency for Linear Templates created from the 2D Element. For more information, see *11A.3.b Linear Template TIP: Modify the Linear Template Interval Frequency*. Also, Stroking Definition effects elements used in Terrain Model creation. The Stroking Definition sets the default spacing for triangles.

Sub-Grade: In this manual, the term sub-grade refers to the datum formed by the string of Template Points at the bottom of the Template. End Condition points are included in the sub-grade datum. Cut/Fill calculations analyze the volume between the Existing Ground Terrain Model and the sub-grade.



Superelevation Lane: An element used in Corridor Superelevation. In the graphics, a Lane element is shown as a color-graded strip, with each color representing a different superelevation cross-slope value. Each Lane element represents a specific segment of the Template to be superelevated. For example, for a 2-lane road (with no shoulders), there should be two Superelevation Lane elements. For a 2-lane road with shoulders, there should be four Lane elements (an additional Lane element for each shoulder). For more information, see *Chapter 10 – Superelevation*.

Superelevation Section: Superelevation Section element controls the calculation parameters for Superelevation Lane elements. A Superelevation Section appears as a rectangular element positioned around a section of the Alignment. Typically, create a Superelevation Section for each curve in the Alignment. For more information, see *Chapter 10 – Superelevation*.

Surface Template: Surface Templates are used to created modeling that are non-linear in nature. Before creating a Surface Template, a proposed Terrain Model must be created. Surface Templates apply material depths to a Terrain Model. For example, a Terrain Model can be created to represent the finished grade surface of a parking lot. A Surface Template is applied to the Terrain Model to model the parking lot pavement section (i.e., 4" of asphalt over 6" of aggregate). For more information, see *11A.2 Surface Templates and Terrain Models – Process Overview*.

Survey ORD File: See ORD File.

Survey Units: There are two types of Survey Units used for FLH projects: **Survey Feet** and **International Feet**. The state which the project is located determines the Survey Units. International Feet units are used in the following states: Arizona, Michigan, Montana, North Dakota, Oregon, and South Carolina. Survey Feet are used in all other states. When creating a new ORD File, the Seed File establishes the Survey Units used in the new ORD File. ***NOTE:*** A Survey Foot = 0.3048006096… meters. An International Foot = 0.3048 meters.

> ***WARNING:*** Beginning on 01/01/2023 all FLH Projects will use International Feet. Survey Feet will NOT be used on ANY projects after this date.

Symbology (Attributes): The term Attributes or Symbology refers to the Level, Color, Line Style, and Line Weight properties for an element.

Synchronize with (Template) Library: If a Template is edited in the project Template Library, then the *Synchronize with Library* tool must be used to update the corresponding Template used in the Corridor. For more information, see *9E.8 Synchronize with Library tool*.

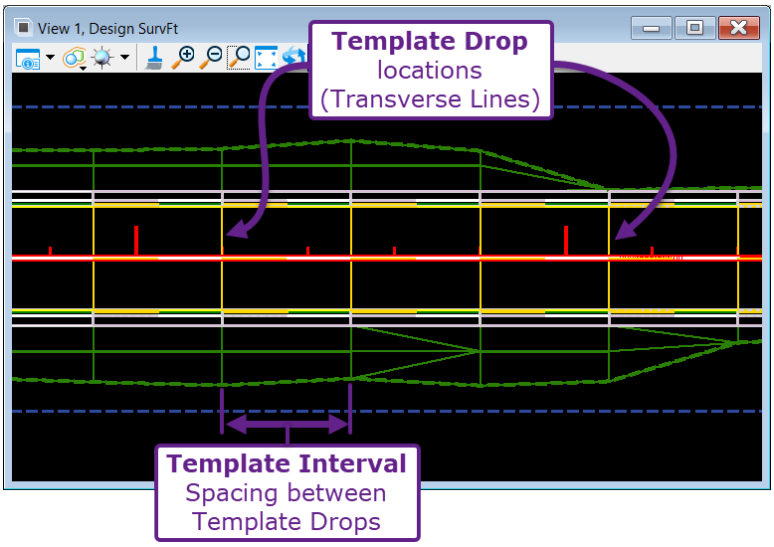
T

Target Aliasing: The Target Aliasing tool is used to specify multiple targets for the Corridor. By default, End Condition Template Points (i.e., Cut/Fill) will seek out the active Terrain Model (which is typically the Existing Ground). With the Target Aliasing tool, multiple Terrain Models can be targeted. Configuration of this tool allows the nearest of the two Terrain Models to be used at a particular station. For more information, see *9G.8 Target Aliasing*.

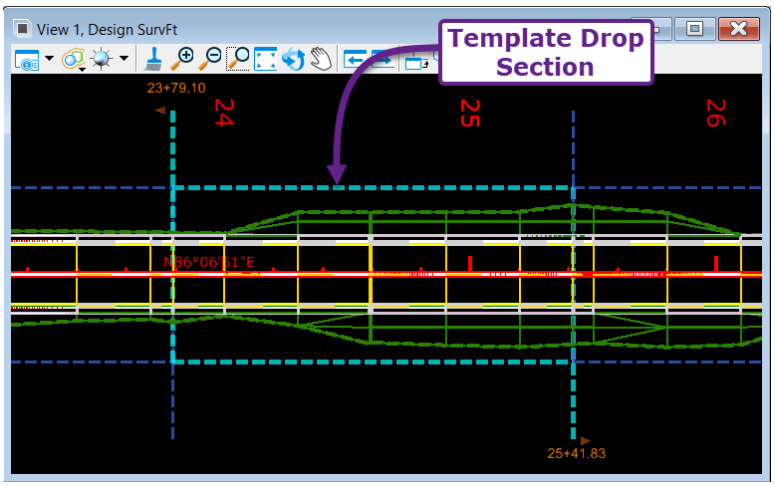
Template: A Template represents the cross-section geometry for a Corridor, Linear Template, or Surface Template. Templates are created and edited in the Template Editor. A Template is comprised of Points and Components. Template Points are created and edited to set the geometry for the Template. Template Components represent construction materials (i.e., asphalt, aggregate) in the Template. The creation and modification of Templates is discussed in *Chapter 8 – Template Library*.

Template Components: See Components.

Template Drop: A Template Drop is a station location where the Corridor Template is applied. A Template Drop location is signified by a transverse line in the Component elements. The location of Template Drops is determined by the Template Interval, the current Corridor Feature Definition, and Key Stations applied to the Corridor. For more information, see *9D.2 Corridor Feature Definitions: Design and Final*.



Template Drop Section: A Template Drop Section represents the station limits where a particular Template is used. If multiple Templates are used in a Corridor, then multiple Template Sections must be created. For more information, see *9E – Template Drops*.



Template Interval: The Template Interval determines the spacing of Template Drops. However, the Corridor Feature Definition and the presence of curves in the alignment also factor into Template Drop spacing. For more information, see *9D.2 Corridor Feature Definitions: Design and Final*.

Template Library: A Template Library is an external file with an .itl extension. A Template Library contains a set of pre-made Templates. Federal Lands Highway (FLH) has created a Template Library, which is referred to as the FLH Template Library. Instead of creating new Templates from scratch, it is recommended that a Standard Road Templates from the FLH Template Library is used and modified for project conditions.

Template Points: Template Points are created and modified in the Template Library. Template Points serve as the skeleton of a Template and Corridor. When the Corridor is created, Template Points are extruded as 2D and 3D Linear Elements. For more information, see *8A.2 Basic Parts of a Template*.

Terrain Model: A 3-dimensional element that represents an existing or proposed surface. Typically, every project contains an Existing Ground Terrain Model, which is found in the Survey ORD File. The Existing Ground Terrain Model is created by survey processors. Background information relating to the creation of the Existing Ground Terrain Model is discussed in *5A.1 How the Survey ORD/Existing Ground Terrain Model is created*.

Commonly, Surface Templates are applied to proposed Terrain Models to represent the pavement section and material depths. Manually drawing and creating a proposed Terrain Model is discussed in *11A.2 Surface Template and Terrain Models – Process Overview*. Creating a proposed Terrain Model from a Corridor or Linear Template is discussed in *Chapter 22 – Proposed Terrain Model Creation*.

Terrain Model Boundary: A closed element that represent the perimeter of a Terrain Model. In proposed Terrain Model creation, a Boundary element must be manually drawn. A Profile must be drawn and *activated* for the Boundary element. After, a Terrain Model can be created directly from the Boundary element. Creation of a basic Terrain Model Boundary is shown in *11A.2.a Creating Basic Terrain Models form an Enclosed Shape*.

Terrain Model Master Level and Sub-Levels: Terrain Models have a single Master Level which toggles ON/OFF the entire display of the Terrain Model. Also, Terrain Models contain Sub-Levels that toggle ON/OFF the display of specific components, such as major/minor contours, contour labels, and triangles. For more information, see *11B.5 Level Management for Terrain Models*.

Terrain Model Triangles: Terrain Models use triangular planes to interpolate interior elevations. Triangulation of Terrain Models is discussed in *11B.3 Triangulation of a Terrain Model*.

Text Favorites: An expression formed with Fields and conventional, static text. Text Fields are discussed in *15C.2 Text Favorites*.

Text Styles: For Text and Note elements, the Text Styles controls text characteristics, such as font, text height, color, italicization, and boldness. For more information, see *15B.4 Text Styles and Dimension Styles*. ***NOTE:*** When creating Text and Note elements, it is unnecessary to manually set the Text Style. Instead, set the appropriate Element Template before creating a Text/Note element. The Element Template will automatically set the appropriate Text Style.

Top/Bottom Meshes: A Corridor creates Top Mesh and Bottom Mesh elements that trace the top and bottom of the Template, respectively. By default, Top/Bottom Mesh elements are NOT shown. To show Top/Bottom Mesh elements, the Corridor Feature Definition must be modified. For more information, see *9I.1 Top and Bottom Meshes*.

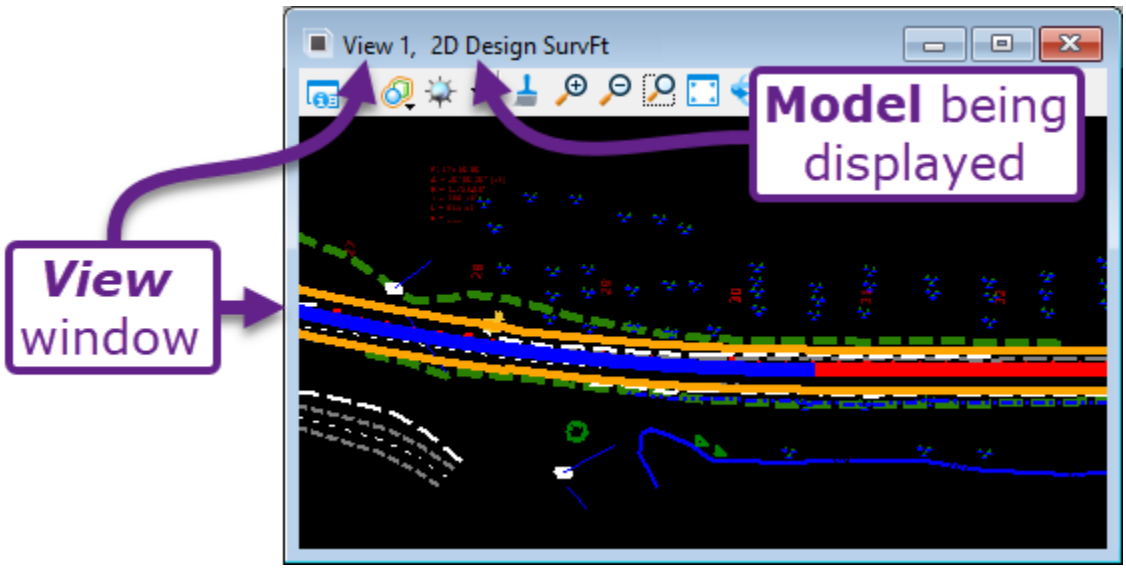
U

Unsuitable Material Meshes: Examples of Unsuitable Materials include topsoil, existing pavement, duff, and loam. When a project is constructed, unsuitable materials must be removed from the ground before earthwork (Cut/Fill) activities begin. After removing unsuitable materials, the actual ground surface may be lower than the surveyed Existing Ground Terrain Model. To address the removal of unsuitable materials in earthwork calculations, mesh elements can be created to represent areas that contain unsuitable materials. For more information, see *20E – Unsuitable Material Modeling and Calculations*.

V

Vertical (Profile) Element: Any element drawn in the *Profile Model* of a Horizontal Element. When a Vertical Element is *activated*, then it becomes associated with the Horizontal Element and a 3D Linear Element is automatically created in the *3D Design Model*. The term Vertical Element includes both MicroStation Elements and ORD Elements drawn in the *Profile Model*.

View Window: A *View* window displays a single Model contained in the ORD File. The currently displayed Model is identified in the *View* window title bar. A maximum of 8 *View* windows can be simultaneously opened. For more information on manipulating *View* windows, see *1C – Views and Models*.

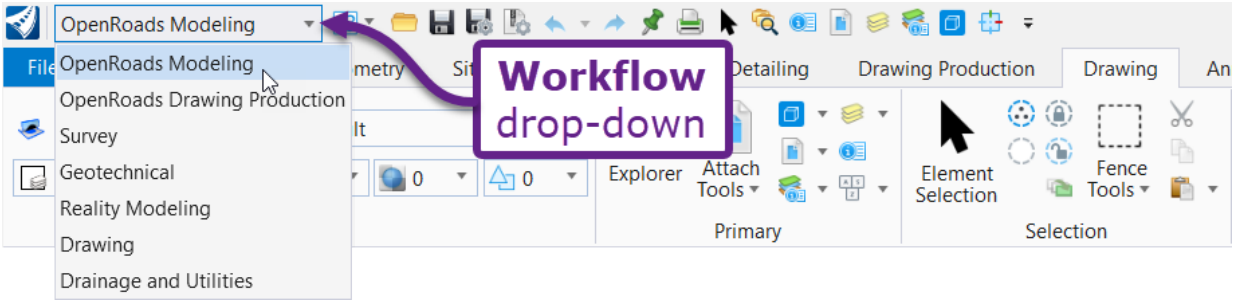


Volume Option: Volume Option is a Feature Definition property for Template Component and Mesh elements. The Volume Option property controls how Cut/Fill (Earthwork) volumes are calculated relative to the proposed Design Components/Meshes. For more information on the Volume Option, see *20G – Advanced Information: Component Feature Definition and Volume Options*.

Volumetric Template Component: In the Template Editor, Volumetric Template Components are shown as closed shapes. When the Corridor is created, the Volumetric Template Component is extruded into a 3D Volumetric Mesh. For more information, see *8A.2 Basic Parts of a Template*.

W

Workflow: The Workflow drop-down is found in the top-left portion of the Ribbon. Each Workflow corresponds with a specific functional area of the software. By switching the Workflow, a new set of **Tabs** and tools are presented. The types of tools found in each Workflow is discussed in *1B.1.b Workflows, Tabs, and Groups*. ***TIP:*** **OpenRoads Modeling** and **Drawing** are the most used Workflows.



WorkSet: Every unique project requires the creation of a WorkSet. All ORD Files are organized and assigned to the WorkSet. The WorkSet contains project specific information, such as the Project Number and PMIS Number. WorkSet Properties are linked to Sheet Borders in *Sheet Models* to auto-populate project information. For more information on setting the WorkSet before opening or creating an ORD File, see *1A.1 Opening the Software and WorkSpace/WorkSet Selection Menu* and *2B – Introduction to the WorkSpace and WorkSet*.

WorkSpace: Every ORD File is assigned to and opened with a WorkSpace. A WorkSpace contains drafting resources such as the Level library, Feature Definition Library, Cell libraries, Template Library, and Drawing Seeds for sheet production. Federal Lands Highway (FLH) has created a WorkSpace that must be used for all ORD Files. For more information, see *1A.1 Opening the Software and WorkSpace/WorkSet Selection Menu* and *2B – Introduction to the WorkSpace and WorkSet*.