



OpenRoads Designer Sheet Clipping

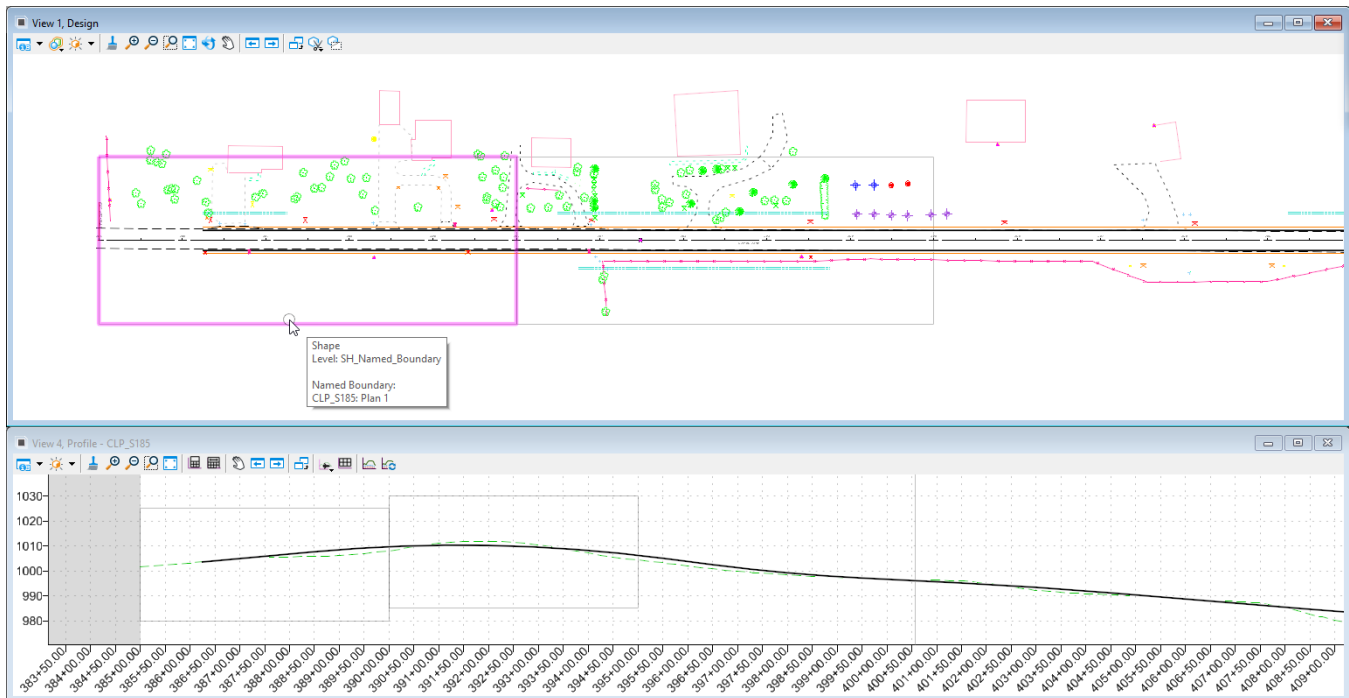
OpenRoads Software Version

This document was prepared using OpenRoads Designer CONNECT Edition –Update 3 – Version 10.03.00.43

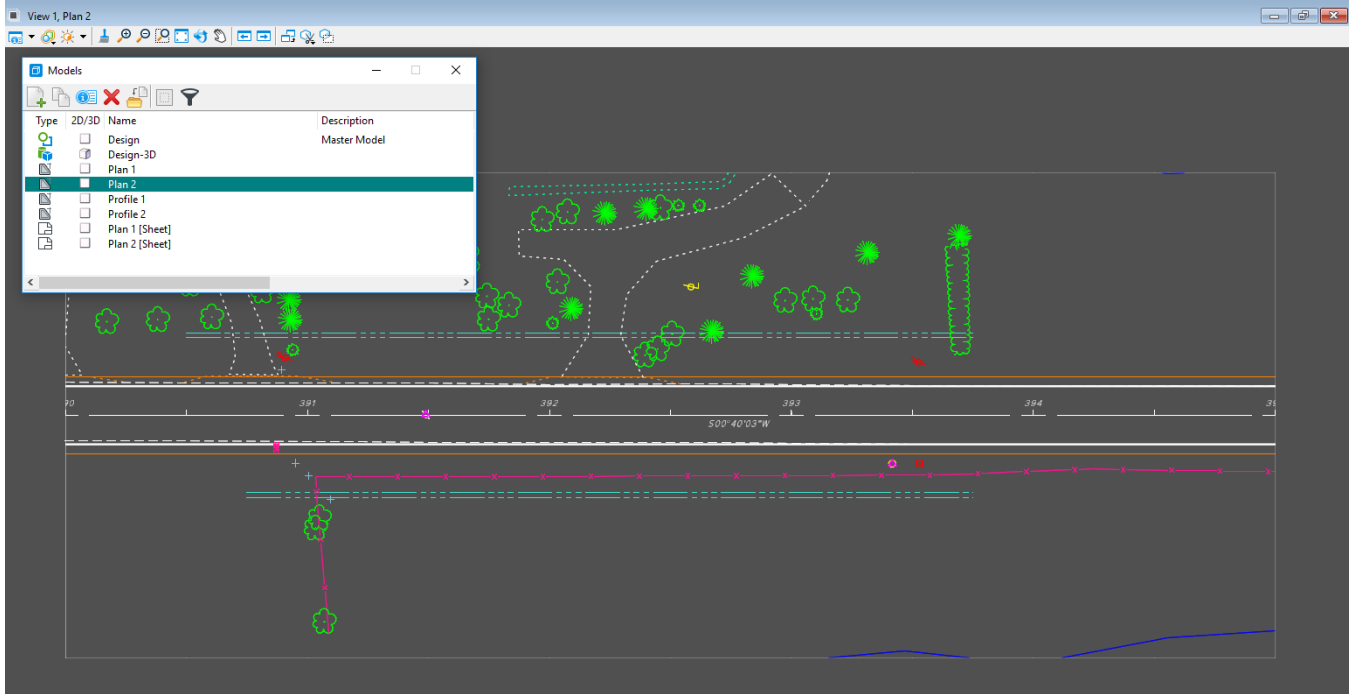
Process Overview

OpenRoads designer uses MicroStation **Named Boundaries** to define plan, profile, and cross section clipping areas. The named boundaries are placed in a design model relative to a selected alignment, profile, or 3D model for cross sections.

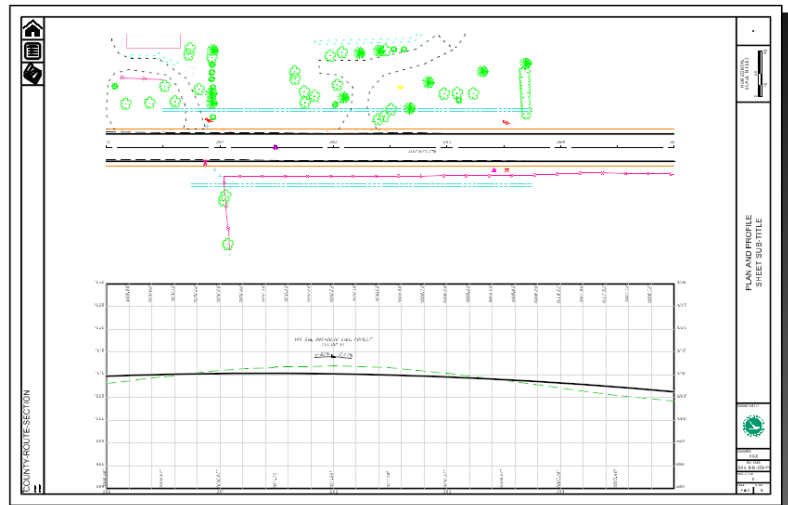
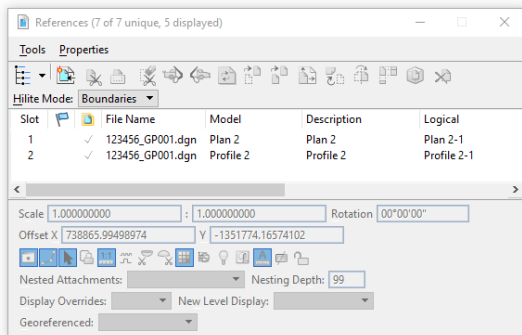
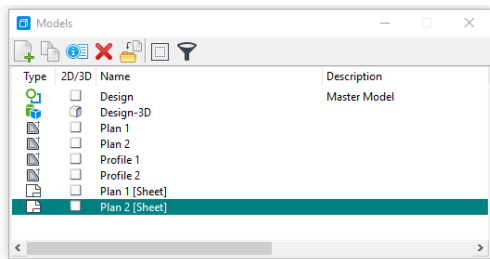
An example of the named boundaries placed for the plan and profile is shown below.



When the sheets are generated, the software creates a MicroStation drawing model for each named boundary; plan, profile, or cross section. An example of the drawing model for a plan view named boundary is shown below.



The drawing models are then referenced to a sheet model with a sheet border to assemble the completed sheet for plotting and PDF generation as shown in the example below.

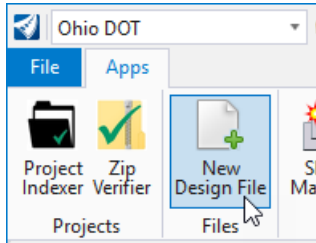


The sheet model is intended for plotting or PDF generation. Most annotations should be placed in the drawing models.

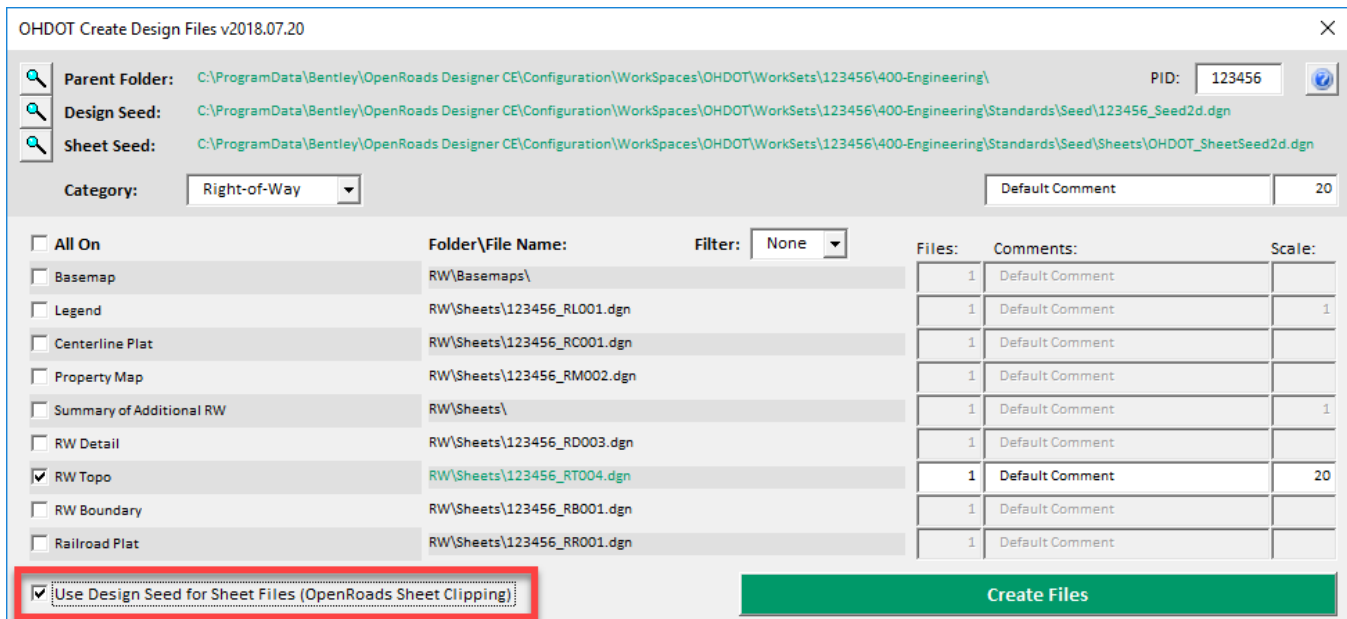


Sheet Design Files

Sheets are generated in their own design file. Sheet design files can be created using the OHDOT_Files.mvba application. The application is accessed from the Ohio DOT WorkFlow by selecting the **New Design File** icon.



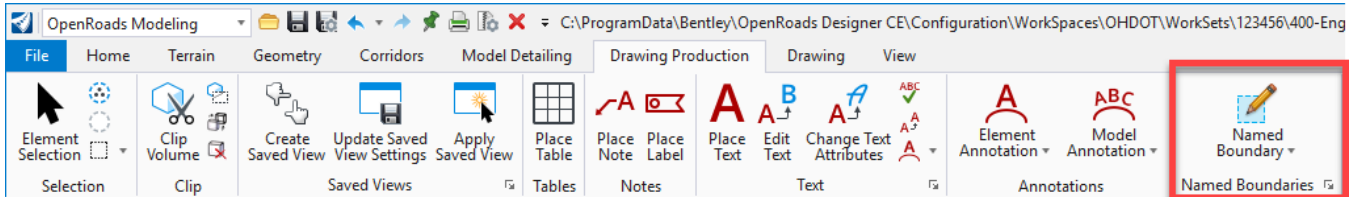
When creating sheet design files, it is important to consider the seed file that will be used to create the new file. Normally, a sheet design file is created using the **Sheet Seed** as defined by the ODHOT WorkSpace configuration. When creating design files for OpenRoads sheet clipping, it is important to use the **Design Seed**. Be sure to toggle on the **Use Design Seed for Sheet Files (OpenRoads Sheet Clipping)** option as shown below. This will ensure that the file is created with a design model instead of a sheet model. The design model is necessary for attaching the references that will be displayed in the sheets as well as laying out the named boundaries.



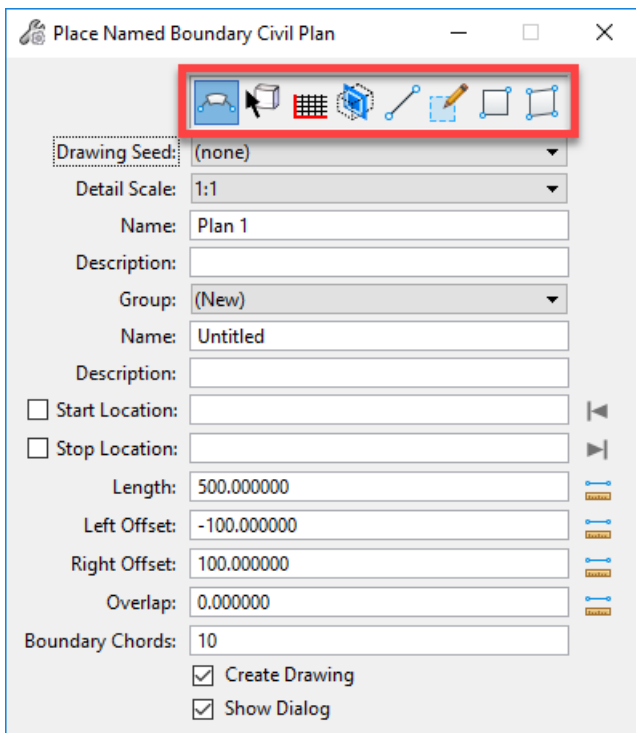


Named Boundaries

Sheets are clipped using **Named Boundary** tool. From the **OpenRoads Modeling** workflow, select the **Drawing Production** tab to access the **Named Boundary** tool as shown below.







The *Place Named Boundary Civil Plan* dialog is opened as shown below.



The top of the dialog contains several icons to select the type of named boundary that you wish to place.

The following icons will be discussed in this document:

-  Civil Plan
-  Civil Profile
-  Civil Cross Section
-  Civil Cross Section 2 Points

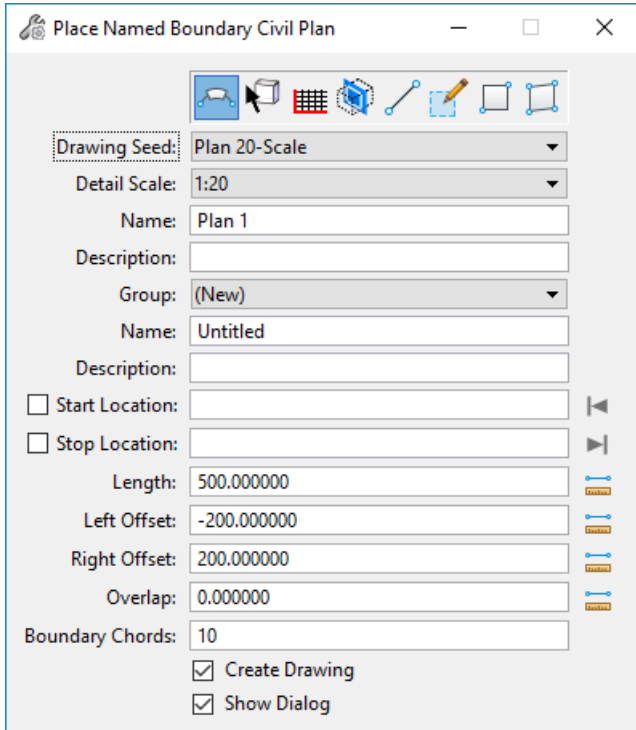
ODOT has configured several sheet clipping options for plan, profile, and cross section sheets. These configurations are stored in a MicroStation DGN Library. The Configuration files are defined in the OHDOT_WorkSpace.cfg file as follows:

```
MS_DGNLIBLIST > $(_USTN_WORKSPACESTANDARDS)Dgnlib/Sheet Seeds/*.dgnlib
```



Plan-Only Sheet Clipping

From the OpenRoads Modeling WorkFlow, select **Drawing Production > Named Boundaries**. On the *Place Named Boundary Civil Plan* dialog, select the **Civil Plan** icon.



The **Drawing Seed** item is used to select the configuration for the plan portion of the sheet. Several options are available as defined by the DGN Libraries.

For clipping Plan-Only sheets, the following options are available:

Single Plan	Dual Plan
Plan 20-Scale	Plan-Plan 20-Scale
Plan 30-Scale	Plan-Plan 30-Scale
Plan 40-Scale	Plan-Plan 40-Scale
Plan 50-Scale	Plan-Plan 50-Scale
Plan 100-Scale	Plan-Plan 100-Scale

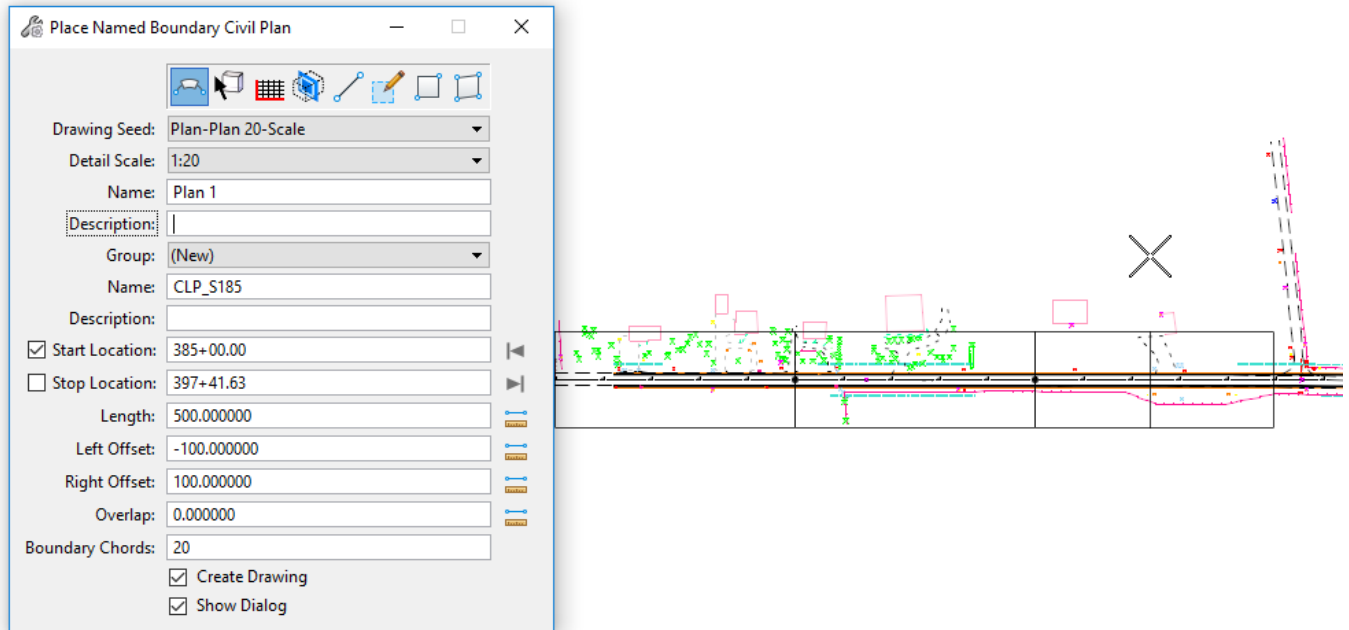
When one of the **Drawing Seed** options is selected, several parameters in the dialog are automatically configured according to the configured settings. In the example below, the value for the **Plan 20-Scale** is selected from the list. The **Detail Scale**, **Name**, **Length**, **Left Offset**, **Right Offset**, **Overlap**, and **Boundary Chords** items are set according to the selected **Drawing Seed** item. These items should typically be left to their default values.

Take the following steps to define the named boundaries for the Civil Plan:

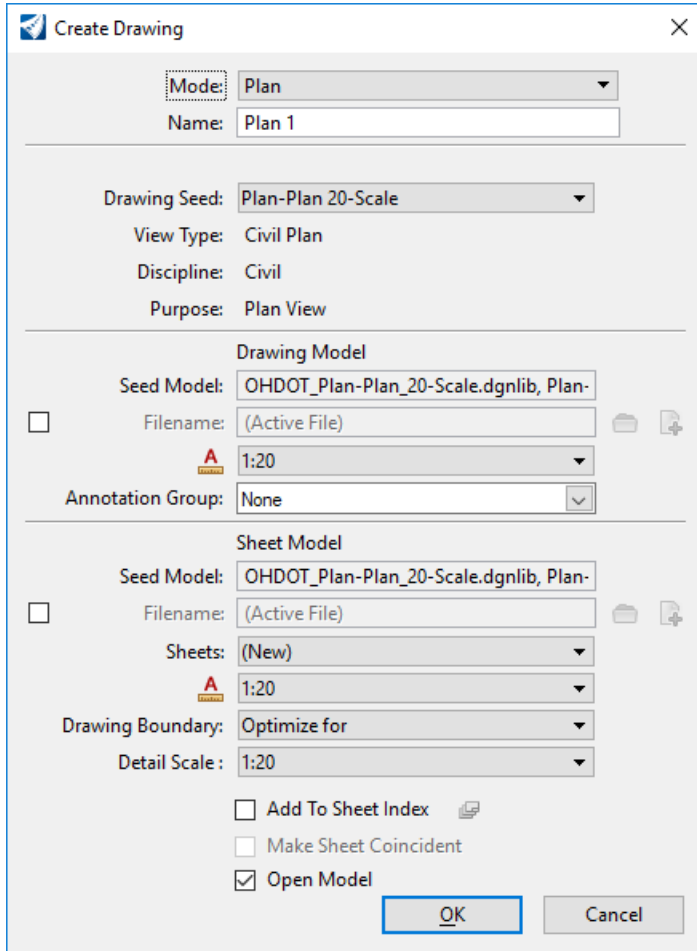
- Issue a left mouse-click in the **Start Location** Field.
- Select the desired alignment that will be used as the centerline for the sheet clipping. The **Start Location** value will dynamically change as the cursor is moved within the view window. Note that the second **Name** field will change from “Untitled”, as shown above, to the name of the selected alignment.
- Identify the desired **Start Location** by issuing a data-point within the view, by keying in a station value, or by selecting the icon to the right of the **Start Location** field to lock the starting location to the beginning of the selected alignment.
- After the **Start Location** has been established, identify the desired **Stop Location**. As the cursor is moved, the **Stop Location** will track the station value relative to the cursor position. Clipping borders are dynamically displayed as the cursor is moved. The stop location can be entered by issuing a right-mouse



click in the view, keying in the desired station, or by selecting the icon to the right of the **Stop Location** field to lock the ending location to the end of the selected alignment. Note that the last sheet will always assume the value of the **Length** field even if the stop location is not equal to the **Length** value. An example is shown below.



- After the start and stop locations have been defined, issue a left mouse-click in the view to continue the process. Note that it takes a total of three mouse clicks to continue.
- The *Create Drawing* dialog is opened as shown on the following page.



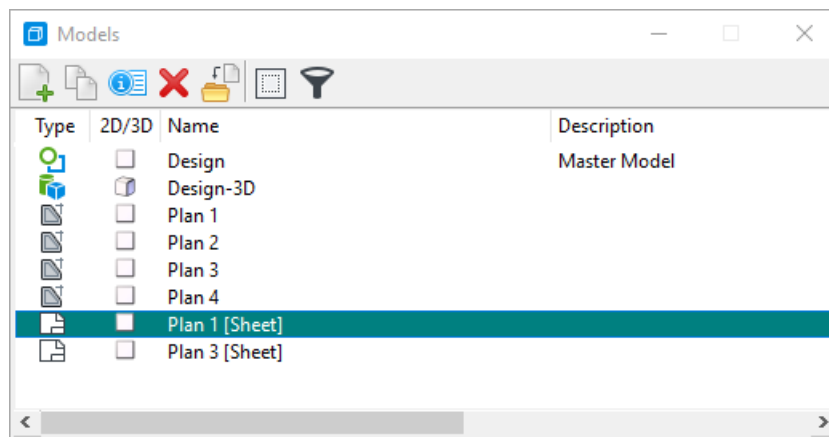
The parameters for the *Create Drawing* dialog have been predefined in the DGN Library for the selected **Drawing Seed**. It is not necessary to make any adjustments to the settings in this dialog.

Select **OK** to continue the sheet clipping process.

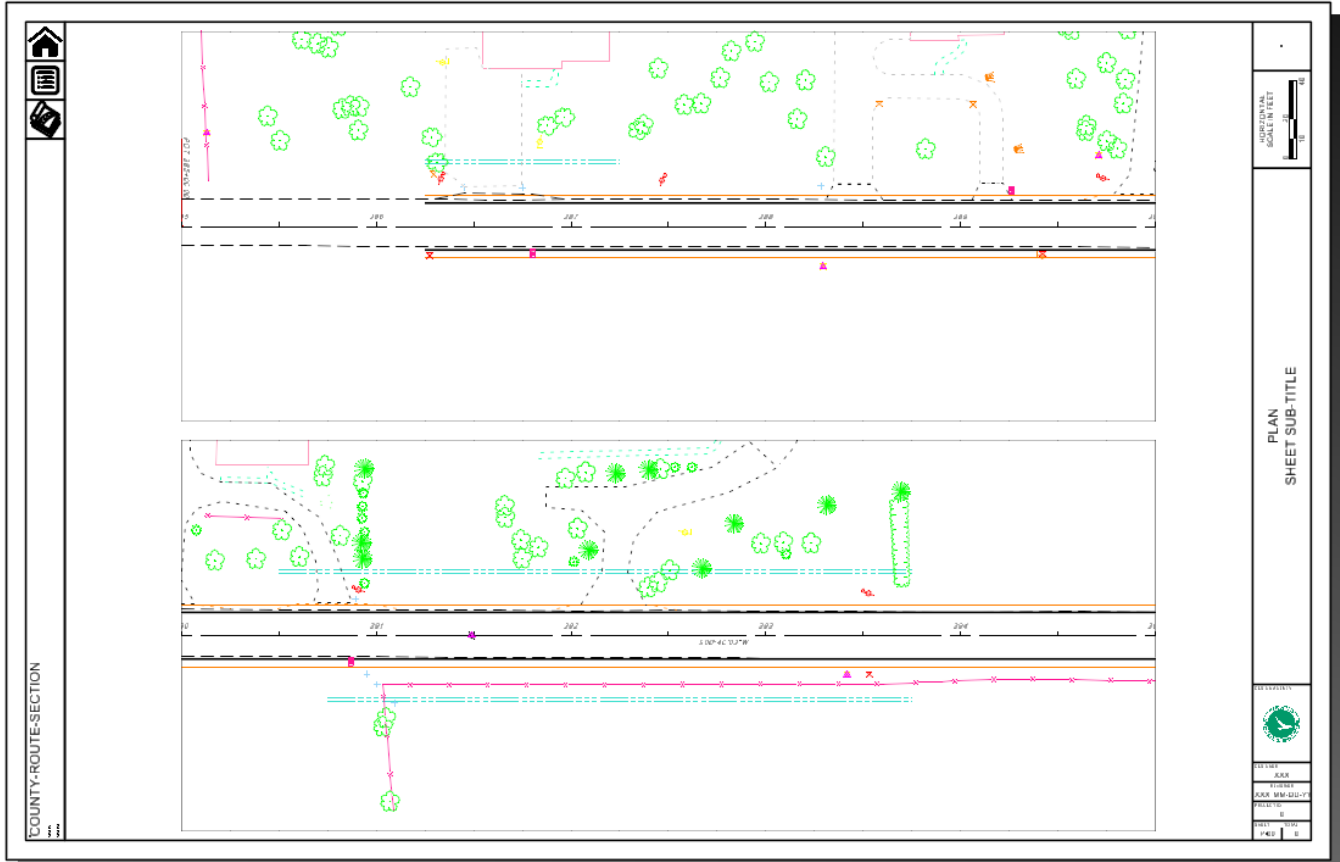
Note: In this release, the **Annotation Group** for the plan view **Drawing Model** is not supported by Bentley. This will allow annotating various plan view items such as match lines, north arrows, etc. It is necessary to manually generate these annotation items with the current release of the software. This option will be configured in a future release of the software.

After selecting **OK**, the software generates a drawing model for each named boundary. The drawing models are attached as references to a sheet model to generate the sheets.

An example of the models generated for a Plan-Plan sheet configuration is shown below.



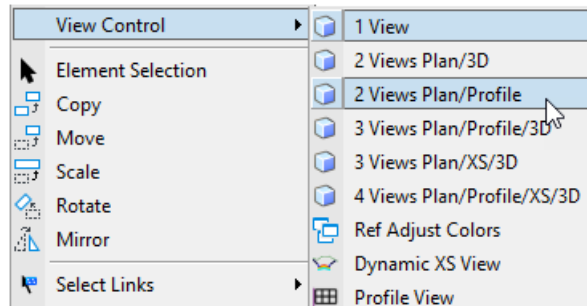
An example of the completed sheet is shown on the following page.





Plan-Profile Sheet Clipping

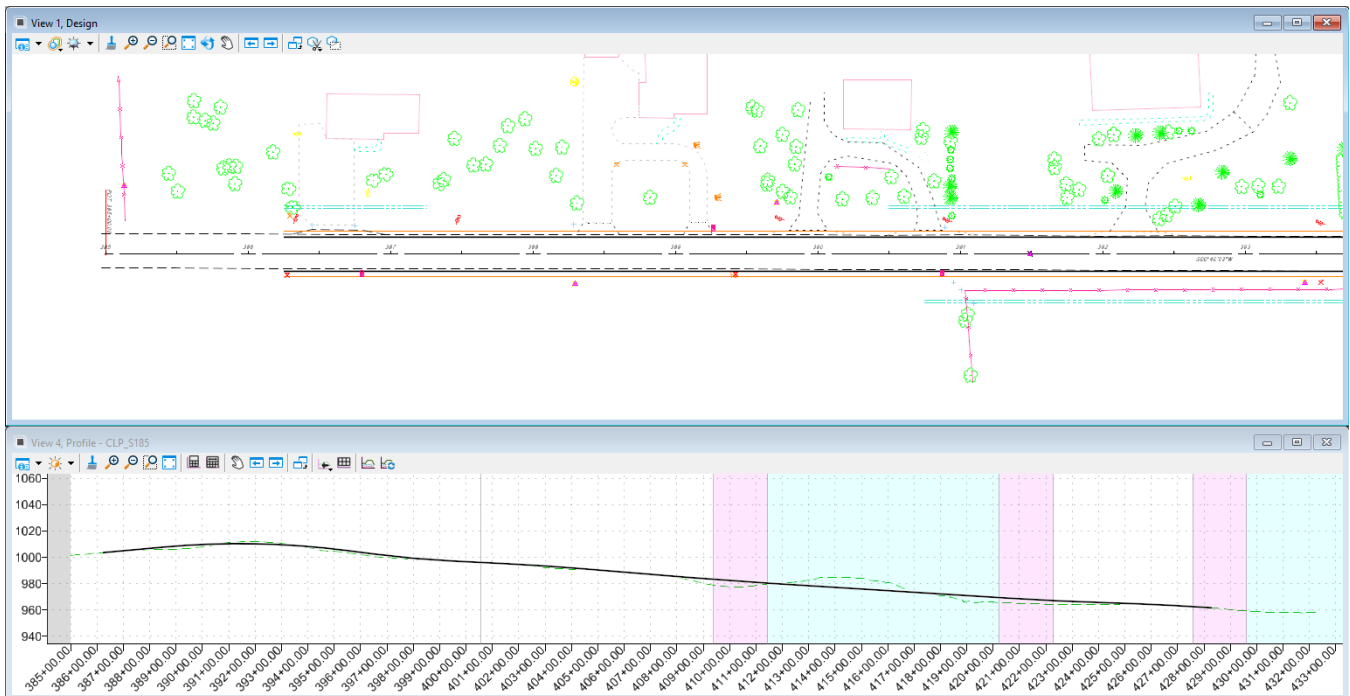
Plan and profile sheet clipping starts by configuring the MicroStation view windows to display both plan and profile information. This is facilitated using the right-mouse button menu. Hold down the right mouse button with the cursor positioned in a MicroStation view window until the pop-up menu appears. Select the **2 Views Plan/Profile** option as shown below.



Follow the prompts, listed below, to open a profile window.

- Select OK to Create a Dynamic Profile View
- Locate Plan Element
- Select or Open View

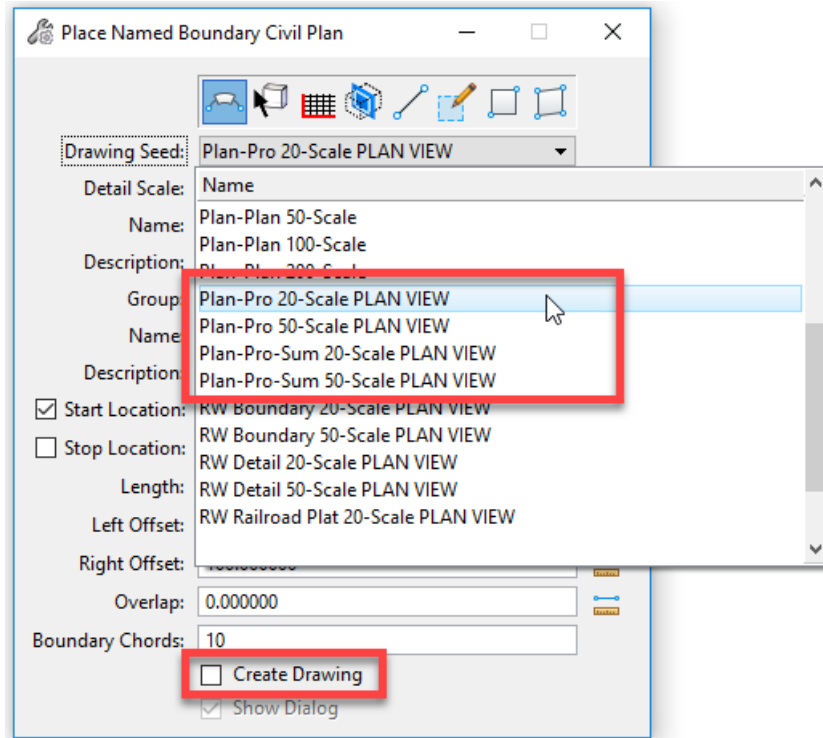
When complete two view windows displaying the plan and profile are opened similar to the example below.





The named boundaries for plan and profile sheet clipping will be placed as two separate actions. From the **OpenRoads Modeling WorkFlow**, select **Drawing Production > Named Boundary** to initiate the process. The *Place Named Boundary Civil Plan* dialog is opened.

Select the first icon, **Civil Plan** to begin the process of placing the plan view named boundaries. The **Drawing Seed** is used to select the configuration for various plan view named boundaries. As of this writing, four options are available to define the plan portion of the plan and profile sheet clipping.



Selected the desired option for the plan sheet type that you wish to create. The following options are currently available for plan and profile sheet clipping

The process to create the named boundaries for the plan view is the same as described previously in this document, with one significant difference.

- Be sure to toggle off the **Create Drawing** option before placing the named boundaries as shown above. To clip plan and profile sheets, you will also need to also create the profile named boundaries before creating the drawings.

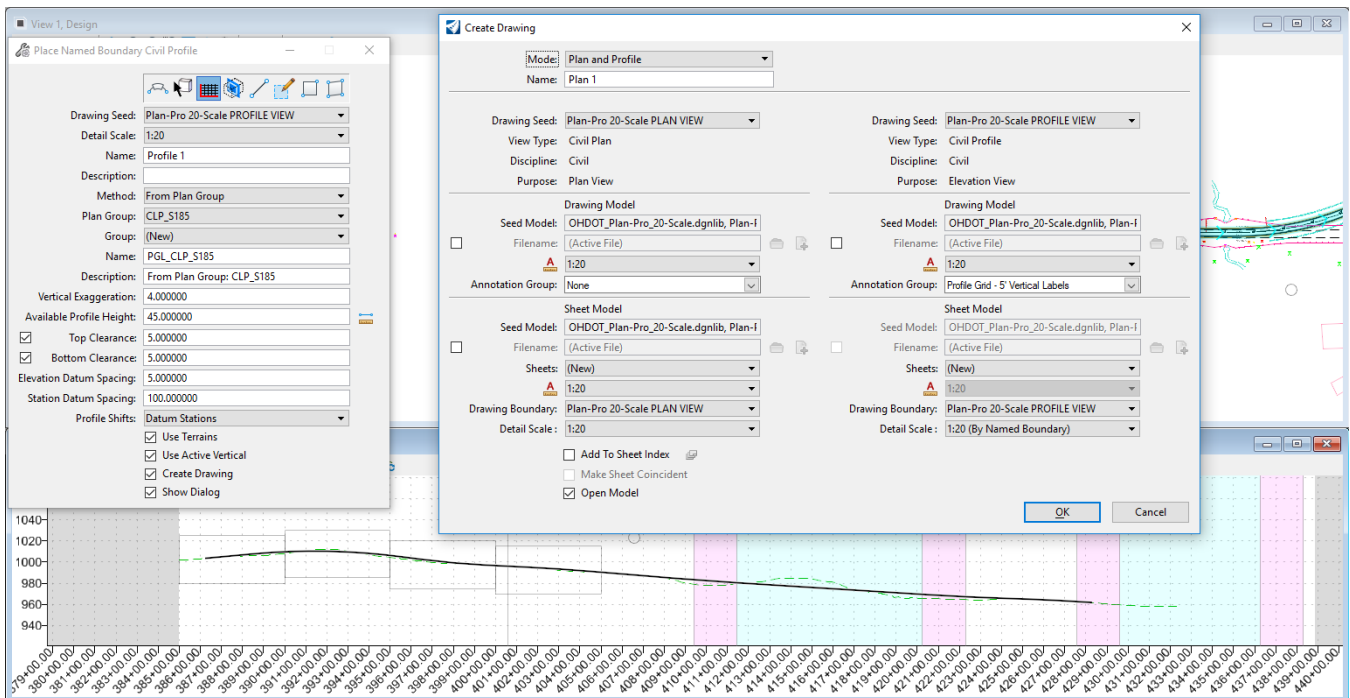


After the named boundaries for the plan view have been placed, take the following steps to create the named boundaries for the profile view.

- From the **OpenRoads Modeling WorkFlow**, select **Drawing Production > Named Boundary** to initiate the process. The *Place Named Boundary Civil Plan* dialog is opened.
- Select the third icon, **Civil Profile** to begin the process of placing the plan view named boundaries
- Select the **Drawing Seed** that corresponds to the previously selected plan view drawing seed. The table below lists the appropriate profile drawing seed to be used with the plan view drawing seed.

Plan view Drawing Seed	Corresponding Profile View Drawing Seed
Plan-Pro 20-Scale PLAN VIEW	Plan-Pro 20-Scale PROFILE VIEW
Plan-Pro 50-Scale PLAN VIEW	Plan-Pro 50-Scale PROFILE VIEW
Plan-Pro-Sum 20-Scale PLAN VIEW	Plan-Pro-Sum 20-Scale PROFILE VIEW
Plan-Pro-Sum 50-Scale PLAN VIEW	Plan-Pro-Sum 20-Scale PROFILE VIEW

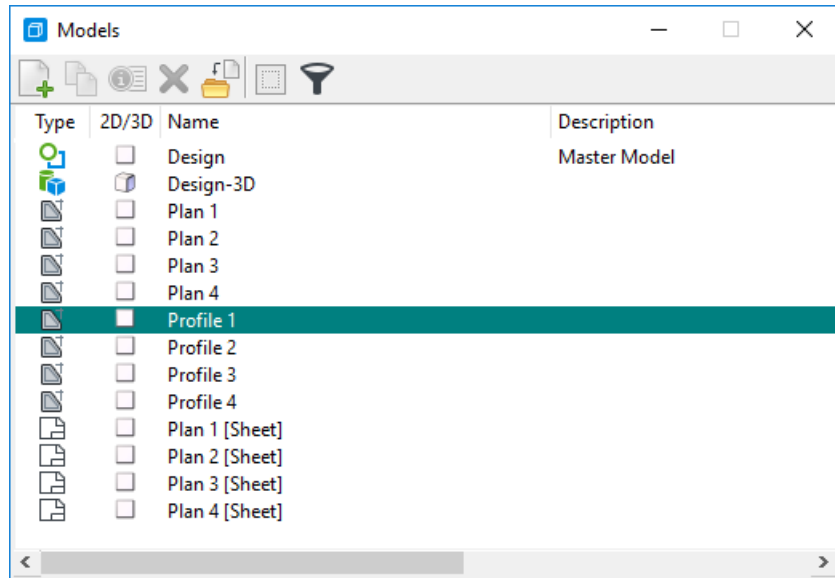
- Toggle on the **Create Drawing** option
- The settings for the remaining dialog items are all configured according to the selected **Drawing Seed** and do not need any adjustments.
- Issue a left mouse-click in the profile view. The named boundaries for are displayed in the view. Issue a second left mouse-click to accept the named boundary placement. The boundaries are drawn in the profile view and the **Create Drawing** dialog is opened.



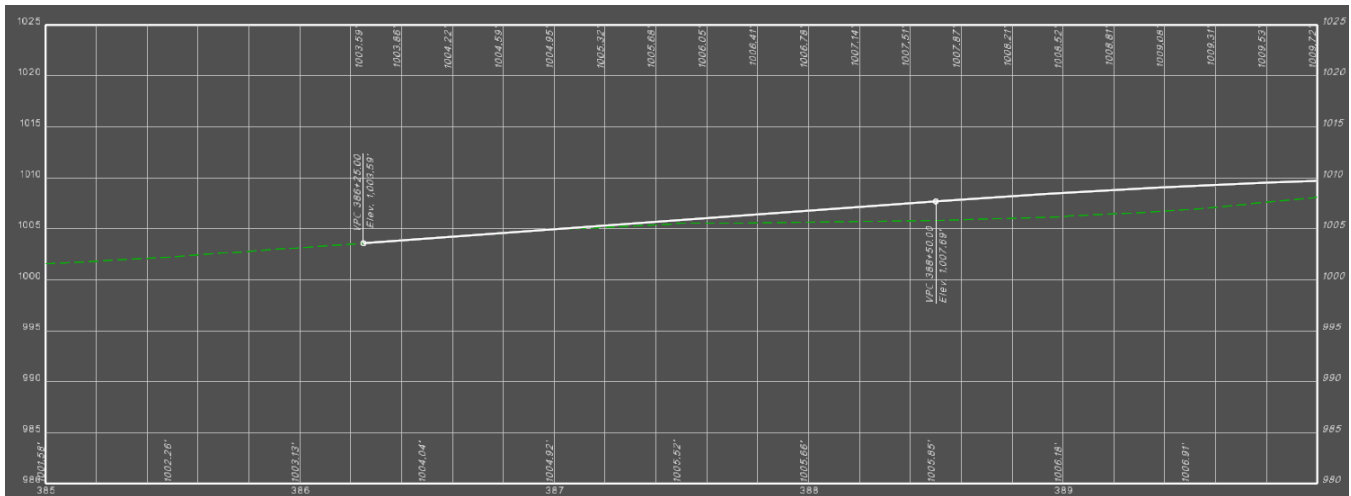


- The values and parameters in the *Create Drawing* dialog are set according to the selected **Drawing Seed** for the plan and profile and do not need to be adjusted
- Select **OK** to initiate the process.

A drawing model is created for each plan and profile named boundary. A sheet model is created for each sheet, which is assembled by referencing the appropriate plan and profile drawing models. An example of the models created shown below.



The drawing model for the profile contains the grid lines and annotation, like the example below.



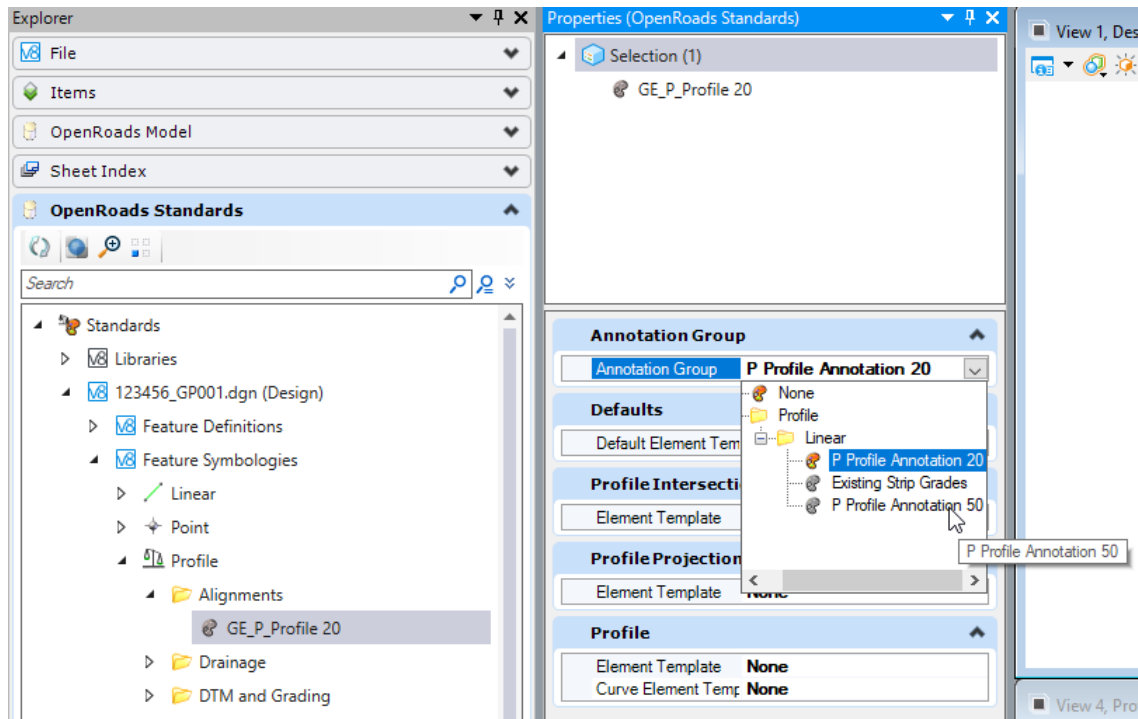


Note: The annotation for the proposed profile elevations is controlled by the Feature Definition assigned to profile itself. This feature definition defaults to 20' increments as shown above. This may not be desirable 50-Scale plan and profile sheets and can be changed by the user after the drawing models have been created. Take the following steps to adjust the proposed elevation spacing:

- Activate the Design Model
- Open the *Project Explorer* dialog
- From the *Project Explorer*, select the **OpenRoads Standards** tab. Expand the active design file to select the **Feature Symbolgies > Profile > Alignments > GE_P_Profile 20** option

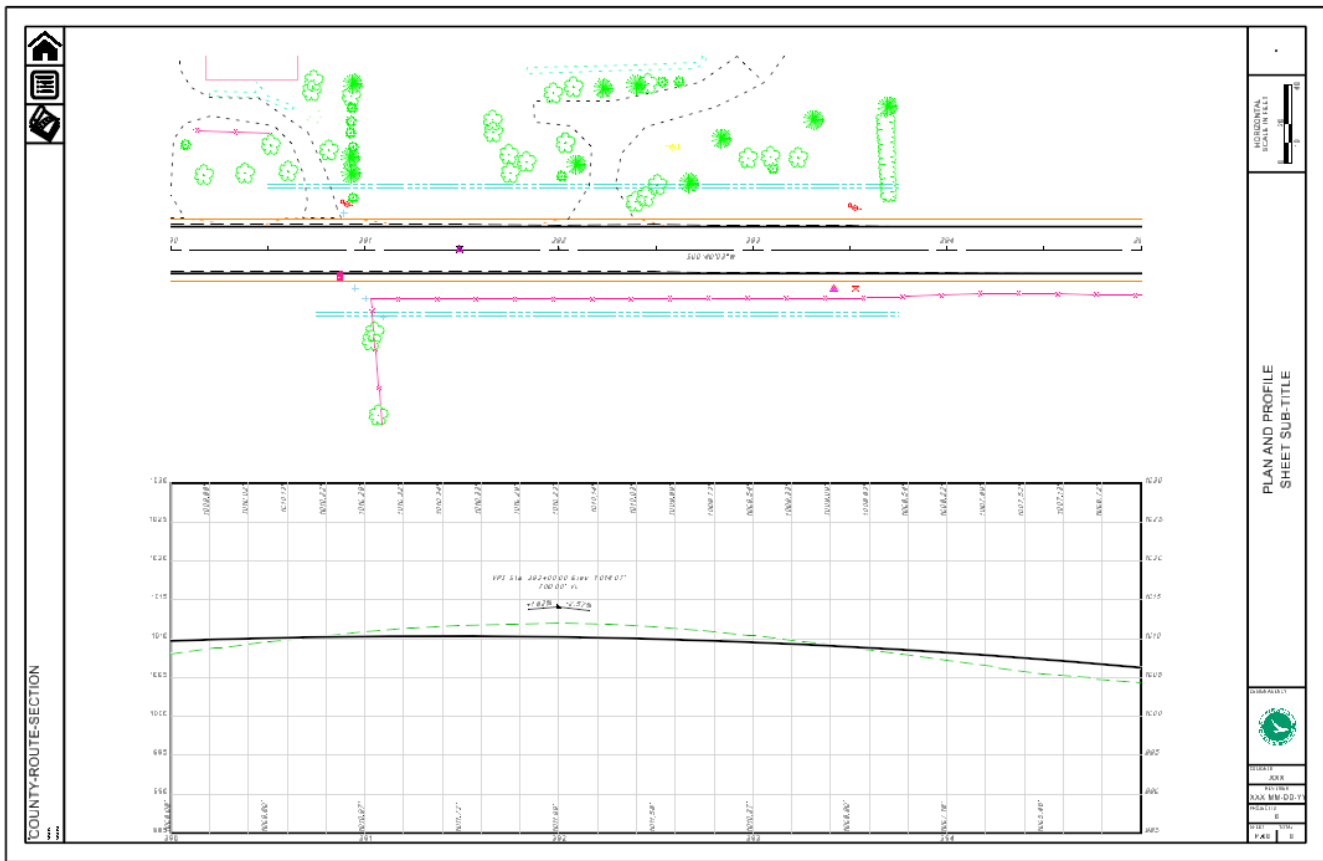
Note, if the feature symbolgies are not listed it is necessary to close and re-open the file

- Right click on the **GE_P_Profile 20** item and choose the **Properties** option
- Change the **Annotation Group** to the **P Profile Annotation 50** option as shown below



- Each of the profile drawing models is updated according to the selected annotation group
- Reopen one of the profile drawing models to verify the change

An example of a completed plan and profile sheet is shown on the following page.





Profile-Profile Sheet Clipping

Options are available to clip a sheet containing a continuous profile across the top and bottom of a sheet using the Pro-Pro drawing seed options. Two options are currently available:

- Pro-Pro 20-Scale PROFILE VIEW
- Pro-Pro 50-Scale PROFILE View

The process is like creating named boundaries for the profile view detailed above. The differences are detailed below:

- Set the **Method** to **Station Limits**
- Left-click in the **Start Location** dialog item
- Identify the profile view by issuing a left mouse-click in the profile view
- Issue another left mouse-click in the profile view to accept the profile. As you move the cursor in the profile view the named boundaries are dynamically drawn corresponding to the **Start Location** and the cursor position. The **Start Location** can be set by keying-in a value or by selecting the icon to the right of the **Start Location** to lock it to the beginning of the profile
- Set the **Stop Location** by issuing a left mouse-click in the profile window, keying in a value, or selecting the icon to the right of the **Stop Location** to lock it to the end of the profile
- The remaining parameters are set according to the selected **Drawing Seed** and are not normally changed
- Issue another left mouse-click in the profile view to initiate the process. The *Create Drawing* dialog is opened.
- The value and parameter settings on the *Create Drawing* dialog are set according to the **Drawing Seed** and should not normally be changed
- Select **OK** to create the sheets

An example of the dialog settings, and a completed sheet, is shown on the following page.

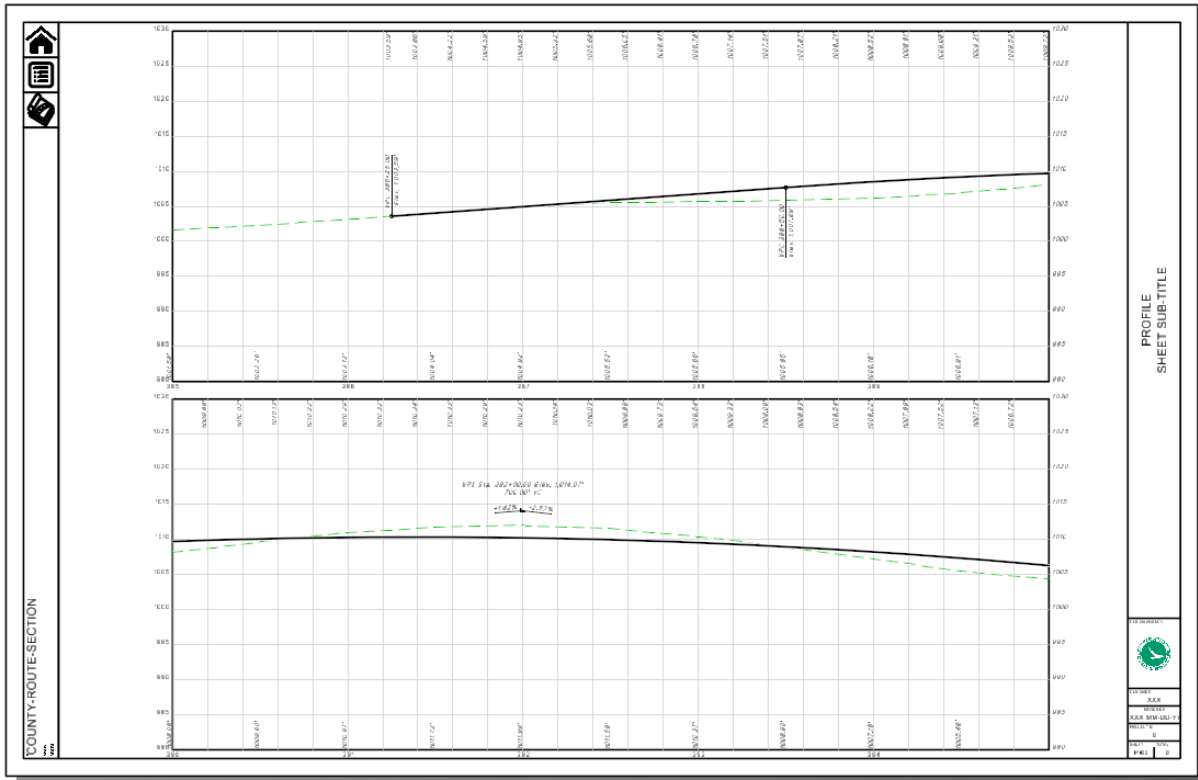


Place Named Boundary Civil Profile

Drawing Seed: Pro-Pro 20-Scale PROFILE VIEW
Detail Scale: 1:20
Name: Profile 1
Description:
Method: Station Limits
Group: (New)
Name: PGL_CLP_S185
Description:
 Start Location: 385+00.00
 Stop Location: 428+27.30
Length: 500.000000
Vertical Exaggeration: 4.000000
Available Profile Height: 50.000000
 Top Clearance: 5.000000
 Bottom Clearance: 5.000000
Elevation Datum Spacing: 5.000000
Station Datum Spacing: 100.000000
Profile Shifts: Datum Stations
 Use Terrains
 Use Active Vertical
 Create Drawing
 Show Dialog

Create Drawing

Mode: Profile
Name: Profile 1
Drawing Seed: Pro-Pro 20-Scale PROFILE VIEW
View Type: Civil Profile
Discipline: Civil
Purpose: Elevation View
Drawing Model
Seed Model: OHDOT_Pro-Pro-20-Scale.dgnlib, Pro-Pr
Filename: (Active File)
Annotation Group: Profile Grid - 5' Vertical Labels
Sheet Model
Seed Model: OHDOT_Pro-Pro-20-Scale.dgnlib, Pro-Pr
Filename: (Active File)
Sheets: (New)
Drawing Boundary: Optimize for
Detail Scale: 1:20
 Add To Sheet Index
 Make Sheet Coincident
 Open Model
OK Cancel





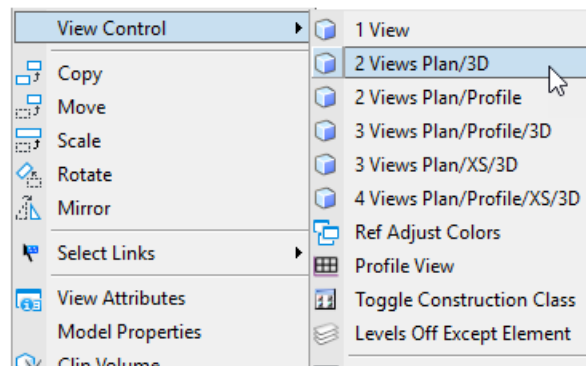
Cross Section Sheet Clipping

Cross section sheets are clipped in their own design file. Like the other sheet types, it is necessary to create the sheet file using the **Design Seed** as previously detailed in this document.

After creating the new design file for the cross section sheets, attach the references necessary to generate the cross sections. As a minimum, the following files will need to be attached:

- Survey basemap containing the existing ground terrain model.
 - **Note:** Be sure to set the existing ground as the active terrain after the file is attached. This will create a 3D model in the active cross section sheet design file
- Geometry basemap containing the alignments
- Corridor Modeling basemaps containing the applicable corridors
- Any other files that contain 3D information (utilities, etc.) that is to be displayed on the cross sections

After the references are attached, it is necessary to set the view displays to show both plan and 3D model information. This is facilitated using the right mouse-button menu. Hold down the right mouse-button with the cursor positioned in a MicroStation view window until the pop-up menu appears. Select the **2 Views Plan/3D** option as shown below.

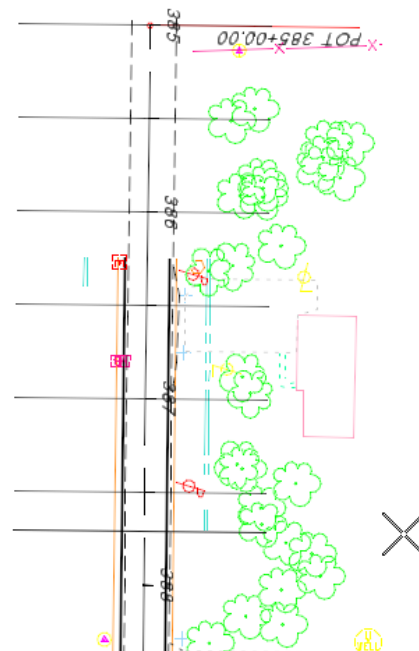
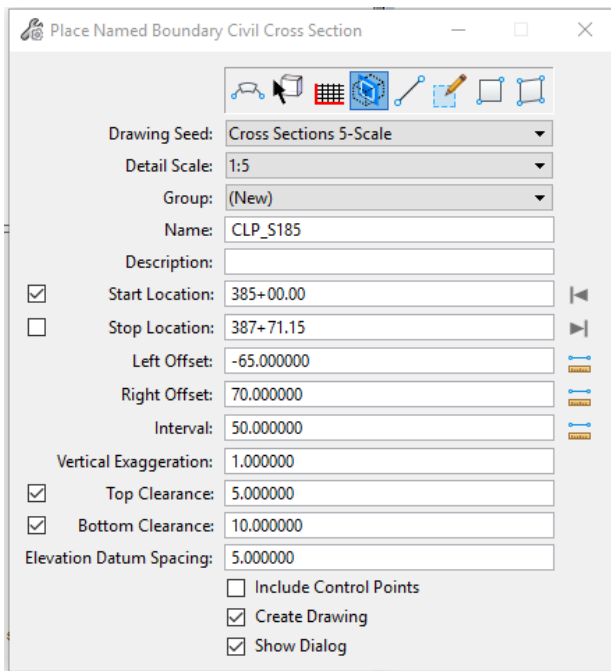


The graphics that will be displayed on the clipped cross sections are controlled by what is displayed in the 3D view. Toggle on/off the desired levels in the 3D view before proceeding.

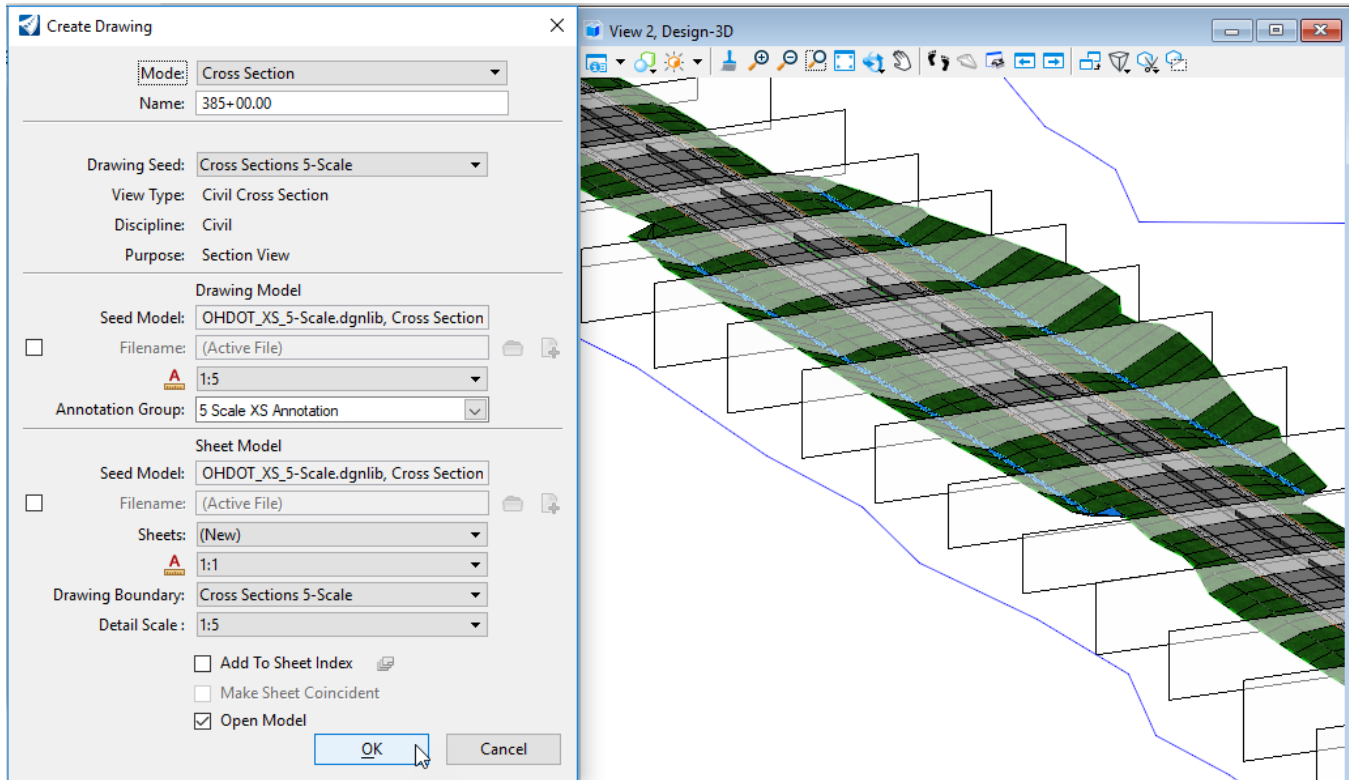
- From the **OpenRoads Modeling** WorkFlow, select **Drawing Production > Named Boundary** to initiate the process. The *Place Named Boundary Civil Plan* dialog is opened.
- Select the fourth icon, **Civil Cross Section** to begin the process of placing the cross section named boundaries. The **Drawing Seed** is used to select the configuration for various cross section named boundaries. As of this writing, two options are available to define the named boundaries for cross section sheet clipping.
 - Cross Sections 5-Scale
 - Cross Sections 10-Scale
- Issue a left mouse-click in the **Start Location** Field.



- Select the desired alignment that will be used as the centerline for the cross section clipping. The **Start Location** value will dynamically change as the cursor is moved within the view window. Note that the second **Name** field will change from “Untitled”, as shown above, to the name of the selected alignment.
- Identify the desired **Start Location** by issuing a data-point within the view, by keying in a station value, or by selecting the icon to the right of the **Start Location** field to lock the starting location to the beginning of the selected alignment.
- After the **Start Location** has been established, identify the desired **Stop Location**. As the cursor is moved, the **Stop Location** will track the station value relative to the cursor position. Clipping borders are dynamically displayed as the cursor is moved. The stop location can be entered by issuing a right-mouse click in the view, keying in the desired station, or by selecting the icon to the right of the **Stop Location** field to lock the ending location to the end of the selected alignment. An example is shown below.

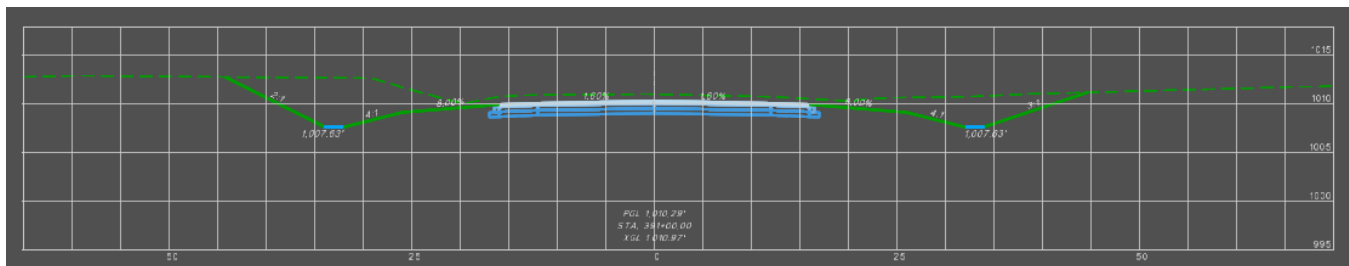


- Issue a left mouse-click to accept the **Start** and **Stop Location** values
- Issue another left mouse-click to accept the named boundary placement. Named boundaries are drawn in the 3D view representing the clipping limits for each cross section as shown on the following page.
- The *Create Drawing* dialog is opened like the example shown on the following page



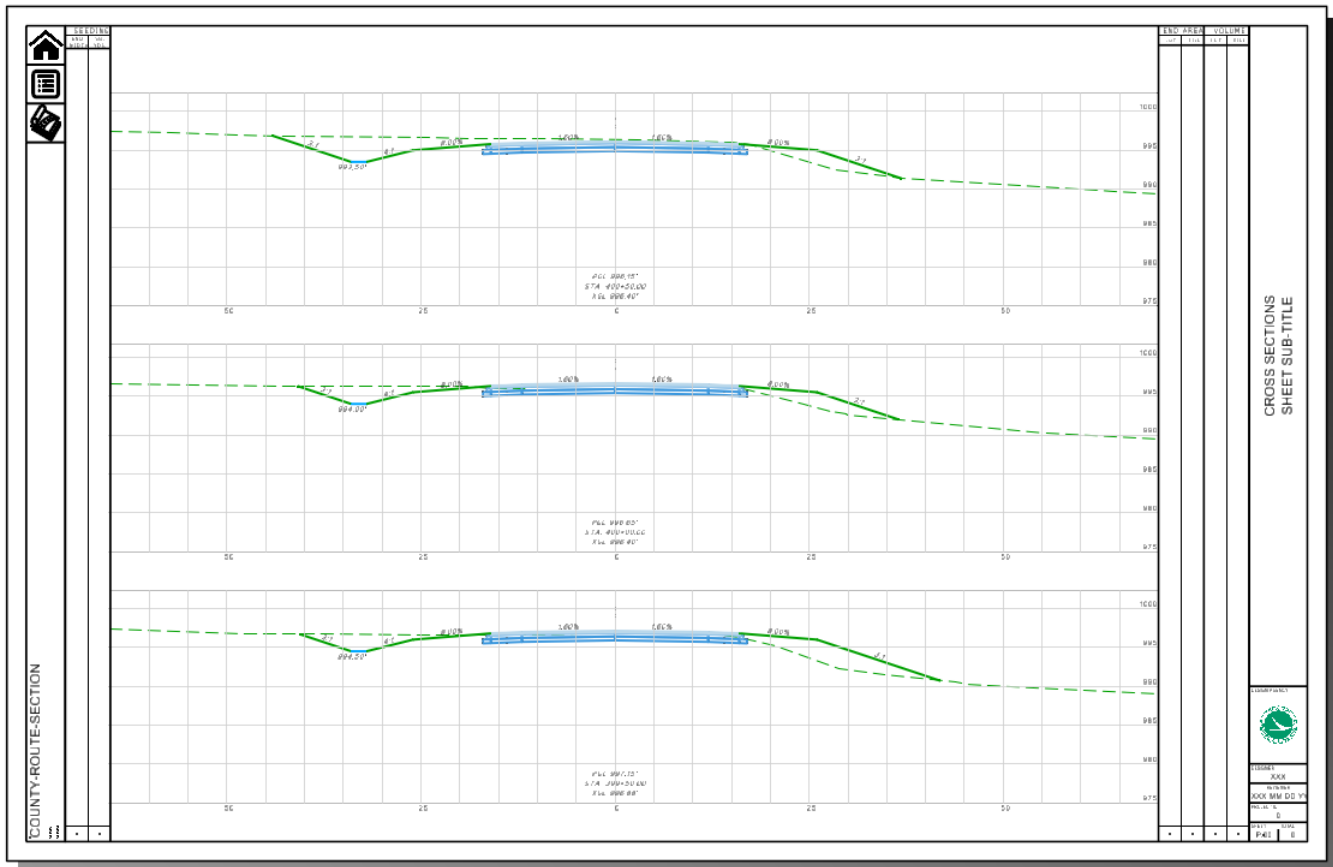
- The values and parameters are set according to the selected **Drawing Seed**. These settings are not typically changed
- The cross section named boundaries are dynamic and can be manually modified, individually, to change the range of what will be displayed in individual cross sections. These changes are typically made before clipping the sheets.
- Select **OK** to create the drawing models and sheets

Each cross section is displayed in a drawing model like the example below. The drawing model includes the grid lines and annotation for the cross section.





Sheets are created by referencing the drawing models to a sheet model with a sheet border. An example is shown below.



The software will attempt to place as many cross sections as possible on the sheets.

Note that the spacing above and below each cross section, within the grid lines, is set in the *Place Named Boundary* dialog by setting the **Top Clearance** and **Bottom Clearance** values. The default values for the bottom clearance have been set to account for the presence of underground utilities, however, the value represents a default setting and may not be appropriate for all cases.

The spacing between the cross sections is set by a configuration variable.



Adding Cross Sections at Specific Stations

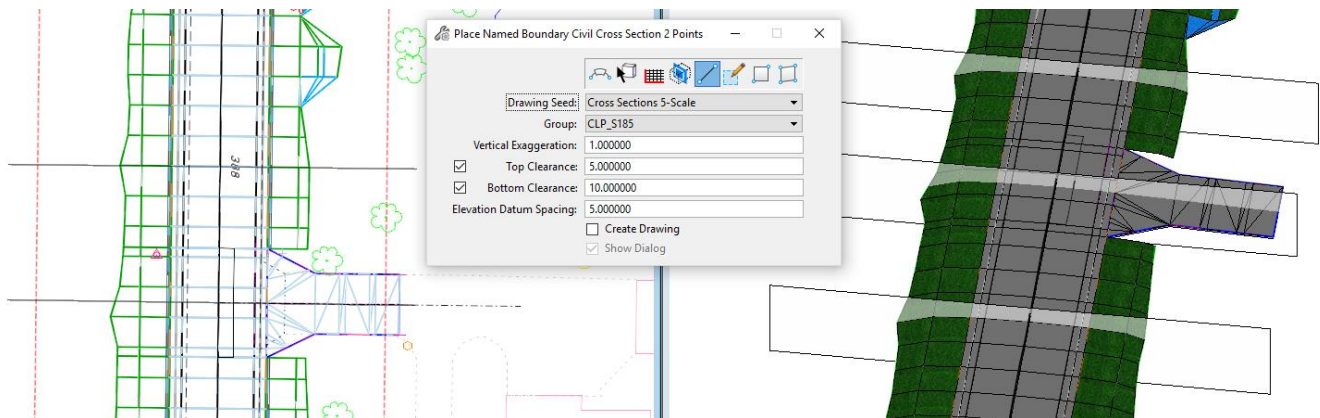
The initial cross section named boundary placement is defined by selecting an alignment and specifying an interval. Additional named boundaries for specific locations such as a driveway or a drainage structure can be inserted using the **Civil Cross Section 2 Points** option.

Additional cross section locations should be defined prior to generating the drawing models and sheets. When the initial set of named boundaries is defined for the cross sections, be sure to toggle off the **Create Drawing** option.

Take the following steps to define additional cross section named boundary locations:

- From the **OpenRoads Modeling WorkFlow**, select **Drawing Production > Named Boundary** to initiate the process. The *Place Named Boundary Civil Plan* dialog is opened.
- If multiple locations are to be defined, toggle off the **Create Drawing** option
- Select the fifth icon, **Civil Cross Section 2 Points** to begin the process of placing the cross section named boundaries
- Select the desired **Drawing Seed** for the cross section named boundaries.
- Select the **Group**. The drop-down list will include any previously defined cross section groups.
- Select the alignment for the named boundaries
- After the alignment has been identified, enter data points for the start and end of the named boundary location. A third data point is required to accept the named boundary placement
- To define additional named boundary locations, the path element (alignment) must be identified each time. Follow the prompts in the lower left corner of the MicroStation window.

In the example below, a named boundary has been added at a driveway location.

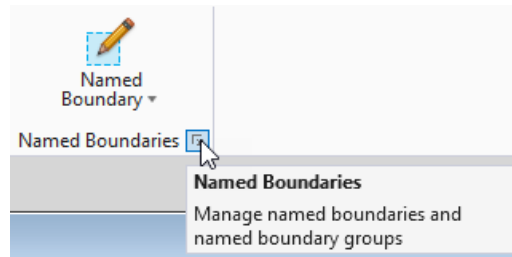


Tip: For best results, create any additional named boundaries using Civil AccuDraw to define the station and offset values for the boundary. Use the same offset values as the primary cross-sections.

- Toggle on the **Create Drawing** option prior to defining the last named boundary to launch the *Create Drawing* dialog. If you forget to toggle this option back on, the *Create Drawing* dialog can be accessed from the *Named Boundaries* dialog as described on the following page.

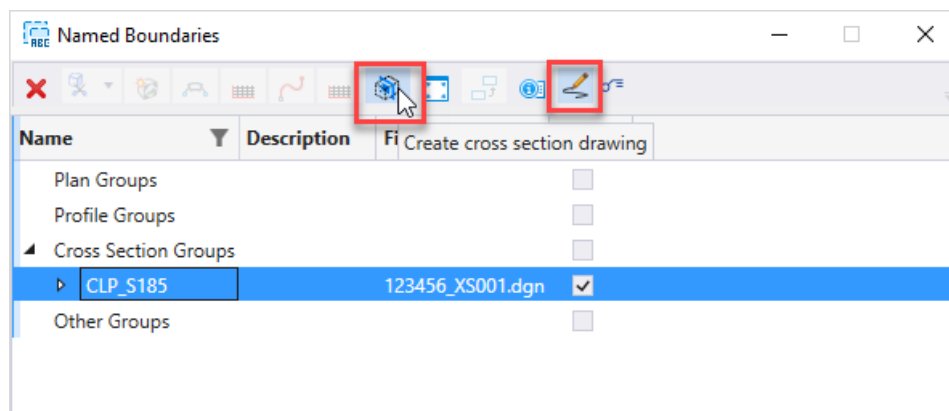


The *Named Boundaries* dialog is accessed from the OpenRoads Modeling WorkFlow by selecting **Drawing Production** and then selecting the icon on the lower right of the **Named Boundary** icon as shown below.



To create the drawings, take the following steps.

- Toggle on the **Show the Create Drawing** icon. This set is not necessary as the settings in the *Create Drawing* dialog are defined by the **Drawing Seed**
- Expand the **Cross Sections Group** item and select the cross-section group from the list
- Select the **Create cross section drawing** icon



- The *Create Drawing* dialog is opened as previously documented. Select **OK** to create the drawing and sheet models for the cross sections



Deleting and Re-Clipping Sheets

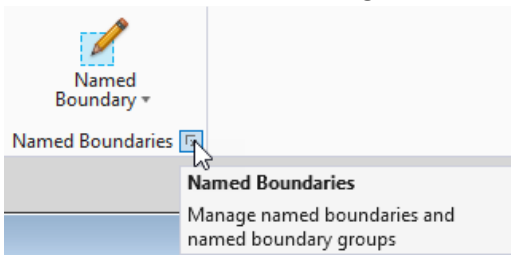
Typically, the default parameters for the various sheet types and Drawing Seeds will yield the desired results. In some cases, the user may wish to delete the sheets and re-clip them by adjusting some of the parameters. Sheets can be deleted as follows:

Delete all the drawing and sheet models

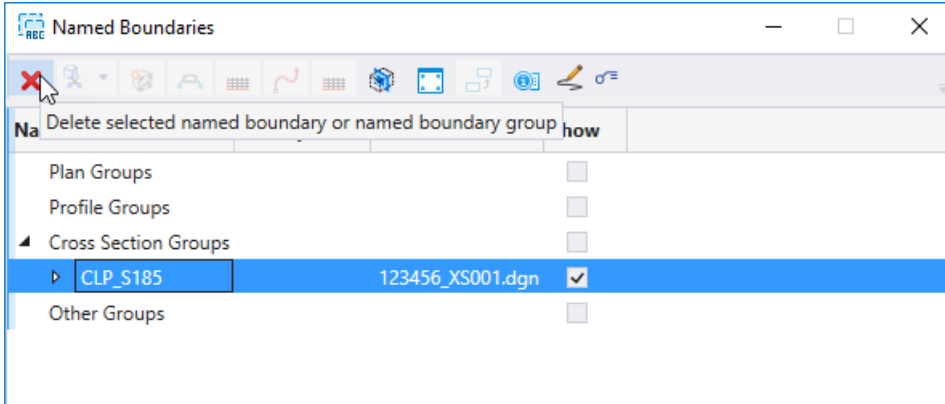
- Active the **Design** model
- Open the *Models* dialog
- In the *Models* dialog, select all the drawing and sheet models. Delete all these models.

Delete all the named boundaries

- Select the icon on the lower right of the **Named Boundary** icon to manage the named boundaries



- From the *Named Boundary* dialog, expand the group for the appropriate boundary type. Select the group and choose the **Delete** icon



With the named boundaries, drawing, and sheet models deleted, you can now initiate the process to re-clip the sheets.



Contacts

For any questions, suggestions, or problems with this document please contact the ODOT Office of CADD and Mapping Services by use of the following form on the ODOT website:

https://odot.formstack.com/forms/cadd_servicerequest
