



CDOT Plans Production Workflows (ORD)

April 24, 2023

Prepared For: Colorado Department of Transportation

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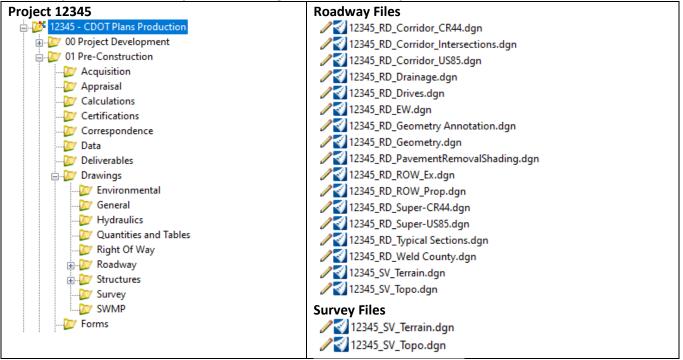
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1. OVERVIEW

This help guide documents CDOT Plan Production processes using OpenRoads Designer & related tools. The primary topics include but are not limited to Named Boundary's, Sheet Creation, Annotation, and Sheet Index. The Sheet Index section covers sheet management and the steps of how to create and put together a project plan set ready for Ad. This includes how to apply page number on a plan set, how to insert and or remove pages from plan set, and apply page number to the final plan set.

The initial dataset is shown below. Note that the names of the files used and created in this guide are named for clarity and not necessarily the file naming convention used by CDOT.

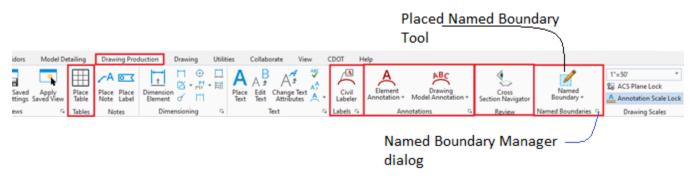




2. DRAWING PRODUCTION OVERVIEW

2.1 Section Overview

This section provides a high-level overview of the Drawing Production Tools available in OpenRoads Designer that are discussed in this document. **Detailed plan production steps are available in other sections of this document.** Also included in this section is an overview of the CDOT Ribbon Tab tools.



- Place Table Allows you to Place a Table from a Report or an Excel file.
- **Civil Labeler** The civil labeler is a production-focused annotation tool for the civil environment. Stored as part of a workspace, label definitions are easily shared while maintaining constancy and compliance with standards. Label definitions bring together Text Favorites, Text Styles, Dimension Styles, Element Templates, custom prompting, border frames, and lock settings into a single, repeatable label definition. Examples of use are intersection, station/offset, station/elevation, offset/elevation, etc. and this tool does allow bulk selection of intended elements to label.
- Annotations This is a much more automated method of labeling than the Civil Labeler but generally not as flexible with customization. The tools are feature driven by Annotation Groups that are associated with Feature Symbologies. Examples of use are Alignment stationing annotation, profile annotation, displaying ROW on cross-sections, etc.
- **Cross Section Navigator** This tool allows you to easily browse between cross section drawing models that have been previously generated through the Named Boundary Cross-Section Sheet creation process. Note that this only looks for drawing models in the active drawing file.
- **Named Boundary** Places named boundary elements which define the location from which Sheets are generated. Named Boundaries can also be used to identify where you wish to calculate earthwork.

NOTES:

• Annotation should generally be performed in the Design or Drawing models. The only annotation work that should be done in a Sheet model is when you use the Place Table command and title block info.

2.2 Sheet Production Process

The overall sheet production process using the ORD Named Boundary process is:

- 1) Place Named Boundaries which identify where you want to cut sheets. Drawing Seeds are chosen during the Place Named Boundary process to pre-populate the dialog settings.
- 2) Invoke the **Named Boundary Manger dialog** which is utilized to manage Named Boundaries and ultimately kick-off the Create Drawing process.
- 3) The Create Drawing dialog is the dialog invoked through the Named Boundary Manager dialog that actually creates Drawing & Sheet models & references the Drawing models to the Sheet models. Annotation Groups are defined on this dialog as well to annotate the XS grid, Plan Annotation such as matchlines, profile annotation, etc.

NOTES:

- CDOT does offer another method outside the Named Boundary process of creating some of the General Sheets. This process is available on the CDOT Ribbon Tab and is documented in this manual.
- The CDOT Create General Sheet tool only creates a Sheet model (a Drawing model is not created).

2.2.1 Named Boundary Tool

Step 1 of the Sheet production process is place Named Boundary shapes that define the areas where you wish to generate sheets at. We will utilize the Named Boundary tool quite often in this help guide so we will provide an overview of the tool below. We will also show the Named Boundary Manager dialog. The modes (a,b,c, etc.) are defined below. **Drawing Seeds** are chosen to populate the default values on this dialog, specify the sheet cells placed when sheets are created, and also specify Annotation groups used when creating sheets.

B Place Named B		×	a)
	a b C d e f g h		
Drawing Seed:	Plan-Profile - 40 Scale - 1x Vert. Exag Pl 🗸		
Detail Scale:	1"=20' 👻		b)
Name:	Plan 1		,
Description:			c)
Group:	(New) 👻		(ام
Name:	Untitled		d)
Description:			
Start Location:		◀	e)
Stop Location:		▶	
Length:	280.000000		
Left Offset:	-30.000000	ee Emaine	f)
Right Offset:	30.000000	ee	1)
Overlap:	0.000000		
Boundary Chords:	10		g)
	Create Drawing	8	8/
	Show Dialog		
NOTES:			h)
alignm			,
so not below	1odes B, G, & H are not generally discussed in detail in any of the check the Create Drawing check	steps	
you wi creatio	Il proceed right into the sheet on process as soon as the Named		
	aries are placed. This is a viable		
	but it is more practical to go the	-	
	med Boundary Manager discuss		
below	to generate Drawing & Sheet m	odels.	

- a) Civil Plan Mode (Place along an alignment Plan, Double Plan, Plan Profile, & ROW Plan Drawing Seeds, Survey Plan, Roll Plots, etc. are available.)
- b) **Civil Plan By Element** (Lets you place a named boundary from an existing element.)
- c) **Civil Profile** (Profile, Double Profile, Plan Profile, Driveway Profile Drawing Seeds)
- d) **Civil Cross-Section** (Cross-Section Drawing Seeds @ various scale are available)
- e) Civil Cross-Section 2 Point (Two point method of creating a Cross-Section Named Boundary. You would use this primarily for skewed X-Sections (at culverts, etc.))
- From Drawing Boundary (Plan not along an alignment) (Roadway Detail-Title-Plan-Typical), ROW Title & Plan, Survey Plan, etc.)
- g) By 2 Points (Lets you place a named boundary by interactively defining a rectangular element with two data points.)
- h) By Polygon (Lets you place a named boundary by interactively defining vertices of a polygon with data points.)

2.2.2 Named Boundary Manager dialog

As mentioned earlier, the **Named Boundary Manager dialog** is used to manage (Delete, rename, etc.) the Named Boundaries in the DGN file. It is also Step 2 of the Sheet production process unless you check the Create Drawing item on the Place Named Boundary dialog above. If this is checked you will skip the Named Boundary Manager dialog and go straight into the Sheet Production process.

🗰 Named Boundarie	es						_	
🗙 🕺 🔹 🔗			🕸 🗔 🖃 🐽 🛃	o⁄≊				
Name	Ŧ	Description	File Name	Show				
Plan Groups								
Profile Groups								
 Cross Section Gro 	ups							
CR44			12345_RD_XS_CR44.dgn	~	×	Delete		
0+00.00			12345_RD_XS_CR44.dgn	~	1	Create cross section drawing		
1+00.00			12345_RD_XS_CR44.dgn	~	8	Create Cross Section Sheets from Drawings		
2+00.00			12345_RD_XS_CR44.dgn	\checkmark	_	2		
3+00.00			12345_RD_XS_CR44.dgn	\checkmark		Fit To Named Boundary		
4+00.00			12345_RD_XS_CR44.dgn	~	01	Properties		
5+00.00			12345_RD_XS_CR44.dgn	~				

2.2.3 Create Drawing dialog

Step 3 and final step of the Sheet Production process is the **Create Drawing** dialog. This dialog is pre-populated and generally no edits are required. Ultimately, this dialog controls the creation of the Drawing & Sheet models. In this dialog you can;

- 1) Specify to create the sheets and drawing models in the same file the Named Boundaries are in or in other files.
- 2) Change scales
- 3) Change Annotation Groups,
- 4) Control Drawing & Sheet Model names
- 5) Add the Sheets created to the Sheet Index
- 6) Specify a Sheet Model that has been created in advance with the *Sheets* setting below although this is generally set to (New) as shown below.

🞻 Create Drawing		×
Mode: One Sheet Per Dgn:	Cross Section	•
Drawing Seed: 2 View Type: 0 Discipline: 0	CR44 - 0+00.00-1 OH 10V Civil Cross Section Civil Section View	
Model Name: Seed Model: Filename: (rawing Model CR44 - 0+00.00-1 (S - 20H 10V.dgnlib, 20H 10V Active File) "=20' S Annotation 20H 10V	•
Model Name: (Seed Model:) Filename: (Sheets: (Drawing Boundary: 2	heet Model Create Sheet Model CR44 - 0+00.00-1 (S - 20H 10V.dgnlib, 20H 10V [Sheet] Active File) New) ull Size 1 = 1 OH 10V =20' (By Named Boundary) Add To Sheet Index	•
	Make Sheet Coincident Open Model OK C	ancel

2.3 Sheet Index

Sheet Index is found on Project Explorer as shown below and is used to manage DGN files that contain your Sheets. <u>It's extremely important that all Sheets are created in a Sheet model because Sheet Index will only</u> <u>recognize sheet models as sheets.</u> In other words, Sheet Index will not recognize a sheet cell placed in a design or drawing model.

The Sheet Index:

- Aids in Sheet naming/numbering
- Allows index property edits by users of fields like Hwy No., County, Project Code, etc. which automatically populate text fields that have been established in the Title Blocks.
- Can generate an Index of the Sheets as a Table
- Transfers the Sheets to Print Organizer for PDF production or printing.

Explorer 🗸 🕈 🗙
🔀 File 😽
😝 Items 😽
🕘 OpenRoads Model 😽
🕼 Sheet Index 🔹
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EXHIBITS

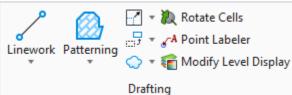
2.4 CDOT Ribbon Tab

CDOT also provides many Drawing Production Tools through its custom **CDOT** Ribbon Tab shown below.

Drawing Production Drawing Utilities Co	laborate View CDOT Help				^
Linework Patterning ↔ * ☆ Modify Level Displ	y General Sheets *	Roadway * Fence * ☆ ✓ Fence * Typical Guardrail * Generator *	NOAA IDF Drainage Convertor Design Manual	A A	 ☆ Mojo Help Desk ④ OIT Service Desk ⑤ CDOT Design Guide
Drafting	Sheets	Design	Hydraulics	ROW/Survey	CDOT Info & Help

The Ribbon Group categories of the CDOT Ribbon tab are described below with more discussion in the GENERAL SHEETS & HATCHING primary sections.

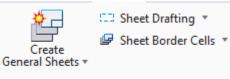
• Drafting



These are drafting tools with a mix of commands as described below:

- Linework tools that set active attributes & kicks off the Place SmartLine tool.
- Patterning selections that set the Pattern Cell of the Pattern Area command & kicks off the Pattern Area command.
- o Various MicroStation tools including the Revision Bubble (Cloud By Points command)
- o Custom tools
 - Rotate Cells
 - Point Labeler
 - Modify Level Display

• Sheets

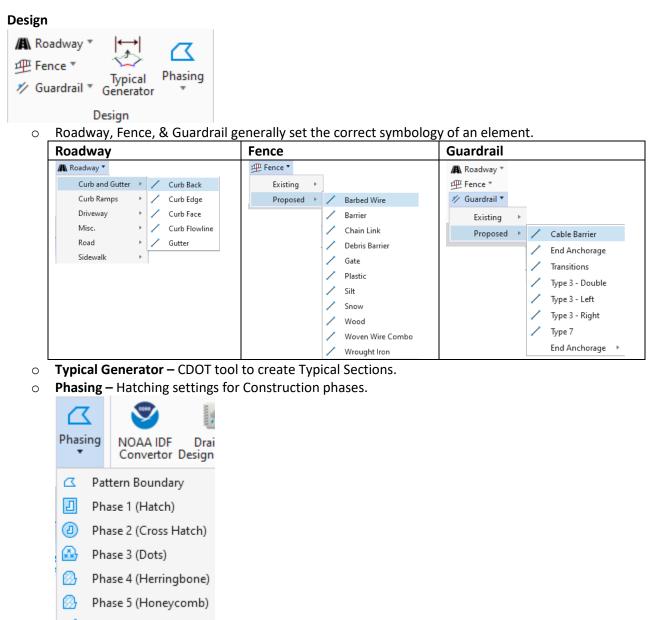


Sheets

- Create General Sheets Covered in detail under the GENERAL SHEETS section, this is an option for creating sheets outside of the Named Boundary process that only creates a Sheet Model (No Drawing model is created). This would be ideal for tabulation sheets.
- o Other tools

Sheet Drafting tools	Sheet Border Cells
🖽 Sheet Drafting 🔹	🖽 Sheet Drafting 💌
C Draw Clip Boundary	Image: General Sector Cells ▼
✓ Draw Matchlines	Place Signature Cover Sheet Border
🐐 Open General Cell Library	Place Plan Sheet Border (11"x17")
Noc Place CDOT Sheet Logo (Template)	Place Plan-Profile Sheet Border (11"x17")
Place Title Block Cell (Standard)	🥔 Place Profile Sheet Border (11"x17")
Place Title Block Cell (Title Sheet)	Place Title Sheet Border (11"x17")
😚 Place North Arrow	Place Typical Section Sheet Border (11"x17")
Place Horizontal BarScale (Standard)	Place General Notes Sheet Border (11"x17")
Place Horizontal BarScale (Title Sheet)	Place Detail Sheet Border (11"x17")
Place Vertical BarScale	Place SWMP Plan Sheet Border (11"x17")
Place 811 Utility Stamp	Place Plan Sheet Border - Letter, Portrait (11"x8.5")
L Place Stamp Area	Place Plan Sheet Border - Letter, Landscape (8.5"x11")
Place Skier North Arrow	CC Place Border Limits, w/ Margins (11"x17")
Place FIR Stamp	Tabulation Sheets
Place FOR Stamp	Place Tabulation Sheet Border - Blank (11"x17")
Place Preliminary Stamp	Place Tabulation Sheet Border - Concrete (11"x17")
CDOT Logo (Color)	Place Tabulation Sheet Border - Fencing/Guardrail
	Place Tabulation Sheet Border - Removals (11"x17")

•

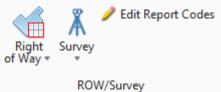


- 🖌 🛛 Place Control Line
- Hydraulics

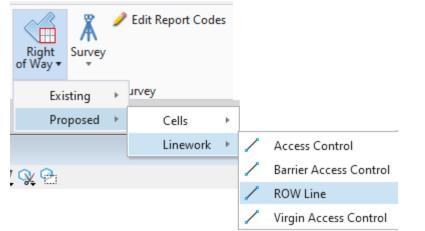


o Links to IDF Convertor & Drainage Design Manual

• ROW/Survey



- Contains tools to set symbology and place cells for ROW & Property related items.
- Right of Way expanded:



• Survey expanded:

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				Α	Survey Label (Hexagon)	

3. GENERAL SHEETS (No Alignment)

3.1 Section Overview

This section covers the process of creating General Sheets normally found at the beginning of the plan set. These include but are not limited to the following sheet types:

Title Sheet Index (Generally included on the Title Sheet) M&S Standard Plans List Typical Sections General Notes Summary of Approximate Quantities Structure Tabulation Earthwork Summary Surfacing Tabulation Guardrail/Fencing/Delineator Tabulation (Included on separate sheets on large projects) Any Civil model Detail Sheets

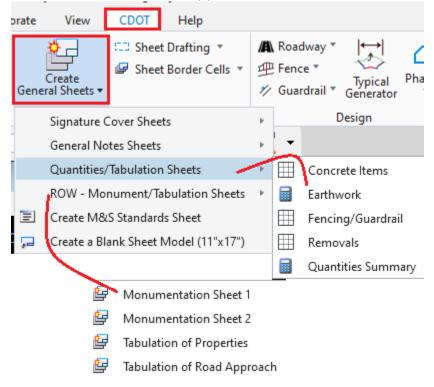
These sheets are not generated along an alignment such as Plan/Profile, Cross-Section, Traffic Control sheets, etc. There is actually a couple of different methods for creating these type of sheets.

1. Place Named Boundary Tool (From Drawing Boundary).

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abels 12	Annotations	G Review	Named Boundaries	
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		0 × 1	1100	
	Drawing Boundary:	Bridge Sheet - FULL	Name	Model
	Name:	Untitled	Bridge Sheet - FULL	Bridge Sheet - FULL [Sheet]
	Description:		Bridge Sheet - HALF (Left)	Bridge Sheet - HALF (Left) [Sheet]
	Detail Scale:	Full Size 1 = 1	Roadway Detail Sheet	Roadway Detail Sheet [Sheet]
			Roadway Plan Sheet - FULL	Roadway Plan Sheet - FULL [Sheet]
			Roadway Plan Sheet - HALF (Left) Roadway Plan Sheet - HALF (Top)	Roadway Plan Sheet - HALF (Left) [Sheet] Roadway Plan Sheet - HALF (Top) [Sheet]
	Groups		Roadway Fian Sneet - FIALF (Top) Roadway Title Sheet	Roadway Fian Sneet - HALP (Top) [Sneet] Roadway Title Sheet [Sheet]
	crock.			ROW Land Survey Control (LCSD) [Sheet]
			ROW Ownership Map	ROW Ownership Map [Sheet]
			ROW Plan County Sht 18x24 V 1 Detail	ROW Plan County Sht 18x24 [Sheet]
			ROW Plan County Sht 18x24 V 2 Detail	ROW Plan County Sht 18x24 [Sheet]
			ROW Plan County Sht 24x36 V1 Detail	ROW Plan County Sht 24x36 V1Detail [Sheet
			ROW Plan County Sht 24x36 V2 Detail	ROW Plan County Sht 24x36 V1Detail [Sheet
			ROW Plan County Sht 24x36 V3 Detail	ROW Plan County Sht 24x36 V1Detail [Sheet
			ROW Plan County Sht 24x36 V4 Detail	ROW Plan County Sht 24x36 V1Detail [Sheel
			ROW Plan Sheet	ROW Plan Sheet [Sheet]
			ROW Title Sheet - Federal	ROW Title Sheet - Federal [Sheet]
			ROW Title Sheet - LPA	ROW Title Sheet - LPA [Sheet]
			ROW Title Sheet - State	ROW Title Sheet - State [Sheet]
			Survey PCD Title	Survey PCD Title Sheet [Sheet]

NOTE: Listed above are the current Drawing Boundaries available.

2. Create General Sheets Ribbon tool found under the CDOT ribbon tab shown below and discussed more in depth in the sections below. These commands create a Sheet Model but not a Drawing model like the Named Boundary process does.



NOTE: A few of the ROW & Quantities/Tabulation Sheet Types are shown above.

We will create a couple of these type sheets using both of these methods in the next couple of sections.

3.2 Place Named Boundary (From Drawing Boundary)

Annotation should normally be performed in the design or drawing models when using the Named Boundary process to create sheets.

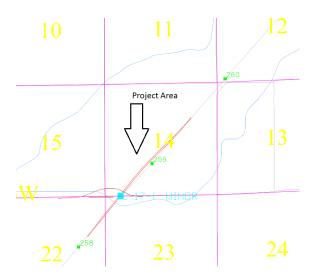
3.2.1 Creating a Title Sheet

In the steps in this section, we are using a DGN with Section lines, roads, county boundaries, etc. already present in the correct GCS.

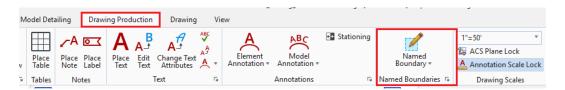
There are other instructions **(word docx links below)** available outside this manual that are a better resource than the steps in this section of creating a Title Sheet because of some of the annotation processes documented there. The word document links below guide you through the process of creating a title sheet vicinity map using GIS data. The GIS data has been compiled from a number of shape files into a single DGN file. GIS attribute data is used to label the drawing for the title sheet vicinity map through the use of the Civil Labeler.

https://www.codot.gov/business/designsupport/cadd/ord/about

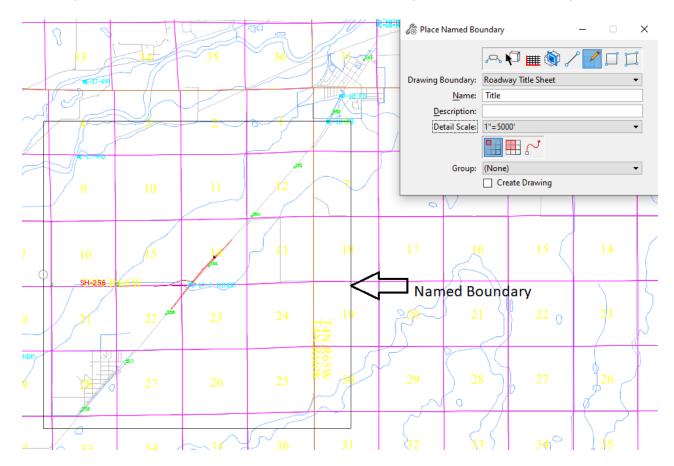
- Workflow ORD 1- Using GIS Data For A Title Sheet Vicinity Map For ORD 10.08 Version(docx)
- Workflow ORD 1- Using GIS Data For A Title Sheet Vicinity Map For ORD 10.10 Version(docx)
- GIS Vicinity Map workflow file for ORD 10.08 Version.dgn
- GIS Vicinity Map workflow file for ORD 10.10 Version.dgn
- 1. Create & enter the title sheet DGN file (Using a 2d Seed file) -> 12345_RD_Title.DGN.
- 2. Reference the file **12345_RD_Geometry.dgn** & fit the view.
- 3. Reference the file 12345_RD_Weld County.dgn. Note that this file is a derivative of the GIS Vicinity map above and created for this manual. Your drawing should appear similar to what is shown below.



4. Select Drawing Production -> Place Named Boundary.



5. Use the **From Drawing Boundary** method, fill out the dialog as shown below, position the Named Boundary similar to what is shown below, and then Data Point to place the Named Boundary.



NOTES:

- You will generally change the scale as needed to determine the correct size of the Named Boundary.
 - - Modes are Place Single, Place an Array, Place along a Path respectively.

6. Select the Named Boundary Manager button.

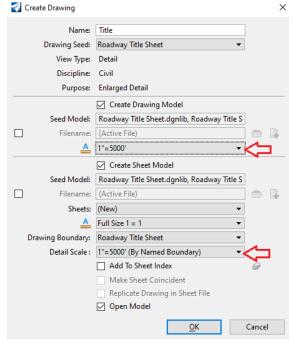


7. Expand Other Groups until you see the Title boundary and follow the steps below.

Report Named Boundaries (Not Responding)

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Name	3)	Ŧ	Description	2)		File Name	Show
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4 C	Orphan Named Bou	ndaries	Named Boundaries v	which don't belong to	o any Run		
	Title 1					12345_RD_Title.dgn	

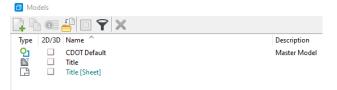
8. Change the scales if needed, review the Create Drawing dialog, and choose OK.



9. The title sheet will be created in a new sheet model.

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10. Open the Models dialog and review that two models were created a shown below.





Title is a Drawing model and Title [Sheet] is a Sheet model.

11. You can double click any of these models and it will be opened in all views. Close the models dialog and choose **Title** from the View Groups at the bottom of the MicroStation window.



12. Review the Title model. This is the ideal location for any Annotation that needs to be added.

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	27 26 25

3.2.2 Typical Section Sheets (From Drawing Boundary, Array)

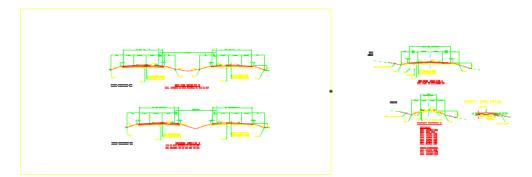
- 1. Open 12345_RD_Typical Sections.dgn
- 2. Choose the Place Named Boundary tool.

N	lodel Deta	ailing Draw	ing Production	Drawing	Vie	- 2W	5-	5.		-
	Place	A or	Place Edit	A Change Text	ABC A ^A A	A Element Annotation *	Model Annotation •	🛃 Stationing	Named Boundary •	1"=50'
v	Table	Note Label	Text Text	Attributes	Ö	Annotation •	Annotation •		· · · ·	Annotation Scale Lock
ы	Tables	Notes		Text	E.		Annotations	Gi -	Named Boundaries 🗔	Drawing Scales

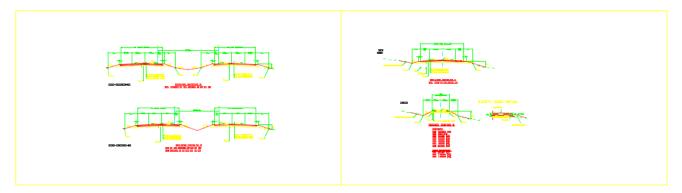
3. Choose the From Drawing Boundary method and set the dialog as shown below.

🔏 Place Named Bou	undary	_		×
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Drawing Boundary:	Typical Section Sheet		•	
<u>N</u> ame:	TS-1			
Description:				
Detail Scale:	1"=20'		•	
Group:	(New)		•	
N <u>a</u> me:	TS			
Description:				
Active <u>A</u> ngle:	00°00'00.00"			* *
Rows:	1			
Columns:	2			
Row Overlap:	0.000000			00 Instan
Column Overlap:	0.000000			00 Itutu
	Create Drawing			

4. Move your cursor to show the location of the 1st sheet as shown below.



5. Data Point to place the named boundaries as shown below. Two were placed since we set 1 Row & 2 Columns on the dialog.



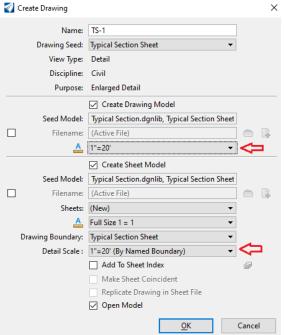
6. Select the Named Boundary Manager button.



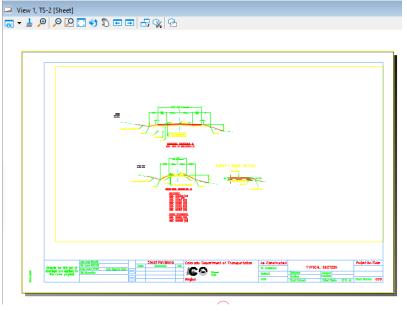
7. Expand Other Groups until you see the TS boundary group and follow the steps below.

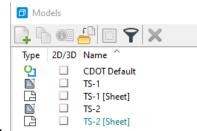
Ramed Boundaries		2)	
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Name 3) 🔻	Description	File Name	Show
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Profile Groups			
Cross Section Groups	1		
 Other Groups 			
⊿ TS 1)		12345_RD_Typical Sections.dgn	V
TS-1		12345_RD_Typical Sections.dgn	~
TS-2		12345_RD_Typical Sections.dgn	~

8. Change the scales if needed, review the Create Drawing dialog, and choose OK.



9. The typical section sheets will be created in new sheet models.





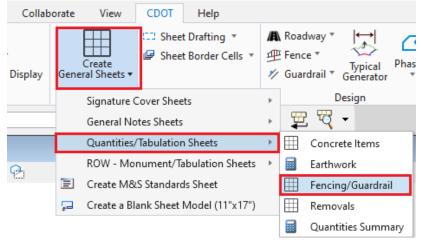
10. Review the Models created.

3.3 Create General Sheets (CDOT menu)

As noted earlier, these commands create a Sheet Model but not a Drawing model like the Named Boundary process does. Much of the time tabular or pasted data from excel/word documents are used as the content on these sheets.

Unlike sheets created through the Named Boundary process, annotation (generally tabular or pasted data from excel/word documents) is performed in the sheet models of General Sheets created through the CDOT ribbon tab because no drawing model is created through this process.

- 1. Create the file **12345_RD_Tabulation_Fencing.dgn** & enter this file.
- 2. Choose the Create General Sheets -> Quantities/Tabulation Sheets -> Fencing/Guardrail

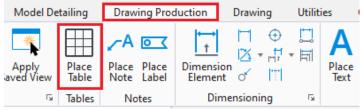


3. A sheet model is created & opened as shown below. Note that no Drawing model was created nor are there any reference files to the sheet model. You will add tables, estimated quantities, etc. as needed here. We will perform some of these processes in the next section.

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3.4 Place Table

Found under Drawing Production is the **Place Table** command shown below.



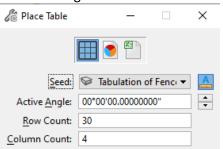
This tool (shown below) allows the user to:

- a. Place an empty table
- b. Place a table from a report
- c. Place a table from an Excel file.

🔏 Place Table	abc	\times
<u>S</u> eed:	None 🔻	A
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<u>R</u> ow Count:	3	
<u>C</u> olumn Count:	3	

3.4.1 Place an Empty Table (Using a Drawing Seed)

- 1. Remaining in 12345_RD_Tabulation_Fencing.dgn, choose the **Place Table** command.
- 2. Set the dialog as shown below.



NOTES:

• At this time, there is only one Seed (Tabulation of Fence) but more should be added soon.

3. Place the Table as shown below.

	Tabulation	of Fence							
Station	Side	Notes							
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			-						
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			1						
		-							
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3.4.2 From an Excel file

Below are general steps for using the Place Table command to place rows/columns from an excel file.

1

1) Choose the Place Table command.

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	Apply aved View	Place Table	A or	Dimens	ion 📿 🔐		A Place Text
	G	Tables	Notes	Di	mensioning	E.	
2)	Set the mo	de to Fr	om File (1) a	nd then c	hoose the X	KLSX file	(2).
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	File N	lame:					
			Contains Tit	le Row	2		
			Contains <u>H</u> e	eader Row	4		
			Retain Asso	ciation			

3) You are prompted with the following dialog. Config as needed to place the worksheet/row/columns as needed.

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Select Cells					×
Worksheet:	Shee	t1		٣	
Range:	Auto	matic		٣	
From:	A1				
To:	D12				
OK			Cancel		

4) Data Point to place the Table.

Place Table	—		×			
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	Retain Association	n				

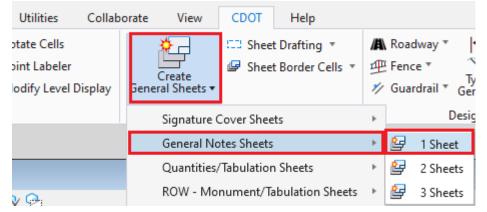
5) You can then select this table and notice the ribbon changes to excel commands. You can perform edits such as resizing, Refreshing data from the datasource, etc.

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	ometry Site Corrid		g Production Drawing	Utilities	Collaborate View CDOT Hel	p Layout	
Title Row Summary Row Header Row First Column Footer Row Last Column	Height: 0.20833292 Width: 0.22222178 Lock Aspect Ratio	Delete Delete Insert Insert I	nsert Insert Refresh Table Left Right from Data	Merge Split Cells	Height: 0.01736108 Distribute		Fill Borders
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		10 This Is 11 This Is	a Test a Test				
		12 This Is	a Test				

3.5 Paste Special

You can copy/paste data from an external app such as word or excel, into a DGN through the Paste Special command. We will create a General Notes sheet in the steps below.

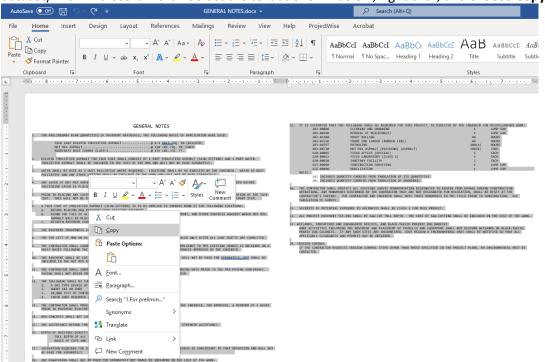
- 1. Create the file **12345_RD_General Notes.dgn** (using a 2d seed file) and enter this file.
- 2. Choose the Create General Sheets -> General Note Sheets -> 1 Sheet



4. A sheet model is created & opened as shown below. Note that no Drawing model was created nor are there any reference files to the sheet model. You will paste the General Notes from a word document here in the next few steps.

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	ALL REPORTED					Revised:	Detaler:	Southan	

5. In ProjectWise or Windows Explorer, open the file **GENERAL NOTES.docx** (that should be included in the dataset) with Microsoft Word. Select the text as shown below, right click, and choose **Copy**.



6. Moving back to the General Notes DGN file, choose the Home -> Selection Paste Special command.

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File Home Terrain Geometry Site Corrido	ors Model Detailing Dra	wing Production	Drawing Uti	lities Collab
✓ None * Default * Image: 0 *	Explorer Attach Tools + Construction + Constructio	Element Selection	Fence Tools •	Reports Civi Analys
Attributes	Primary	Selecti	on 🖺 Pa:	ste An
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7. Select the **Embedded Microsoft Word Document** Data Type.

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NOTES:

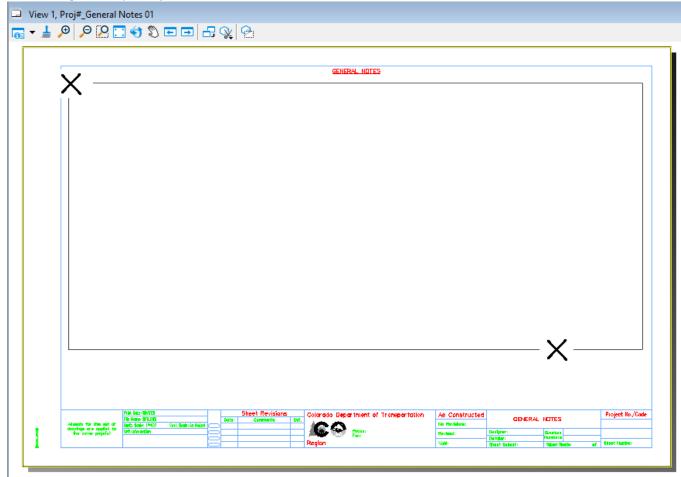
- Embedded The copied contents is added and actually saved in the DGN file and future edits are made to the embedded file by double clicking the image in ORD to open the document up in Word to edit.
- Linked The copied content is added to the DGN file but edits are still made outside of ORD in Word to the original document and then the ORD Update link tool is used to update the text.

8. You should be prompted with the following options on the Tool Settings dialog.

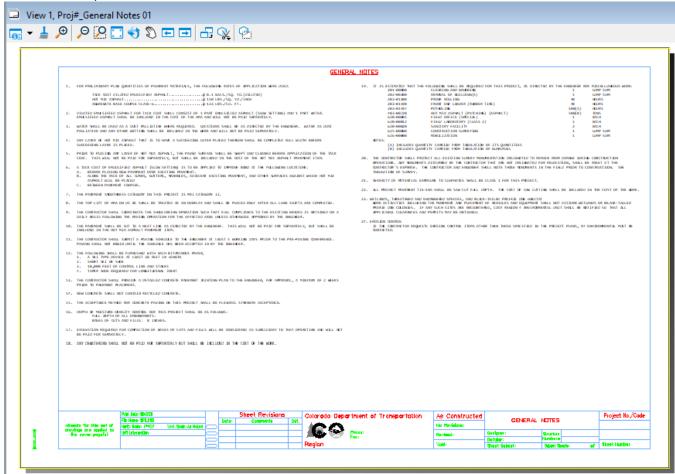
haste OL	E Object	—		×
Object: M	icrosoft Wor	d Docu	iment	
<u>P</u> aste as:	Embedded	•		
Method:	By Corners	•		
			•	

9. With the settings above, observe the bottom left of the ORD window. You should be seeing the following prompt.

10. Data Point in the top left area of the sheet and then data point in the lower right of the sheet making sure the rectangular shape stays within the sheet boundaries.



11. Below is the copied text.



12. Double Click the text area and the embedded object is open for edit. We will not perform any edits here so close Microsoft Word.

4. CONTAINER DGN FILE

4.1 Section Overview

This section covers the process of setting up a Container DGN file that contains references of the files that will be used in the plan production process. This is not a requirement but rather a best practice so you can reference just the container file instead of multiple files when preparing the named boundary of sheet files.

4.2 Creating a Container file

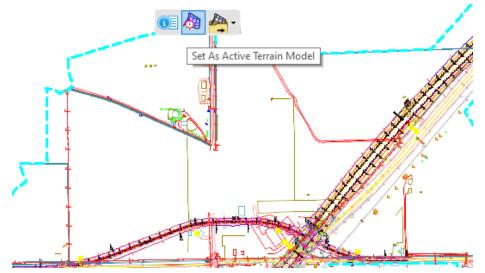
- 1) Create & enter the 12345_RD_Container for Plans.DGN file (Using a 2d Seed file)
- 2) Reference the following files:

12345_RD_Corridor-CR44.dgn	12345_ RD_Geometry-Annotation
12345_ RD_Corridor-Intersections.dgn	12345_ RD_Geometry.dgn
12345_ RD_Corridor-US85.dgn	12345_ RD_SURV_Topo.dgn
12345_ RD_Drainage.dgn	12345_ RD_Terrain.dgn
12345_ RD_Drives.dgn	

The Reference File Attachment Properties dialog is shown below:

Reference Atta	achment Propertie	es for\Corridor-CR44.dgn >
<u>F</u> ile Name:	PW_WORKDIR:dm	ns20164\Corridor-CR44.dgn
Full Path: 0	c:\bms\cdot-pw-(04t\dms20164\Corridor-CR44.dgn
Model: 0	CDOT Default	•
Logical Name:		
_	Master Model	
Orientation:		
View		Description
Coincident		Aligned with Master File
Coincident - V		Global Origin aligned with Master File
Saved Views (
Named Boun		
Detail S	Scale: 1"=50'	-
Scale (Master:	:Ref): 1.0000000	00 : 1.00000000
Named Gr		
Revi	ision:	.
L	Le <u>v</u> el:	•
<u>N</u> ested Attachm	ents: No Nestin	g Vesting Depth: 0
<u>D</u> isplay Over	rides: Allow	•
Ne <u>w</u> Level Dis	splay: Use MS_R	EF_NEWLEVELDISPLAY Cor
Global LineStyle S	Scale: Master	-
Synchronize	View: Volume O	nly 👻
Toggles		
	🖸 🏒 🕨 🔒 🛛	11 T 🖉 😪 🎟 🕸 🔛 💷 📥
		OK Cancel

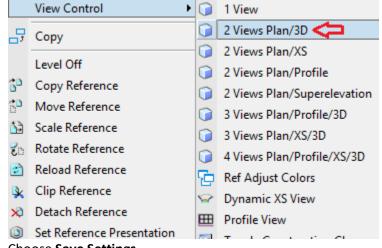
3) Select the terrain and from the context menu, **Set As Active Terrain Model.**



4) Open the Reference dialog and turn Display OFF for the CDOT Default-3D model.

•	1	X	; 🗅 🌿 🗢 🔄 🖓 静 🚹 🖓 🍈 🖤 🚇	×	Hilite Mode: Nor	ne 🔻			
Slot	٣		File Name ^	٠	Model	Description	Logical	Orientation	Pre
10		\checkmark	PW_WORKDIR:dms20164\12345_RD_Container for Plans.dgn		CDOT Default-3D		Ref	Coincident - World	Wir
1			PW_WORKDIR:dms20164\12345_RD_Corridor-CR44.dgn	×	CDOT Default	Master Model		Coincident - World	Wir
2			PW_WORKDIR:dms20164\12345_RD_Corridor-Intersections.dgn	\checkmark	CDOT Default	Master Model		Coincident - World	Wi
3			PW_WORKDIR:dms20164\12345_RD_Corridor-US85.dgn	\checkmark	CDOT Default	Master Model		Coincident - World	Wi
4			PW_WORKDIR:dms20164\12345_RD_Drainage.dgn	\checkmark	CDOT Default	Master Model		Coincident - World	Wi
5			PW_WORKDIR:dms20164\12345_RD_Drives.dgn	\checkmark	CDOT Default	Master Model		Coincident - World	Wi
7			PW_WORKDIR:dms20164\12345_RD_Geometry Annotation.dgn	\checkmark	CDOT Default	Master Model		Coincident - World	Wi
6			PW_WORKDIR:dms20164\12345_RD_Geometry.dgn	\checkmark	CDOT Default	Master Model		Coincident - World	Wi
9			PW_WORKDIR:dms20169\12345_SV_Terrain.dgn	\checkmark	CDOT Default	Master Model		Coincident - World	Wi
8			PW_WORKDIR:dms20169\12345_SV_Topo.dgn	Ý	CDOT Default	Master Model		Coincident - World	Wi
<									
Scale	1.000	0000	00 : 1.00000000 Rotation 00°00'00"		Offset X 0.000		Y 0.000		

5) Close the Reference dialog and from the Reset menu, choose Views Plan/3D.



6) Choose Save Settings.

5. PLAN/PROFILE SHEET CREATION

5.1 Section Overview

This section along with sections 8-10 will cover how to use Named Boundaries through ORD's Drawing Production ribbon tab to generate sheets along alignments. The types of sheets normally generated with this method include the following type sheets:

Plan & Profile Sheets Interchange Plan Sheets Profile of Ramps or Side Streets or Driveways Bridge Plans and Details Retaining Wall Plans and Details Structure Cross Section (Culvert Profiles) Stormwater Management Plan Wetland Mitigation Sheets Utility Plans Phasing and Detour Plans Traffic Control Plans Permanent Signing & Marking Plans and Details Traffic Signal Plans and Details Lighting Plans and Details

We will create Plan & Profile sheets for CR44 in Section 5, Plan only sheets for US85 in Section 8, Profile Sheets for US85 in Section 9, & Roll Plots in Section 10. Many sheet specific processes (Scales, modifying named boundary locations, adding references, levels, deleting sheets, etc.) are covered in Section 6 and can be applied in Sections 8-10.

Annotation should normally be performed in the design or drawing models when using the Named Boundary process to create sheets.

5.2 Attaching the Container file (or references)

In the following steps, will create a file to reference the container file. In subsequent subsections we will place Named Boundaries and then create 1"=50' Plan & Profile Sheets along alignment CR44. We will then create separate Plan & Profile sheets in Sections 6 & 7 along US85 @ a scale of 1"=100'. If you had the same scale for all sheets, you could ultimately create one file for the Named Boundaries but that's not the case here so we are specifying CR44 in the name of the file as shown in step 1 below.

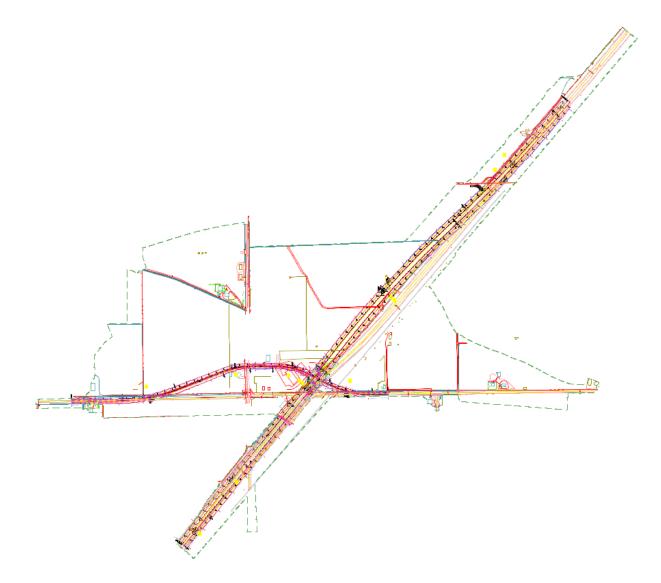
- 1) Create and enter the file 12345_RD_Plan Profiles_CR44.dgn (Using a 2D Seed file).
- 2) Reference the file **12345_RD_Container for Plans.dgn with** the following settings.

引 Reference At	ttachme	nt Properties	for\12345_Container f	for Plans.dgn X					
File Name:	PW W	ORKDIR:dms2	20164\12345_Container f	or Plans.dgn					
– Full Path:	_	\cdot-pw-04t\dms20164\12345_Container for Plans.dgn							
Model:		CDOT Default							
Logical Name:									
Description:	Master Model								
Orientation: View			Description						
			Description						
Coincident Coincident	- World		Aligned with Master Fil Global Origin aligned v						
Standard Vie			Global Origin aligned v	Vicitiviascel The					
Saved Views	s (none)								
Named Bou	indaries	(none)							
Detail	Scale:	1"=50'	•	•					
Sc <u>a</u> le (Maste	er:Ref):	1.00000000	: 1.00000000						
Named (Group:			r					
Re	vision:			·					
	Le <u>v</u> el:			- V					
<u>N</u> ested Attach	ments:	Live Nesting	•	Nesting Depth: 1					
<u>D</u> isplay Ove	errides:	Never	•						
Ne <u>w</u> Level D	isplay:	Use MS_REF	NEWLEVELDISPLAY Con	7					
Global LineStyle	Scale:	Master	•	•					
Synchronize	e View:	Volume Onl	у	*					
Toggles									
	•	/ 📐 🔒 🛄	T 🖉 🖓 🎹 🗞 🥊						
			<u>O</u> K	Cancel					

NOTES:

- Nesting depth of 1 will bring all the references in the Container file.
- Display Overrides is set to Never.

3) Fit the view which should appear as shown below.



~

5.3 Placing Plan Named Boundaries

 Select the Drawing Production ribbon tab, confirm or set a scale of 1"=50', then select Named Boundary from the Drawing Production ribbon tab.

🛃 Оре	enRoads Modeling	• M •	😑 🖬 🛃 🕻	6 🔶 - 🔶 🕯	1 🚔 🕴 🧕	6 =	pw:\\cdot-pw.	bentley.com:cdot-pw-(4T\Docu	ments\02	Minor Project	s\CDOT Tr	aining Proje	ects\12345 - CDC	T Plans Production\01 P	re-Construction\Drav	vings\Roadway\12345_R	D_Plan Profiles.dgn Search Rib
File	Home Terrai	n Geome	try Site	Corridors	Model Det	tailing	Drawing Proc	luction Drawing	Utilitie	s Col	aborate	View	CDOT	Help				
ন্ধ		🙀 ⁶	S.	-8	*		<u>∕</u> -A ⊡			A A	B A	ABC ABC		A	ABC	۸.	1	1"=50' *
· · ·	Element Selection	Clip Volume	Create Saved View	Update Saved View Settings	Apply Saved View	Place Table	Place Place Note Label	Dimension Element		Place Ed Text Te		ext	Civil Labeler	Element Annotation *	Drawing Model Annotation *	Cross Section Navigator	Named Boundary =	ACS Plane Lock
Primary	Selection	Clip		Saved Views	Fa	Tables	Notes	Dimensioning	6	icit it	Text		Labels 5	An	notations 🕞	2	Named Boundaries 🕞	Canada Canad

2) On the Place Named Boundary dialog:

- a) Choose the Civil Plan icon at the top of the dialog,
- b) Choose the **Plan-Profile 50 Scale 5x Vert. Exag. PLAN** *Drawing Seed The following are the available Plan-Profile Drawing Seeds you can* choose from.

Name
Plan-Profile - 40 Scale - 1x Vert. Exag PLAN
Plan-Profile - 40 Scale - 2x Vert. Exag PLAN
Plan-Profile - 40 Scale - 5x Vert. Exag PLAN
Plan-Profile - 50 Scale - 1x Vert. Exag PLAN
Plan-Profile - 50 Scale - 2x Vert. Exag PLAN
Plan-Profile - 50 Scale - 5x Vert. Exag PLAN
Plan-Profile - 100 Scale - 1x Vert. Exag PLAN
Plan-Profile - 100 Scale - 2x Vert. Exag PLAN
Plan-Profile - 100 Scale - 5x Vert. Exag PLAN
Plan-Profile - 100 Scale - 10x Vert. Exag PLAN
Plan-Profile - 200 Scale - 1x Vert. Exag PLAN
Plan-Profile - 200 Scale - 2x Vert. Exag PLAN
Plan-Profile - 200 Scale - 5x Vert. Exag PLAN
Plan-Profile - 200 Scale - 10x Vert. Exag PLAN

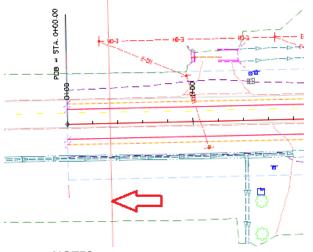
- c) Select alignment CR44 (You are being prompted to *Identify Path Element* in the lower left of the MicroStation view. You may have to Right click to select this element because there is a Template produced CL element on top or below CR44.)
- d) Uncheck the Create Drawing checkbox at the bottom of the dialog (if necessary).
- **NOTE:** *Create Drawing* performs the model/sheet creation which we are not ready to do until we have placed named boundaries for both plan and profile.

Civil Place Named Boundary Civil Plan × A 🖓 🏢 資 🦯 📝 🗂 a) Drawing Seed: Plan-Profile - 50 Scale - 5x Vert. Exag. - Pl - b) Detail Scale: 1"=50" Name: Plan 1 Description: Group: (New) Name: **CR44** Description: Start Location: 0+00.00 |◀ Stop Location: -14+00.00 Length: 700.000000 Left Offset: -75.000000 •---•• Right Offset: 75.000000 o----o Itotoc Overlap: 0.000000 e e Boundary Chords: 10 d Create Drawing Show Dialog

The dialog should look as shown below following the 4 steps.

NOTE: Although we will not make changes in this class, observe the two **Name fields** in the dialog above. The 1st (Plan 1) represents the name of the named boundaries. The 2nd (CR44) is the Group the named boundaries will fall under which should be the alignment name. The software will join these two "Names" when creating drawing and sheet models.

3) You should be prompted to **Identify Path Start Point to Place Boundary**. Move your cursor and notice the graphics which indicates the start Location.



NOTES:

- You can set this Start Location with a data point, key-in, or lock the start station to the beginning of the alignment by clicking the lock to start button
- You can key-in numbers less than the starting station of the alignment to place the Named Boundary prior to the start station.

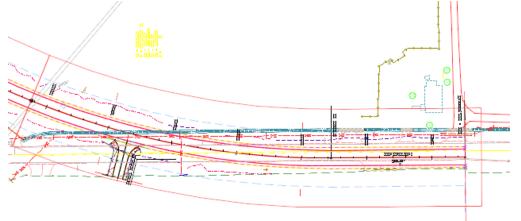
4) As mentioned in the note above, you can key-in numbers less than the starting station of the alignment so for this example, key-in -25

Start Location:	-0+25.00	◀
Stop Location:	7+55.85	▶

5) Data Point to confirm the Start Station which previews the 1st named boundary and ultimately more as you move your cursor down the alignment.



6) Now you are prompted to identify the end location to place the boundary. Move your cursor towards the end of the alignment. Data Point so the last sheet is placed as shown below.



7) Make changes to Offsets and Boundary chords if needed at this point although we will not make any changes in this example.

🔏 Place Named Bo	oundary Civil Plan —	×
	► ♥ ■ ◊ / / I I	
Drawing Seed:	Plan-Profile - 50 Scale - 5x Vert. Exag Pl 🔻	
Detail Scale:	1"=50' 🗸	
Name:	Plan 1	
Description:		
Group:	(New) 👻	
Name:	CR44	
Description:		
Start Location:	-0+25.00	◀
Stop Location:	41+50.52	▶
Length:	700.000000	00 [171]76
Left Offset:	-75.000000	 0
Right Offset:	75.00000	 0
Overlap:	0.000000	00 11-0
Boundary Chords:	10	
	Create Drawing	
	Show Dialog	

NOTE: Boundary Chords set to 0 will place a rectangular shape. If set to 10 or 20, the Named Boundaries will be curved around curves. The Boundary Chords introduced can be moved as needed to adjust the clipping area.

- 8) Data Point one more time to accept the Named Boundary Placement. This will exit you out of the Place Named Boundary dialog.
- 9) Turn any other plan view levels off as needed and Save Settings. In this example, turn construction class off to turn the corridor handlers off.

5.4 Placing Profile Named Boundaries

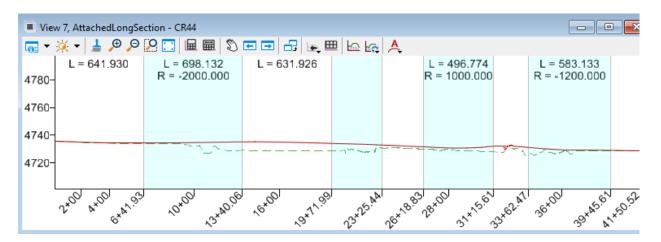
1) Set the referenced Terrain Active.



2) Open the References dialog and turn OFF display of the CDOT Default-3D model of the reference file 12345_RD-Plan Profiles_CR44.dgn.

References ((11 of 11 uniqu	ue, 10 displayed)					- 🗆	×
Tools Propert	ties							
🗄 🗕 陸 🔋	k 🗅 🌿	🗟 🄄 🗇 🚱	1 🗗 🕫	â û 🗙) <u>H</u> ilite Mode:	Boundaries 🔻		
Slot 🏴 🗋	File Name			Model	Description	Logical		Orie
1	PW_WORK	\12345_RD_Containe	r for Plans.dgn	CDOT Default	Master Model			Coir
2 🗸	PW_WORK	DI\12345_RD_Plan Pr	ofiles_CR44.dgn	CDOT Default-3D		Ref		Coi
< Scale 1.000000		: 1.000000000	Rota	ation 00°00'00"				
Scale 1.000000 Offset X 0.000		Y 0.000						
Scale 1.000000 Offset X 0.000					esting	 Nesting Depth 	: 1	

3) Open the profile model of US85_NB in View 7



4) Invoke the Named Boundary dialog and choose the **Civil Profile** mode and set the *Drawing Seed* to **Plan-Profile -50 Scale – 5x Vert. Exag. - PROFILE**



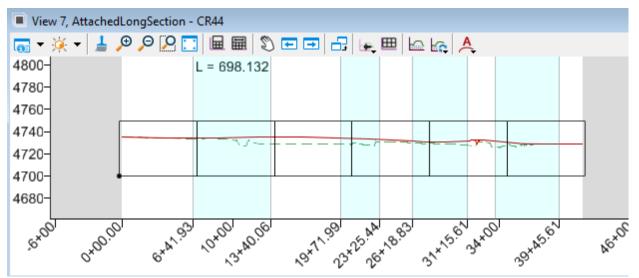
NOTE: Below are the Plan-Profile (PROFILE) Drawing Seeds available.

Name	^
Plan-Profile - 40 Scale - 1x Vert. Exag PROFILE	
Plan-Profile - 40 Scale - 2x Vert. Exag PROFILE	
Plan-Profile - 40 Scale - 5x Vert. Exag PROFILE	
Plan-Profile - 50 Scale - 1x Vert. Exag PROFILE	
Plan-Profile - 50 Scale - 2x Vert. Exag PROFILE	
Plan-Profile - 50 Scale - 5x Vert. Exag PROFILE	
Plan-Profile - 100 Scale - 1x Vert. Exag PROFILE	
Plan-Profile - 100 Scale - 2x Vert. Exag PROFILE	
Plan-Profile - 100 Scale - 5x Vert. Exag PROFILE	
Plan-Profile - 100 Scale - 10x Vert. Exag PROFILE	
Plan-Profile - 200 Scale - 1x Vert. Exag PROFILE	
Plan-Profile - 200 Scale - 2x Vert. Exag PROFILE	
Plan-Profile - 200 Scale - 5x Vert. Exag PROFILE	
Plan-Profile - 200 Scale - 10x Vert. Exag PROFILE	

5) Set the *Method* to **From Plan Group, The Vert Exageration 5, check Use Terrains and Use Active Vertical.** The dialog at this point should look similar to what is shown below, making note that Create Drawing is set:

🄏 Place Named Boundary	r Civil Profile —	Х	NOTES:
Drawing Seed: Detail Scale: Name: Description: Method:	Plan-Profile - 50 Scale - 5x Vert. Exag Pl • 1"=50' Profile 1 From Plan Group CR44 (New)	×	• You do have the option of checking the Create Drawing checkbox which means when you confirm all the prompts, you will move straight into the Create Drawing dialog. We will not in this example but this is a viable option.
Name: Description:	CR44 From Plan Group: CR44		Give 1"=50' Horizontal & Vertical Evagoration of E To calculate the
Vertical Exaggeration:	5.000000		Exaggeration of 5. To calculate the
Available Profile Height:	50.000000	• •	Vertical scale: $50/5 = 10$ so the Vertical
Top Clearance:	0.500000		Scale will be equal to 1"=10'.
Bottom Clearance:	0.500000		
Elevation Datum Spacing:	10.000000		 Make note of the Available Profile Height
Station Datum Spacing:	10.000000		(50 in this example). This will help you
Profile Shifts:	Datum Stations 👻		
	Use Terrains		choose which Profile Annotation Group
	Use Active Vertical		you will use.
	Whole Conduits Only		
	Create Drawing		
	Show Dialog		

6) Once prompted to Identify Profile View, data point in View 7 which should be still opened as a profile view. You should then be able to view the named boundaries in the profile view.



NOTE:

The number of Profile Named boundaries matches the Plan Names boundaries but that may not be the case when there is a lot of vertical change along the profile. If the profile will not fit on a profile named boundary, the software will break that named boundary into 2 or more named boundaries and shift the vertical datum so that it is different for each extra named boundary if Profile Shifts is set to Datum Stations as shown below.

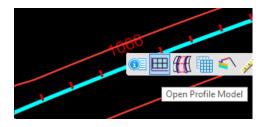
Station Datum Spacing:	10.000000
Profile Shifts:	Datum Stations 👻
	Use Terrains
	Use Active Vertical
	Whole Conduits Only
	Create Drawing
	Show Dialog

7) Data point to accept the placement of the named boundaries.

5.4.1 Displaying Elements on Profiles

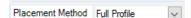
Profiles, unlike cross-sections, do not automatically display every 3D element the alignment cuts across. However, the **Create 3D Cut** tool will add any elements the alignment cuts across to the profile. We will demonstrate how to display items on profiles that cross alignments (like cross drains or other corridors) in the next few steps with this command. These steps can be perfromed after sheet setup and any elements added to the profiles should automatically show on the profile drawing model and sheet model.

- 1) Open 12345_RD_Geometry.dgn
- 2) Reference the 12345_RD_Drainage.dgnfile.
- 3) Open the profile model of alignment CR44.

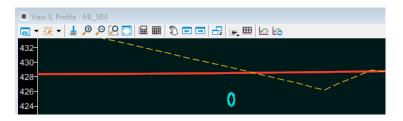


- 4) Turn OFF display of the 12345_SV_Topo.dgn file in the Defaul-3D model.
- 5) Select the command Create 3D Cut from the top of the Profile View.





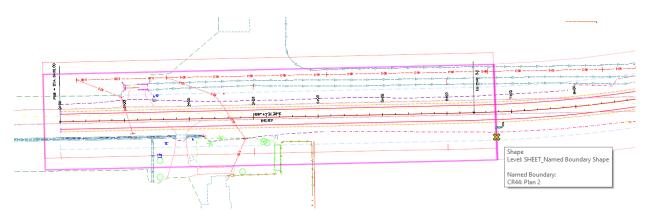
7) Review the profile and you should see the cross-drain we placed in the previous section.



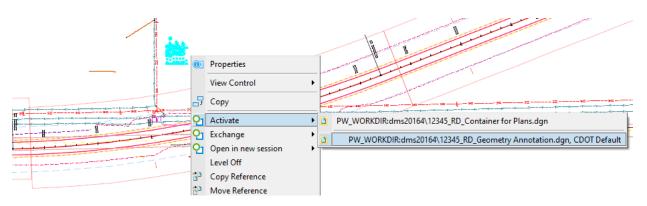
5.5 Modifying Named Boundary Locations & arranging Text

Before you go through the process of creating sheets, you may need to move the named boundaries to encompass important data on the sheet that may not be initially covered. For plan named boundaries, you can use MicroStation's **Move** tool to simply move the plan named boundary. For profile named boundaries, there is an **Adjust Profile Named Boundary** tool available in the Named Boundary pulldown menu that would need to be used.

1) Select the 1st named boundary and move it to the North just a little.



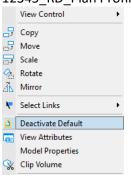
2) Move the curve data that is at the bottom of named boundaries 1 & 2 so that it is in the middle of named boundary 1. Since the curve data is in a reference, hold down the Reset button on the curve data, choose **Activate**, select Geometry_Annotation.dgn.



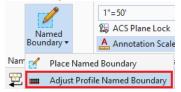
3) Move & rotate the curve data so that it is positioned on named boundary 2 as shown below.



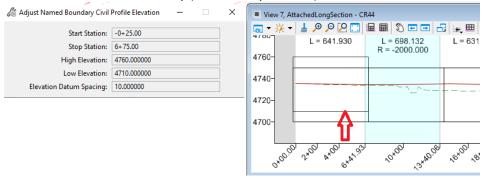
- 4) Perform the same process (make sure all other curve data fits on for all other CR44 Curve data.
- 5) Hold down your right mouse button and choose **Deactivate Default** to return to 12345_RD_Plan Profiles_CR44.dgn.



6) Next, we will move a named boundary in the profile view by selecting the **Adjust Profile Named Boundary** command from the Named Boundary pulldown.



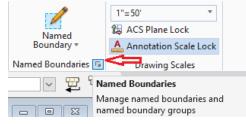
- 7) You are prompted to *Identify the Profile View.* **Data point in View 7** which should still be open as the profile view for ML_SR4.
- 8) Select the 1st named boundary (middle shape below) and move it to elevation 445.



5.6 Creating Sheets (Named Boundary Manager)

In the next few steps we will create sheets from the named boundaries we have placed. *The Profile View must remain open through this process when creating Plan & Profile sheets.*

- <u>Turn off any levels you do not want on your sheets, turn off construction class elements, and</u> <u>then Save Settings</u>. This can be performed later as well and controlling sheet levels is discussed more in section 7.6
- 2) Select the Manage Named Boundaries button.



3) The Named Boundaries dialog is invoked. Expand the Plan Groups & Profile Groups to review the named boundaries & **select CR44** under the *Plan Group*.

REC	Named Bounda	ries		-		×
×	2 - 8	ہم 🔜 ہم	· 📖 🛞 [: 📑 🕘 🚄 of		
Nan	ne	Ŧ	Description	File Name	Show	
4	Plan Groups					
	CR44			12345_RD_Plan Profiles_CR44.dgn	~	
	Linked Pr	rofile Groups				
	Plan 1			12345_RD_Plan Profiles_CR44.dgn	~	
	Plan 2			12345_RD_Plan Profiles_CR44.dgn	\checkmark	
	Plan 3			12345_RD_Plan Profiles_CR44.dgn	\checkmark	
	Plan 4			12345_RD_Plan Profiles_CR44.dgn	\checkmark	
	Plan 5			12345_RD_Plan Profiles_CR44.dgn	~	
	Plan 6			12345_RD_Plan Profiles_CR44.dgn	~	
4	Profile Groups					
	 CR44 				~	
	Profile 1			12345_RD_Plan Profiles_CR44.dgn	~	
	Profile 2			12345_RD_Plan Profiles_CR44.dgn	~	
	Profile 3			12345_RD_Plan Profiles_CR44.dgn	~	
	Profile 4			12345_RD_Plan Profiles_CR44.dgn	~	
	Profile 5			12345_RD_Plan Profiles_CR44.dgn	~	
	Profile 6			12345_RD_Plan Profiles_CR44.dgn	~	
	Cross Section Gr	oups				
	Other Groups					

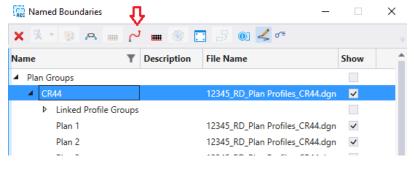
NOTE:

- If there are no arrows next to Plan Groups & Profile Groups, exit the dialog & open it again which should clear up that issue.
- In this dialog, you can delete Named Boundaries, go to Properties and rename named boundaries, create Plan & Profile sheets, etc.

4) Select CR44 under Plan Groups and choose the Show Create Drawing button.



5) With **CR44** still selected, choose the **Create plan/profile drawing** button.



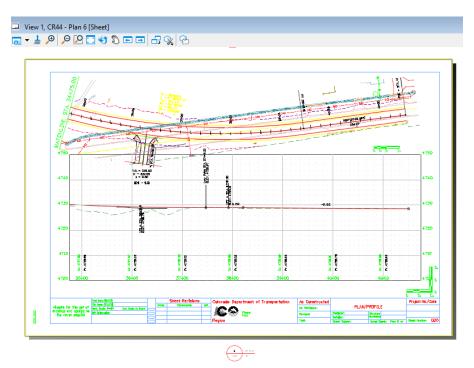
- 6) This invokes the Create Drawing dialog which is shown below step 7. The Plan view type is on the left and the Profile view type is on the right side of the dialog. You generally do not have to change much on this dialog unless you are working with a different scale (which is discussed later in this section).
- 7) Change the *Profile Annotation Group* from Profile Grid 100ft Spacing to **Profile Grid 10ft Spacing.** Remember our maximum Available Profile Height was 50 on the Named Boundary dialog. Using this annotation group will give us 10ft annotations for the elevation datum.

3 o	reate Drawing							\times
	Mod One Sheet Per Dg		•					
	View Name:	CR44 - Plan 1-3		View Name:	CR44 - Profile 1-1			
	Drawing Seed:	Plan-Profile - 50 Scale - 5x Vert. Exag 🔻		Drawing Seed:	Plan-Profile - 50 Sc	ale - 5x Vert. Exag 🔻		
	View Type:	Civil Plan		View Type:	Civil Profile			
	Discipline:	Civil PLAN		Discipline:	Civil	PROFILE		
	Purpose:	Plan View		Purpose:	Elevation View			
		Drawing Model			Drawing Model			
	Model Name:	CR44 - Plan 1-3		Model Name:	CR44 - Profile 1-1			
	Seed Model:	Plan_Profile.dgnlib, Plan-Profile - 50 Scal		Seed Model:	Plan_Profile.dgnlib	o, Plan-Profile - 50 Scal		
	Filename:	(Active File)	🗎 🖡	Filename:	(Active File)			4
	A	1"=50' 🗸		A	1"=50'	-		
	Annotation Group:	Plan Annotation w/ Matchlines		Annotation Group:	Profile Grid 10ft Space	ing 🗸		
		Sheet Model			Sheet Model			
	Model Name:	CR44 - Plan 1-3		Model Name:	CR44 - Profile 1-1			
	Seed Model:	Plan_Profile.dgnlib, Plan-Profile - 50 Scal		Seed Model:	Plan_Profile.dgnlib	o, Plan-Profile - 50 Scal		
	Filename:	(Active File)	• 4	Filename:	(Active File)			4
	Sheets:	(New) 👻		Sheets:	(New)	-		
	A	Full Size 1 = 1		A	Full Size 1 = 1	*		
I	Drawing Boundary:	Plan-Profile - 50 Scale - 5x Vert. Exag 🔻		Drawing Boundary:	Plan-Profile - 50 Sc	ale - 5x Vert. Exag 🔻		
	Detail Scale :	1"=50' (By Named Boundary) 🔹		Detail Scale :	1"=50'	•		
		Add To Sheet Index 🕼						
		Make Sheet Coincident						
		Open Model						
						<u>о</u> к с	ancel	

NOTES:

- You cannot create plan & profile sheets if the profile view is not open.
- The 1st check box on this dialog will create one DGN file per sheet if you check it. If you do check it, the name of the DGN's created comes from the Sheet Model Name.
- It's your preference but we will leave **Add to Sheet Index** box unchecked. Files/Sheets can be added to Sheet Index later if needed. If you decide to check this, choose the icon to the right to specify the folder name.
- The *Profile Annotation Group* is what places the profile grid, annotates the elevation datum, station datum, and any proposed profile that is present when the drawings models are created.

8) Tag **OK** to generate sheets. A status bar is displayed in the lower right of the MicroStation window showing progress until the sheets are created. When the processing is complete, you should be moved to the model of the last sheet created.



9) Open the MicroStation models dialog (Home ribbon tab -> Primary ribbon group) and review the models created.

🔲 Moo	dels					- 🗆 X								
-														
Туре	2D/3D	Name	Description	*	Design File	Sheet Number								
01 6		CDOT Default	Master Model		\12345_RD_Plan Profiles									
i 👘		CDOT Default-3D			\12345_RD_Plan Profiles									
		CR44 - Plan 1			\12345_RD_Plan Profiles									
		CR44 - Plan 2			\12345_RD_Plan Profiles									
		CR44 - Plan 3			\12345_RD_Plan Profiles									
		CR44 - Plan 4			\12345_RD_Plan Profiles									
		CR44 - Plan 5			\12345_RD_Plan Profiles									
		CR44 - Plan 6			\12345_RD_Plan Profiles									
		CR44 - Profile 1			\12345_RD_Plan Profiles									
		CR44 - Profile 2			\12345_RD_Plan Profiles									
		CR44 - Profile 3			\12345_RD_Plan Profiles									
		CR44 - Profile 4			\12345_RD_Plan Profiles									
		CR44 - Profile 5			\12345_RD_Plan Profiles									
00000		CR44 - Profile 6			\12345_RD_Plan Profiles									
		CR44 - Plan 1 [Sheet]			\12345_RD_Plan Profiles	Plan 1								
		CR44 - Plan 2 [Sheet]			\12345_RD_Plan Profiles	Plan 2								
Là		CR44 - Plan 3 [Sheet]			\12345_RD_Plan Profiles	Plan 3								
		CR44 - Plan 4 [Sheet]			\12345_RD_Plan Profiles	Plan 4								
a		CR44 - Plan 5 [Sheet]			\12345_RD_Plan Profiles	Plan 5								
		CR44 - Plan 6 [Sheet]			\12345_RD_Plan Profiles	Plan 6								

NOTES:

- There are 3 models created for each plan & profile sheet:
 - a) Plan Drawing model
 - b) Profile Drawing model
 - c) Plan 1 (Sheet) Sheet model
- You can select and delete all Drawing/Sheet models if there is a need to re-create sheets (Compress and exit before re-processing though.)

10) Close the Models dialog and at the bottom of the MicroStation view, review the Active View Groups. Open a Plan View, a Profile view & other Sheets and then return to the Plan 6 sheet.

	Name	Model	^
	🔁 CR44 - Plan 5 Views	🔊 CR44 - Plan 5	-
	🔁 CR44 - Plan 6 Views	🔊 CR44 - Plan 6	
	🔁 CR44 - Profile 1 Views	🔊 CR44 - Profile 1	
	🔁 CR44 - Profile 2 Views	🔊 CR44 - Profile 2	
	🔁 CR44 - Profile 3 Views	CR44 - Profile 3	
	🔁 CR44 - Profile 4 Views	CR44 - Profile 4	
	🔁 CR44 - Profile 5 Views	🔊 CR44 - Profile 5	
	🔁 CR44 - Profile 6 Views	🔊 CR44 - Profile 6	
	🔁 Multi-Model Views	_	
	🔁 CR44 - Plan 1 [Sheet] Views	CR44 - Plan 1 [Sheet]	
	🔁 CR44 - Plan 2 [Sheet] Views	CR44 - Plan 2 [Sheet]	
	🔁 CR44 - Plan 3 [Sheet] Views	CR44 - Plan 3 [Sheet]	
🔍 Properties 🛛 🔍 Exp			Υ.
() • () • () •	CR44 - Profile 6 View	12345678	/
New Node	Û		

6. SHEET & NAMED BOUNDARY MANAGEMENT

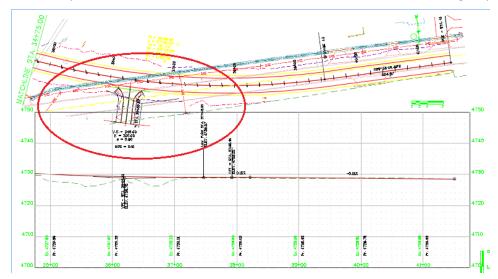
6.1 Section Overview

This section covers Sheet & Named Boundary related tasks outside the normal creation process such as deleting Sheets & Named Boundaries, managing level and reference display, modifying sheet reference clipping & location, etc.

6.2 Deleting Sheets & Named Boundaries

If sheets need to be re-created, delete all drawing and sheet models prior to re-creating. If the named boundaries need to be deleted and placed again, go to the Named Boundary Manager and delete the Named Boundaries. Compress the file, exit, and then re-enter the file before creating named boundaries again. This sequence purges the Named Boundary names so they can be re-used.

For the sheets just in the last exercise, there doesn't appear to be enough room for the plan area on some of the sheets as shown below (on sheet 6). We will delete all the sheet related models and profile named boundaries and recreate the sheets in the following steps.



1) Return to the Multi-Model views.

2) Open the Models dialog, select all sheet related models (All models except CDOT Default & CDOT Defaul-3D), and then delete the selected models.

🗇 Mo	🖸 Models – 🗆 🗙							
) ()	🕘 🔲 🎦 🚺	K					
Туре	2D/3D	Name	Description	*	Design File	Sheet N	Number	
Q 1		CDOT Default	Delete model(s) Nodel		\12345_RD_Plan Profiles			
<u>아</u>		CDOT Default-3D			\12345_RD_Plan Profiles			
D		CR44 - Plan 1			\12345_RD_Plan Profiles			
		CR44 - Plan 2			\12345_RD_Plan Profiles			
		CR44 - Plan 3			\12345_RD_Plan Profiles			
		CR44 - Plan 4			\12345_RD_Plan Profiles			
		CR44 - Plan 5			\12345_RD_Plan Profiles			
		CR44 - Plan 6			\12345_RD_Plan Profiles			
		CR44 - Profile 1			\12345_RD_Plan Profiles			
		CR44 - Profile 2			\12345_RD_Plan Profiles			
		CR44 - Profile 3			\12345_RD_Plan Profiles			
		CR44 - Profile 4			\12345_RD_Plan Profiles			
		CR44 - Profile 5			\12345_RD_Plan Profiles			_
		CR44 - Profile 6	+1		\12345_RD_Plan Profiles	Diam 1		_
		CR44 - Plan 1 [She			\12345_RD_Plan Profiles	Plan 1		
		CR44 - Plan 2 [She CR44 - Plan 3 [She	•		\12345_RD_Plan Profiles \12345 RD Plan Profiles	Plan 2 Plan 3		_
		CR44 - Plan 3 [She CR44 - Plan 4 [She			\12345_RD_Plan Profiles	Plan 3 Plan 4		_
		CR44 - Plan 4 [She CR44 - Plan 5 [She	•		\12345_RD_Plan Profiles	Plan 4 Plan 5		
		CR44 - Plan 5 [She CR44 - Plan 6 [She			\12345_RD_Plan Profiles	Plan 6		
		Cives - Flan 0 [Sne	ccuj		(12345_ND_Flan Profiles	Fian 0		

3) Open the Named Boundaries dialog and delete the Profile Named Boundaries.

🚘 Named Boundaries	_	×
× * * * A 🖩 🖍 📾 🕥 📑 8 🐽 < «		Ŧ
$\ensuremath{\mathbf{N}}\xspace{\mathbf{a}}$ Delete selected named boundary or named boundary group	Show	
Plan Groups		
 Profile Groups 		
▶ CR44	~	
Cross Section Groups		
Other Groups		

- 4) Choose File-> Tools -> **Compress File**
- 5) Choose File -> 12345_RD_Plan_Profiles_CR44.dgn to close & re-open the file.

6.3 Modifying Default Drawing Seed Settings

Drawings Seeds set the default values on the Place Named Boundary dialog. These values do not normally have to be changed but they can. In this example, we will replace the Profile Named Boundaries that we just deleted and will change the Default Profile Height to give us a little more space for the Plan View. We will go through more examples of this in the Roll Plots Section.

 Let's place Profile Named Boundaries again so select Named Boundary from the Drawing Production ribbon tab. The settings you should use are shown below. We previously used a Vertical Exaggeration of 5 which gave us an Available Profile Height of 50. Leave the Vertical Exaggeration set to 5 but change the Available Profile Height to 40.

🖓 Place Named Boundar	Civil Profile —	×
	A 🖓 🏾 🕲 🖉 🖓 🖓 🖾	
Drawing Seed:	Plan-Profile - 50 Scale - 5x Vert. Exag Pl 🔻	
Detail Scale:	1"=50' 💌	
Name:	Profile 1	
Description:		
Method:	From Plan Group 👻	
Plan Group:	CR44 ~	-
Group:	(New) -	
Name:	CR44	
Description:	From Plan Group: CR44	
Vertical Exaggeration:	5.000000	
Available Profile Height:	40.000000	
Top Clearance:	0.500000	1
Bottom Clearance:	0.500000	1 -
Elevation Datum Spacing:	10.000000	1
Station Datum Spacing:	10.000000	1
Profile Shifts:	Datum Stations 👻	í l
	Use Terrains	
	Use Active Vertical	
	Whole Conduits Only	
	Create Drawing	
	Show Dialog	
_		

2) Move the last two Named Boundaries up if needed to elevation 4710 with the Adjust Profile Named Boundary dialog.

View 7, Attache	View 7, AttachedLongSection - CR44						
🕞 - 🔆 - 🛓							
4760-	L = 698.132						
4740-]					
4720-		-					
4700-		_					
4680-							

3) Open the Named Boundary dialog and go through the sheet creation process.

REC	Named Boundaries	3)	2)	-	\times
×	🧏 t 🔞 A	······································	🛞 🔝 🗗 📵 🚄 🕫		
Nar	ne T	Description	File Name	Show	
4	Plan Groups				
	▶ CR44	1)	12345_RD_Plan Profiles_CR44.dgn	~	
4	Profile Groups				
	▶ CR44			~	
	Cross Section Group	s			
	Other Groups				

4) Change the *Profile Annotation Group* to **Profile Grid 10ft Spacing** on the Create Drawing dialog and then choose OK to recreate the sheets.

🜍 Create Drawing					×
Mo	de: Plan and Profile	•			
One Sheet Per D	gn:				
View Name:	CR44 - Plan 1-5	1			
Drawing Seed:			View Name:		
	Civil Plan		-	Plan-Profile - 50 Scale - 5x Vert. Exag 🔻	
Discipline:				Civil Profile	
			Discipline:	Civil	
Purpose:			Purpose:	Elevation View	
	Drawing Model			Drawing Model	
Model Name:			Model Name:	CR44 - Profile 1	
Seed Model:			Seed Model:	Plan_Profile.dgnlib, Plan-Profile - 50 Scal	
Filename	(Active File)	🗇 🖡	Filename:	(Active File)	😑 🖡
A	1"=50' 🗸		A	1"=50' 🗸	
Annotation Group:	Plan Annotation w/ Matchlines]	Annotation Group:	Profile Grid 10ft Spacing	
	Sheet Model			Sheet Model	
Model Name:	CR44 - Plan 1-5		Model Name:	CR44 - Profile 1	
Seed Model:	Plan_Profile.dgnlib, Plan-Profile - 50 Scal		Seed Model:	Plan_Profile.dgnlib, Plan-Profile - 50 Scal	
E Filename	(Active File)	🗅 📮	Filename:	(Active File)	A 1
Sheets	(New) 🔻		Sheets:	(New) 👻	
A	Full Size 1 = 1		A linear	Full Size 1 = 1	
Drawing Boundary:	Plan-Profile - 50 Scale - 5x Vert. Exag 🔻		Drawing Boundary:	Plan-Profile - 50 Scale - 5x Vert. Exag 🔻	
Detail Scale :	1"=50' (By Named Boundary) 🔹		Detail Scale :	1"=50' 🗸	
	Add To Sheet Index				
	Make Sheet Coincident				
	Open Model				
				<u>o</u> k c	ancel



5) Review the change on Sheet 6 -> We have more room for the Plan View.

 \times

6.4 Modifying Sheet References

We will discuss moving sheet references and changing the clipping shape in this section.

1) Open sheet 5. Notice the Plan area really needs to be shifted down on the sheet.



2) Open the References dialog, choose the Plan reference, right click it, & then choose Move.

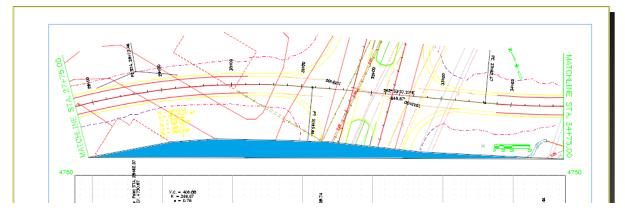
 References (16 of 16 unique, 15 displayed)

<u>T</u> ools	<u>P</u> ropertie	es			
₩.	🔁 🎙	; 🗅 🛒 🗇 🧇 🖻 🗗 🔂 🕏	5 🛱 📅 🛈 🗙	Hilite Mode: Boundaries 🔻]
Slot	۵	File Name	Model	Description Logica	al Orient
1	\checkmark	12345_RD_Plan Profiles_CR44.dgn	CR44 - Plan 5	<u>A</u> ttach	Plan 5-1
2	\sim	12345_RD_Plan Profiles_CR44.dgn	CR44 - Profile 5	<u>D</u> etach	Profile 5-1
				R <u>e</u> load	
				E <u>x</u> change	
				Open in New Session	
				Activate	
				Deactivate	
				Move	
				<u>С</u> ору	
				Scale	1



3) Data Point for the location to move from and then datapoint for the location to move to.

4) We want to see more of the survey on the South side of this intersection (the area shaded blue below).

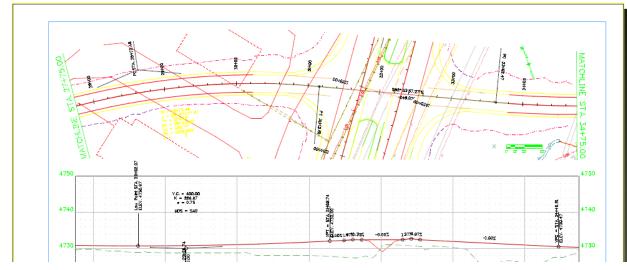


- 5) Open the Multi-Model View group and turn Construction class on in View 1 if it is not on.
- 6) Choose the Delete Vertex tool.

Drawing	Utilities Collaborate	View CDOT	Help		
 	Place Place Arc SmartLine Line Tools	/ O · + · ☆ · □ · ◇ · · [♪] / · A ·	Move Copy Rotate 20 €	Modify Break Trim Element Element Multiple	Image: Second secon
ection	Placer	nent	Manipulate	Modify	🗡 Extend Line 🕞



7) Delete all the Vertex's on the South side of the Named Boundary. BEFORE:



8) Return to Plan Sheet 5 and review the Plan View which should look similar to the image below.

6.5 Adding Reference Files

To add reference files to previously created Plan and Profile Sheets, follow the steps below:

- 1) Open the Default model.
- 2) Invoke MicroStation's Reference Dialog, attach the needed references, and the references should show up on the drawing and sheet models.

6.6 Controlling Sheet Levels

A new reference setting now allows level control for all sheet models. Turning off unwanted levels in the Default model will display the same on all sheet models. This is controlled by the Synchronize View setting in the reference properties of each Drawing model.

- 1) Go to a Plan Drawing model.
- 2) Open the Reference dialog.
- 3) Double click the reference file.
- 4) Review the Synchronize View setting below.

	Synchronize View:	Plan 1	Settings From	Design Model 🔻
То	ggles			
		_ 	15 🖓 🗹 📥	
			<u>о</u> к	Cancel

5) Open the Plan 1 Sheet model

Name	Model	^
🔁 CR44 - Profile 2 Views	🔊 CR44 - Profile 2	
🔁 CR44 - Profile 3 Views	🔊 CR44 - Profile 3	
🔁 CR44 - Profile 4 Views	🔊 CR44 - Profile 4	
CR44 - Profile 5 Views	🔊 CR44 - Profile 5	
CR44 - Profile 6 Views	🔊 CR44 - Profile 6	
🔁 Multi-Model Views		
🔁 CR44 - Plan 1 [Sheet] Views	🕒 CR44 - Plan 1 [Sheet]	
CR44 - Plan 2 [Sheet] Views	🕒 CR44 - Plan 2 [Sheet]	
CR44 - Plan 3 [Sheet] Views	🕒 CR44 - Plan 3 [Sheet]	
CR44 - Plan 4 [Sheet] Views	🕒 CR44 - Plan 4 [Sheet]	
CR44 - Plan 5 [Sheet] Views	🕒 CR44 - Plan 5 [Sheet]	
CR44 - Plan 6 [Sheet] Views	🕒 CR44 - Plan 6 [Sheet]	
		~
CR44 - Plan 1 [Sheet 🔻 🔽	1 2 3 4 5 6 7 8	~

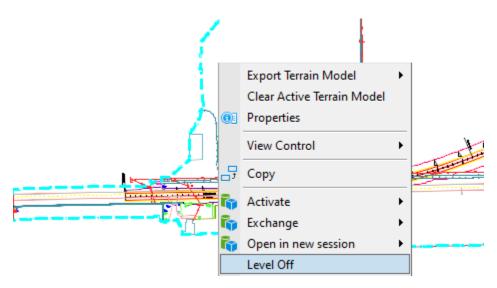
- 4750
- 6) Observe the terrain model on this sheet. This should not be displayed.

7) Open the Default or Multi Model Named views.

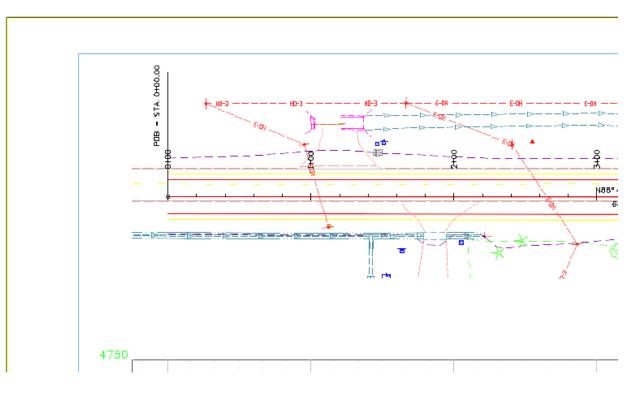
Name	Model	^
🔁 CR44 - Profile 2 Views	🔊 CR44 - Profile 2	
🔁 CR44 - Profile 3 Views	🔊 CR44 - Profile 3	
🔁 CR44 - Profile 4 Views	🔊 CR44 - Profile 4	
🔁 CR44 - Profile 5 Views	🔊 CR44 - Profile 5	
🔁 CR44 - Profile 6 Views	🔊 CR44 - Profile 6	
🔁 Multi-Model Views		
🔁 CR44 - Plan 1 [Sheet] Views	🕒 CR44 - Plan 1 [Sheet]	
🔁 CR44 - Plan 2 [Sheet] Views	🕒 CR44 - Plan 2 [Sheet]	
🔁 CR44 - Plan 3 [Sheet] Views	🕒 CR44 - Plan 3 [Sheet]	
🔁 CR44 - Plan 4 [Sheet] Views	🕒 CR44 - Plan 4 [Sheet]	
🔁 CR44 - Plan 5 [Sheet] Views	🕒 CR44 - Plan 5 [Sheet]	
CR44 - Plan 6 [Sheet] Views	🕒 CR44 - Plan 6 [Sheet]	
		~
🔁 CR44 - Plan 1 [Sheet 🔻 🔽] 1 2 3 4 5 6 7 8	

8) Make View 1 the Active View by data pointing on the top of that view.

9) Hover over the Terrain model, hold down your right mouse button and from the Reset menu, choose **Level Off.**



10) Choose **Save Settings** and return to the Plan 1 Drawing and Sheet models and make sure this level is off there to verify the Synchronize View setting is working.



6.7 Other Scale Sheets

Drawing Seeds are set up for many different scales but should you need a Drawing Seed with a scale that isn't available, the steps below describe the scale changes you need to make during the Named Boundary process to create sheets at other scales. At this time, for example, there is not a Plan Profile Sheet Seed for a 1"=20' scale. If you needed a 1"=20' Plan & Profile Scale & a 1"=5' Vertical scale, you would set the scales in the following locations.

1) Drawing Scale of on the Drawing Production Ribbon Tab



2) Detail Scale of the Plan Named Boundaries. Note that when the Detail Scale is changed, other values such as Length and Offsets are adjusted automatically.

🔏 Place Named Bo	oundary Civil Plan —	×
	<mark>- P 🖩 🎕 🗸 🖌 🏾 🎞</mark>	
Drawing Seed:	Plan-Profile - 40 Scale - 1x Vert. Exag Pl 🔻	
Detail Scale:	1"=20' 🔹	
Name:	Plan 1	
Description:		
Group:	(New) 👻	
Name:	Untitled	
Description:		
Start Location:		◀
Stop Location:		▶
Length:	280.000000	00 Initia
Left Offset:	-30.000000	00 Itata:
Right Offset:	30.000000	00 Inte
Overlap:	0.000000	00 Imini
Boundary Chords:	10	
	Create Drawing	
	Show Dialog	

3)	Detail Scale and Vertical Exaggeration of the Prot	filed Nam	ed Bour	ndaries
	🔏 Place Named Boundary Civil Profile	_		×

	ヘ 🏳 🔳 🕲 🖊 💕 🎞	
Drawing Seed:	Plan-Profile - 40 Scale - 1x Vert. Exag Pl 🔻	
Detail Scale:	1"=20' 🗸	
Name:	Profile 1	
Description:		
Method:	From Plan Group 👻	
Plan Group:	CR44 -	
Group:	(New) 👻	
Name:	Untitled	
Description:	From Plan Group: CR44	
Vertical Exaggeration:	4.000000	
Available Profile Height:	25.000000	oo
Top Clearance:	0.500000	
Bottom Clearance:	0.500000	
Elevation Datum Spacing:	10.000000	
Station Datum Spacing:	10.000000	
Profile Shifts:	Datum Stations 👻	
	Use Terrains	
	Use Active Vertical	
	Whole Conduits Only	
	Create Drawing	
	Show Dialog	

NOTE: In the example above, a Vertical Exaggeration of 4 (20/4) would give you 1''=5'

 \times

Annotation Scale of the Drawing Models created during the Create Drawing process.

 Create Drawing

Moo		•				
View Name:			View Name:	CR44 - Profile 1-1]	
Drawing Seed:				Plan-Profile - 40 Scale - 1x Vert. Exag 🔻		
View Type:				Civil Profile		
Discipline:			Discipline:	Civil		
Purpose:	Plan View		 Purpose:	Elevation View		
	Drawing Model			Drawing Model		
Model Name:	CR44 - Plan 1-6		Model Name:	CR44 - Profile 1-1]	
Seed Model:	Plan_Profile.dgnlib, Plan-Profile - 40 Scal		Seed Model:	Plan_Profile.dgnlib, Plan-Profile - 40 Scal]	
Filename:	(Active File)	🗇 📮	Filename:	(Active File)		Ę.
A	1"=40' 🗸		A	1"=40' 🗸		
Annotation Group:	Plan Annotation w/ Matchlines		Annotation Group:	Profile Grid 10ft Spacing 🗸		
	Sheet Model		 	Sheet Model	<u> </u>	
Model Name:	CR44 - Plan 1-6		Model Name:	CR44 - Profile 1-1]	
Seed Model:	Plan_Profile.dgnlib, Plan-Profile - 40 Scal		Seed Model:	Plan_Profile.dgnlib, Plan-Profile - 40 Scal]	
Filename:	(Active File)	• R	Filename:	(Active File)		4
Sheets:	(New) 👻		Sheets:	(New) 👻		
	Full Size 1 = 1		A	Full Size 1 = 1		
Drawing Boundary:	Plan-Profile - 40 Scale - 1x Vert. Exag 🔻		Drawing Boundary:	Plan-Profile - 40 Scale - 1x Vert. Exag 🔻		
Detail Scale :	1"=40' 🗸		Detail Scale :	1"=40' 🔻		
	Add To Sheet Index 🕼					
	Make Sheet Coincident					
	Open Model					
				<u>OK</u> C	ancel	

7. PLAN SHEETS (along Alignment)

7.1 Section Overview

This section will cover creation of Plan sheets along an alignment. We will generate one set of Plan Named Boundaries & sheets for US85 at a scale of 1"=100'. In the next section, we will generate Profile Sheets for US85 SB & NB.

Annotation should normally be performed in the design or drawing models when using the Named Boundary process to create sheets.

7.2 Attaching the Container file (or references)

In the following steps, will create a file to reference the container file. In subsequent subsections we will place Named Boundaries and then create 1"=100' Plan along US85. If you had the same scale for all sheets, you could ultimately create one file for the Named Boundaries but that's not the case here so we are specifying CR44 in the name of the file as shown in step 1 below.

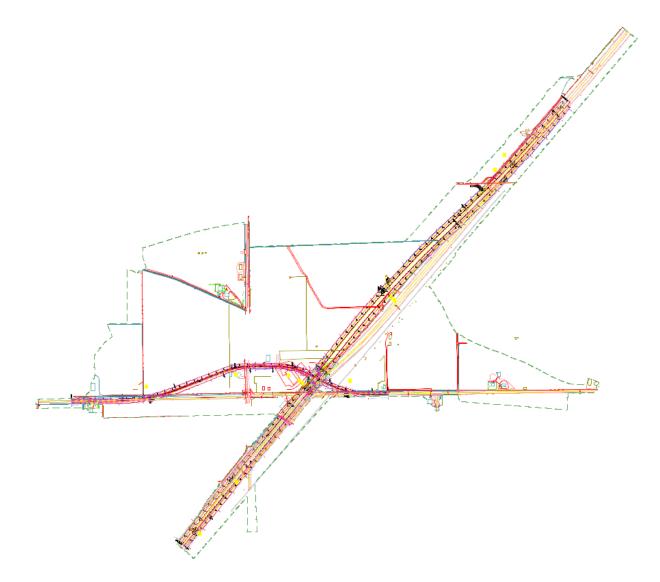
- 1) Create and enter the file 12345_RD_Plan Profiles_US85.dgn (Using a 2D Seed file).
- 2) Reference the file **12345_RD_Container for Plans.dgn with** the following settings.

🜍 Reference Attachment Properties for\12345_Container for Plans.dgn	×
File Name: PW WORKDIR:dms20164\12345 Container for Plans.dgn	
Full Path:\cdot-pw-04t\dms20164\12345 Container for Plans.dgn	
Model: CDOT Default	
Logical Name:	
-	
Description: Master Model	
Orientation:	_
View Description	
Coincident Aligned with Master File	
Coincident - World Global Origin aligned with Master File	
Named Boundaries (none)	
Detail Scale: 1"=50' ←	
Scale (Master:Ref): 1.00000000 : 1.00000000	
Named Group:	
Revision:	
Level:	e.
Nested Attachments: Live Nesting Nesting Depth: 1	٦
Display Overrides: Never	
New Level Display: Use MS_REF_NEWLEVELDISPLAY Cor	
Global LineStyle Scale: Master	
Synchronize View: Volume Only	
Toggles	
OK Cancel	٦

NOTES:

- Nesting depth of 1 will bring all the references in the Container file.
- Display Overrides is set to Never.

3) Fit the view which should appear as shown below.



7.3 Placing Plan Named Boundaries

 Select the Drawing Production ribbon tab, confirm or set a scale of 1"=100', then select Named Boundary from the Drawing Production ribbon tab.

🛐 Оре	nRoads Modeling	* M * 1	🗅 🖬 🛃 🛙	là 🔶 - 🔶 🖈	1 🚔 🕴 📵) 🔥 🗧	pw:\\cdot-pw.	bentley.com:cdot-pw-	04T\Docum	nents\02 M	inor Projects\0	DOT Tra	ining Proje	cts\12345 - CDO	T Plans Production\01 P	re-Construction\Drav	vings\Roadway\12345_R	D_Plan Profiles.dgn Search Rib
File	Home Terrai	n Geomet	try Site	Corridors	Model Det	ailing	Drawing Prod	uction Drawing	Utilities	colla	borate Vie	w (CDOT I	Help				
~ ∎ • 0	Element Selection	Clip Volume 🕄	Create Saved View	Update Saved View Settings	- R		A or	Dimension Element	•	A A Edit Text Text	Change Tex Attributes	ABC A ^A 7 A	Civil	Element Annotation *	Drawing Model Annotation *	Cross Section Navigator	Named Boundary -	1"=50' Solution Contemporation Scale Lock
Primary	Selection	Clip	1	Saved Views	Gi.	Tables	Notes	Dimensioning	5		Text	Fai	Labels 🕫	An	notations 🖓	Review	Named Boundaries 🕞	Drawing Scales

- 2) On the Place Named Boundary dialog:
 - a) Choose the Civil Plan icon at the top of the dialog,
 - b) Choose the Plan 100 Scale Drawing Seed NOTE: Below is a list of the available Plan Drawing Seeds you can choose from. Plan Profile Drawing Seeds are omitted from this list.

Name			
(none)			
Double Plan -	40 Scale		
Double Plan -	50 Scale		
Double Plan -	100 Scale		
Double Plan -	200 Scale		
Double Plan -	500 Scale		
Plan - 10 Scale	e		
Plan - 20 Scale	e		
Plan - 30 Scale	e		
Plan - 40 Scale	e		
Plan - 50 Scale	e		
Plan - 100 Sca	le		
Rail Plan			
Roll Plot - 36x	60		
Roll Plot - 36x	72		
Roll Plot - 36x	96		
Roll Plot - 42x	60		
ROW Plan 10	Scale		
ROW Plan 20	Scale		
ROW Plan 30	Scale		
ROW Plan 40	Scale		
ROW Plan 50	Scale		
ROW Plan 100	Scale		
ROW Plan 200	Scale		
ROW Plan 500	Scale Scale		
Survey Plan L	CSD 20 Scale		
Survey Plan L	CSD 30 Scale		
Survey Plan L	CSD 40 Scale		
Survey Plan L	CSD 50 Scale		
Survey Plan L	CSD 100 Scale		
Survey Plan L	CSD 200 Scale		
Survey Plan L	CSD 500 Scale		
Survey Plan LS	SCD 10 Scale		
Survey Plan P	CD 10 Scale		
Survey Plan P	CD 20 Scale		
Survey Plan P	CD 30 Scale		
Survey Plan P	CD 40 Scale		
Survey Plan P	CD 50 Scale		
Survey Plan P	CD 100 Scale		
Survey Plan P	CD 200 Scale		
Survey Plan P	CD 500 Scale		
-			

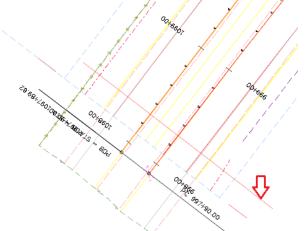
c) **Select alignment US85-NB** (You are being prompted to *Identify Path Element* in the lower left of the MicroStation view. You may have to Right click to select this element because there is a Template produced CL element on top or below US85-NB.)

d) Uncheck the Create Drawing checkbox at the bottom of the dialog (if necessary).
 NOTE: Create Drawing performs the model/sheet creation which we are not ready to do until we have placed named boundaries for both plan and profile.
 The dialog should look as shown below following the 4 steps.

🔏 Place Named Bo		\times
	a)	
	🔼 🖓 🎟 🎕 🖊 🗹 🎞	
Drawing Seed:	Plan - 100 Scale 🔹 👻	b)
Detail Scale:	1"=100' 🗸	
Name:	Plan 1	
Description:		
Group:	(New) 🔻	
Name:	US85-NB	
Description:		
Start Location:	997+90.00	◀
Stop Location:	969+90.00	▶
Length:	1400.000000	ee
Left Offset:	-400.000000	oo
Right Offset:	400.000000	oo
Overlap:	0.000000	•••
Boundary Chords:	10	
d	Create Drawing	
	Show Dialog	

NOTE: Although we will not make changes in this class, observe the two **Name fields** in the dialog above. The 1st (Plan 1) represents the name of the named boundaries. The 2nd (CR44) is the Group the named boundaries will fall under which should be the alignment name. The software will join these two "Names" when creating drawing and sheet models.

3) You should be prompted to **Identify Path Start Point to Place Boundary**. Move your cursor and notice the graphics which indicates the start Location.

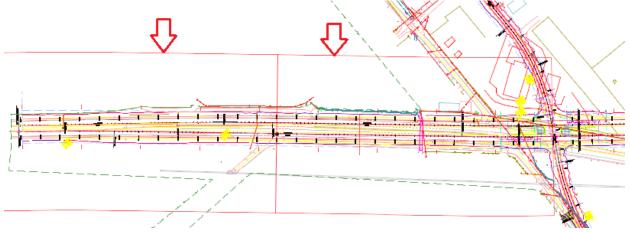


NOTES:

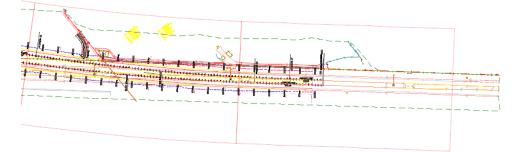
- You can set this Start Location with a data point, key-in, or lock the start station to the beginning of the alignment by clicking the lock to start button
- You can key-in numbers less than the alignment to place the Named Boundary prior to the start station.
- 4) For this example, key-in 997+00 (which is 90' beyond the Start of the alignment.)

✓ Start Location:	-0+25.00	
Stop Location:	7+55.85	

5) Data Point to confirm the Start Station which previews the 1st named boundary and ultimately more as you move your cursor down the alignment.



6) Now you are prompted to identify the end location to place the boundary. Move your cursor towards the end of the alignment. Data Point so the last sheet is placed as shown below.



7) Make changes to Offsets and Boundary chords if needed at this point although we will not make any changes in this example.

🔏 Place Named Bo	oundary Civil Plan	—		Х
	<mark> 10 🏢 🖏 ∕</mark>			
Drawing Seed:	Plan - 100 Scale		•	
Detail Scale:	1"=100'		•	
Name:	Plan 1			
Description:				
Group:	(New)		•	
Name:	US85-NB			
Description:				
Start Location:	997+00.00			◀
Stop Location:	1072+49.60			▶
Length:	1400.000000			oo Itestor
Left Offset:	-400.000000			00 Itutue
Right Offset:	400.000000			00 Indee
Overlap:	0.000000			00 Instant
Boundary Chords:	10			
	Create Drawing			
	Show Dialog			

NOTE: Boundary Chords set to 0 will place a rectangular shape. If set to 10 or 20, the Named Boundaries will be curved around curves. The Boundary Chords introduced can be moved as needed to adjust the clipping area.

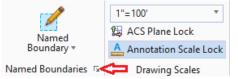
- 8) Data Point one more time to accept the Named Boundary Placement. This will exit you out of the Place Named Boundary dialog.
- 9) At this point, you would review each Named Boundary and referenced elements and ensure everything that needs to be displayed on each Named Boundary is present. This is the stage where you could move Named Boundaries or Activate or Exchange References and move or rotate text so it is displayed on the Named Boundray. Also, you would turn any plan view levels off as needed and Save Settings.

In this example, turn construction class off to turn the corridor handlers off and Save Settings. The Plan Named Boundaries are also on Construction class so they will be turned off as well.

7.4 Creating Sheets (Named Boundary Manager)

In the next few steps we will create sheets from the named boundaries we have placed. <u>Turn</u> off any levels you do not want on your sheets, turn off construction class elements, and then <u>Save Settings.</u> This can be performed later as well and controlling sheet levels is discussed more in section 7.6

1) Select the Manage Named Boundaries button.



2) The Named Boundaries dialog is invoked. Expand the Plan Groups & Profile Groups to review the named boundaries & **select US85-NB** under the *Plan Group*.

REC	Named Boundaries					×
×	🧏 • 🔞 A	<u>م</u>		🌒 🔲 🗜 🐽 <mark>८</mark> 🕫		
Nai	me 🏾	Descrip	otion	File Name	Show	
4	Plan Groups					
	 US85-NB 			12345_RD_Plan Profiles_US85.dgn	\checkmark	
	Plan 1			12345_RD_Plan Profiles_US85.dgn	\checkmark	
	Plan 2			12345_RD_Plan Profiles_US85.dgn	\checkmark	
	Plan 3			12345_RD_Plan Profiles_US85.dgn	\checkmark	
	Plan 4			12345_RD_Plan Profiles_US85.dgn	\checkmark	
	Plan 5			12345_RD_Plan Profiles_US85.dgn	\checkmark	
	Plan 6			12345_RD_Plan Profiles_US85.dgn	\checkmark	
	Profile Groups					
	Cross Section Group	ps				
	Other Groups					

NOTE:

C Name and Record and

- If there are no arrows next to Plan Groups & Profile Groups, exit the dialog & open it again which should clear up that issue.
- In this dialog, you can delete Named Boundaries, go to Properties and rename named boundaries, create Plan & Profile sheets, etc.

3) Select **US85-NB** under Plan Groups and choose the **Show Create Drawing** button.

	lamed Boun	daries		Ŷ	_	×
×	2 - 8	A		🛞 🛄 🗗 🞯 🛃 🕫		
Name	•	T	Description	File Name	Show	
▲ PI	an Groups					
-	US85-NB			12345_RD_Plan Profiles_US85.dg	n 🔽	
	Plan 1			12345_RD_Plan Profiles_US85.dgr	√	
	Plan 2			12345_RD_Plan Profiles_US85.dgr	v	
	Plan 3			12345 RD Plan Profiles LIS85 dor	~	

4) With **US85-NB** still selected, choose the **Create plan/profile drawing** button.

REC	Named Bounda	ries				—	\times
×	R - 8	-		0 📃 🖃 📵 🚄 🛛	r=		
Nai	me	Ŧ	Description	File Name	:	Show	
4	Plan Groups						
	US85-NB			12345_RD_Plan Profiles_US	685.dgn	~	
	Plan 1			12345_RD_Plan Profiles_US	85.dgn	\checkmark	
	Plan 2			12345_RD_Plan Profiles_US	85.dgn	\checkmark	
	DI 2			10045 DD DI D£1 110	OF		

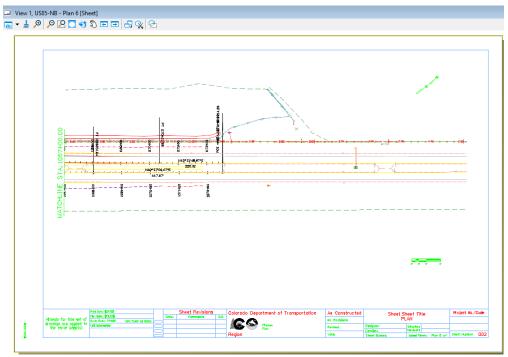
5) This invokes the Create Drawing dialog which is shown below. You generally do not have to change much on this dialog unless you are working with a different scale (which is discussed later in this section).

🜍 Create Drawing		×
Mod One Sheet Per Dg		•
View Name: Drawing Seed: View Type: Discipline:	US85-NB - Plan 1 Plan - 100 Scale Civil Plan	
Purpose:	Plan View	
Model Name: Seed Model: Filename:	Drawing Model US85-NB - Plan 1 Full Plan.dgnlib, Plan - 100 Scale (Active File) 1"=100'	• 4
Model Name: Seed Model: Filename: Sheets:	Sheet Model US85-NB - Plan 1 Full Plan.dgnlib, Plan - 100 Scale [Sheet] (Active File) (New) Full Size 1 = 1	• •
Drawing Boundary:	Plan - 100 Scale 👻	
Detail Scale :	1"=100' (By Named Boundary) 🔹	
	 Add To Sheet Index	Cancel

NOTES:

- The 1st check box on this dialog will create one DGN file per sheet if you check it. If you do check it, the name of the DGN's created comes from the Sheet Model Name.
- It's your preference but we will leave **Add to Sheet Index** box unchecked. Files/Sheets can be added to Sheet Index later if needed. If you decide to check this, choose the icon to the right to specify the folder name.

6) Tag **OK** to generate sheets. A status bar is displayed in the lower right of the MicroStation window showing progress until the sheets are created. When the processing is complete, you should be moved to the model of the last sheet created.



7) Open the MicroStation models dialog (Home ribbon tab -> Primary ribbon group) and review the models created.

Models					- 🗆	Х
	💾 🔲 🌱 🗙					
Type 2D/3	D Name	Description	*	Design File	Sheet Number	
	CDOT Default US85-NB - Plan 1 US85-NB - Plan 2 US85-NB - Plan 3 US85-NB - Plan 4 US85-NB - Plan 4 US85-NB - Plan 6 US85-NB - Plan 1 [Sheet] US85-NB - Plan 3 [Sheet] US85-NB - Plan 4 [Sheet] US85-NB - Plan 5 [Sheet] US85-NB - Plan 6 [Sheet]	Master Model		\12345_RD_Plan Profiles \12345_RD_Plan Profiles	Plan 1 Plan 2 Plan 3 Plan 4 Plan 5 Plan 6	

NOTES:

- There are 2 models created for each plan sheet:
 - a) Plan 1 Drawing model
 - b) Plan 1 (Sheet) Sheet model
- You can select and delete all Drawing/Sheet models if there is a need to re-create sheets (Compress and exit before re-processing though.)

8) Close the Models dialog and at the bottom of the MicroStation view, review the Active View Groups. Open some of your Plan Views & Plan [Sheets] Views and then return to the Plan 6 sheet.

Name	Model	^	Ì
🔁 CDOT Default	🔁 CDOT Default		l
🔁 US85-NB - Plan 1 [Sheet] Views	🕒 US85-NB - Plan 1 [Sheet]		I
🔁 US85-NB - Plan 1 Views	🔊 US85-NB - Plan 1		I
🔁 US85-NB - Plan 2 [Sheet] Views	🕒 US85-NB - Plan 2 [Sheet]		I
🔁 US85-NB - Plan 2 Views	🔊 US85-NB - Plan 2		I
🔁 US85-NB - Plan 3 [Sheet] Views	🕒 US85-NB - Plan 3 [Sheet]		I
🔁 US85-NB - Plan 3 Views	🔊 US85-NB - Plan 3		I
🔁 US85-NB - Plan 4 [Sheet] Views	🕒 US85-NB - Plan 4 [Sheet]		I
🔁 US85-NB - Plan 4 Views	述 US85-NB - Plan 4		I
🔁 US85-NB - Plan 5 [Sheet] Views	🕒 US85-NB - Plan 5 [Sheet]		I
🔁 US85-NB - Plan 5 Views	🔊 US85-NB - Plan 5		I
🔁 US85-NB - Plan 6 [Sheet] Views	🕒 US85-NB - Plan 6 [Sheet]		I
		\mathbf{v}	l
🔁 US85-NB - Plan 6 [Sł 🗸 👘	1 2 3 4 5 6 7 8	~	J
i Element			

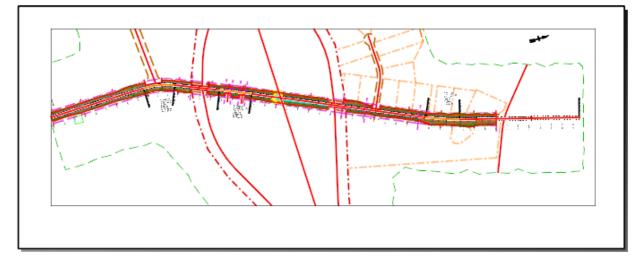
9) Move back to the Default view & Save Settings.

7.5 Roll Plots

Roll plots are sheets longer than the normal sheet and normally show the entire project or at least longer sections of the project. These are generally used for public hearings or presentations. The following Roll Plot Drawing Seeds are available.

C Place Named B	oundary Civil Plan	—		×
	P 🗐 🏢 🏈 🆯 [1	1	
Drawing Seed:	(none)		•	
Detail Scale:	Name			
Name:	Rail Plan			
Description:	Roll Plot - 36x60			
-	Roll Plot - 36x72			
Group:	Roll Plot - 36x96 Roll Plot - 42x60			
Name:	ROW Plan 10 Scale			
Description:	ROW Plan 20 Scale			
Start Location:	ROW Plan 30 Scale			
Stop Location:	ROW Plan 40 Scale			
	ROW Plan 50 Scale			
Length:	ROW Plan 100 Scale			
Left Offset:	ROW Plan 200 Scale			
Right Offset:				Intel
Overlap:	0.000000			00 Insta
Boundary Chords:	10			
	Create Drawing			
	Show Dialog			

Below is an example of a Roll Plot.



8. PROFILE SHEETS

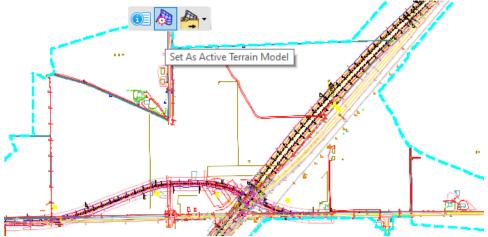
8.1 Section Overview

Profile Only Sheet creation is discussed in this section. We will continue working in **12345_RD_Plan Profiles_US85.dgn.**

Annotation should normally be performed in the design or drawing models when using the Named Boundary process to create sheets.

8.2 Placing Profile Named Boundaries

- 1) Open the Default model in View 1.
- 2) Set the referenced Terrain Active.



 Open the References dialog and turn OFF display of the CDOT Default-3D model of the reference file 12345_RD-Plan Profiles_US85.dgn.

		x +> +> e e e e e e e e e	¢ ₽ ₩ ₩ ¥	1		
Slot	File Nar	ne	Model	Description	Logical	Orier
1	PW_WC	RK\12345_RD_Container for Plans.dgn	CDOT Default	Master Model		Coin
2	√ PW_WC	RKDI\12345_RD_Plan Profiles_US85.dgn	CDOT Default-3D		Ref	Coi
2	√ PW_WC	RKDI\12345_RD_Plan Profiles_US85.dgn	CDOT Default-3D		Ref	Coi
_	✓ PW_WC 0000000000000000000000000000000000		CDOT Default-3D		Ref	Coi

- • × View 7, AttachedLongSection - US85-NB 👦 - 🔆 - 📕 🔍 🖸 💭 🖸 📾 📾 🖸 🖂 🕂 - 👯 🙏 L = 2518.132 R = 14472.000 L = 1653.803 R = -14652.000 L = 1762.387 4800-4750-4700-1051+48.13 1055+00 1010+00 1026+30.00 1030400 1068+01.94 1072+49,60 1002+74.66 1015+00 1020+37.04 1035+00 1040+00 1045+00 1060+00
- 4) Open the profile model of US85_NB in View 7

5) Invoke the Named Boundary dialog and choose the **Civil Profile** mode and set the *Drawing Seed* to **Double Profile - 100 Scale – 10x Vert. Exag.**

🔏 Place Named Boundary	Civil Profile	—		\times
	R ₽ <u>m</u> 	' 🛃 🗖	ΪД	
Drawing Seed:	Double Profile - 100 Scale -	- 10x Vert.	Exag 🔻	
Detail Scale:	1"=100'		•	
Name:	Profile 1			
Description:				

NOTE: Below are the available Profile Drawing Seeds. The Plan & Profile (PROFILE) ones are omitted from this list.

Name
(none)
Culvert or Pipe Profile
Double Profile - 40 Scale - 1x Vert. Exag.
Double Profile - 40 Scale - 2x Vert. Exag.
Double Profile - 40 Scale - 5x Vert. Exag.
Double Profile - 40 Scale - 10x Vert. Exag.
Double Profile - 50 Scale - 1x Vert. Exag.
Double Profile - 50 Scale - 2x Vert. Exag.
Double Profile - 50 Scale - 5x Vert. Exag.
Double Profile - 50 Scale - 10x Vert. Exag.
Double Profile - 100 Scale - 1x Vert. Exag.
Double Profile - 100 Scale - 2x Vert. Exag.
Double Profile - 100 Scale - 5x Vert. Exag.
Double Profile - 100 Scale - 10x Vert. Exag.
Double Profile - 200 Scale - 1x Vert. Exag.
Double Profile - 200 Scale - 2x Vert. Exag.
Double Profile - 200 Scale - 5x Vert. Exag.
Double Profile - 200 Scale - 10x Vert. Exag.
Driveway Profile
Profile - 40 Scale - 1x Vert. Exag.
Profile - 40 Scale - 2x Vert. Exag.
Profile - 40 Scale - 5x Vert. Exag.
Profile - 40 Scale - 10x Vert. Exag.
Profile - 50 Scale - 1x Vert. Exag.
Profile - 50 Scale - 2x Vert. Exag.
Profile - 50 Scale - 5x Vert. Exag.
Profile - 50 Scale - 10x Vert. Exag.
Profile - 100 Scale - 1x Vert. Exag.
Profile - 100 Scale - 2x Vert. Exag.
Profile - 100 Scale - 5x Vert. Exag.
Profile - 100 Scale - 10x Vert. Exag.
Profile - 200 Scale - 1x Vert. Exag.
Profile - 200 Scale - 2x Vert. Exag.
Profile - 200 Scale - 5x Vert. Exag.
Profile - 200 Scale - 10x Vert. Exag.

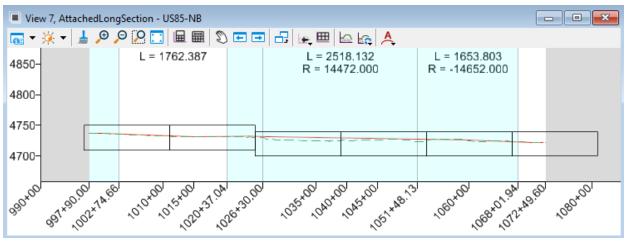
6) Set the *Method* to **From Plan Group, The Vert Exaggeration 10, check Use Terrains and Use Active Vertical.** The dialog at this point should look similar to what is shown below, making note that Create Drawing is set:

🔏 Place Named Boundary	Civil Profile —	\times
	A 🖓 🔜 🏹 🖌 😭 🎞	
Drawing Seed:	Double Profile - 100 Scale - 10x Vert. Exag 🔻	
Detail Scale:	1"=100' 🗸	
Name:	Profile 1	
Description:		
Method:	From Plan Group 👻	
Plan Group:	US85-NB 👻	
Group:	(New) 👻	
Name:	US85-NB	
Description:	From Plan Group: US85-NB	
Vertical Exaggeration:	10.000000	
Available Profile Height:	40.000000	00 [101102]
Top Clearance:	0.500000	
Bottom Clearance:	0.500000	
Elevation Datum Spacing:	10.000000	
Station Datum Spacing:	10.000000	
Profile Shifts:	Datum Stations 👻	
	Use Terrains	
	Use Active Vertical	
	Whole Conduits Only	
	Create Drawing	
	Show Dialog	

NOTES:

- You do have the option of checking the Create Drawing checkbox which means when you confirm all the prompts, you will move straight into the Create Drawing dialog. We will not in this example but this is a viable option.
- Given 1"=100' Horizontal & Vertical Exaggeration of 10. To calculate the Vertical scale: 100/10 = 10 so the Vertical Scale will be equal to 1"=10'.
- Make note of the Available Profile Height (40 in this example). This will help you choose which Profile Annotation Group you will use.

7) Once prompted to Identify Profile View, data point in View 7 which should be still opened as a profile view. You should then be able to view the named boundaries in the profile view.



NOTE:

• The number of Profile Named boundaries matches the Plan Names boundaries but that may not be the case when there is a lot of vertical change along the profile. If the profile will not fit on a profile named boundary, the software will break that named boundary into 2 or more named boundaries and shift the vertical datum so that it is different for each extra named boundary if Profile Shifts is set to Datum Stations as shown below.

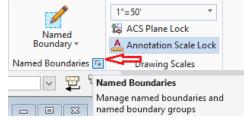
Station Datum Spacing:	10.000000
Profile Shifts:	Datum Stations 👻
	Use Terrains
	Use Active Vertical
	Whole Conduits Only
	Create Drawing
	Show Dialog

8) Data point to accept the placement of the named boundaries.

8.3 Creating Sheets (Named Boundary Manager)

In the next few steps we will create sheets from the named boundaries we have placed. *The Profile View must remain open through this process when creating Profile sheets.*

1) Select the Manage Named Boundaries button.



2) The Named Boundaries dialog is invoked. Expand the Profile Groups to review the named boundaries and follow steps1-3 on the image below.

Rec Named Boundaries (3))	(2) -	
× 🥺 🔊 🗛 📠	ご 💿 🎟 'م		Ŧ
Name	T Description	File Name	Show
Plan Groups			
Profile Groups			
⊿ US85-NB (1)			V
Profile 1		12345_RD_Plan Profiles_US85.dgn	~
Profile 2		12345_RD_Plan Profiles_US85.dgn	\checkmark
Profile 3		12345_RD_Plan Profiles_US85.dgn	\checkmark
Profile 4		12345_RD_Plan Profiles_US85.dgn	~
Profile 5		12345_RD_Plan Profiles_US85.dgn	~
Profile 6		12345_RD_Plan Profiles_US85.dgn	~
Cross Section Groups			
Other Groups			

NOTE:

- If there are no arrows next to Plan Groups & Profile Groups, exit the dialog & open it again which should clear up that issue.
- In this dialog, you can delete Named Boundaries, go to Properties and rename named boundaries, create Plan & Profile sheets, etc.

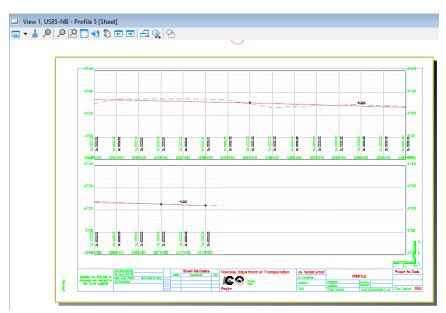
- 3) This invokes the Create Drawing dialog which is shown below step 4. You generally do not have to change much on this dialog unless you are working with a different scale (which is discussed later in this section).
- 4) Change the *Profile Annotation Group* from Profile Grid 100ft Spacing to **Profile Grid 10ft** Spacing. Remember our maximum Available Profile Height was 40 on the Named Boundary dialog. Using this annotation group will give us 10ft annotations for the elevation datum.
 ✓ Create Drawing

Mod					
View Name:	US85-NB - Profile 1				
Drawing Seed:	Double Profile - 100 Scale - 10x Vert. Ex 🔻				
View Type:	Civil Profile				
Discipline:	Civil				
Purpose:	Elevation View				
	Drawing Model				
Model Name:	US85-NB - Profile 1				
Seed Model:	Double Profile.dgnlib, Double Profile - 10				
Filename:	(Active File) 💼 📮				
A	1"=100' 💌				
Annotation Group:	Profile Grid 10ft Spacing				
	Sheet Model				
Model Name:	US85-NB - Profile 1				
Seed Model:	Double Profile.dgnlib, Double Profile - 10				
Filename:	(Active File) 😑 📮				
Sheets:	(New) 🔻				
A	Full Size 1 = 1				
Drawing Boundary:	Optimize for 🔹				
Detail Scale :	1"=100' (By Named Boundary) 🔹				
	Add To Sheet Index				
	Make Sheet Coincident				
	✓ Open Model				
	<u>O</u> K Cancel				

NOTES:

- You cannot create profile sheets if the profile view is not open.
- The 1st check box on this dialog will create one DGN file per sheet if you check it. If you do check it, the name of the DGN's created comes from the Sheet Model Name.
- It's your preference but we will leave **Add to Sheet Index** box unchecked. Files/Sheets can be added to Sheet Index later if needed. If you decide to check this, choose the icon to the right to specify the folder name.
- The *Profile Annotation Group* is what places the profile grid, annotates the elevation datum, station datum, and any proposed profile that is present when the drawings models are created.

5) Tag **OK** to generate sheets. A status bar is displayed in the lower right of the MicroStation window showing progress until the sheets are created. When the processing is complete, you should be moved to the model of the last sheet created.



6) Open the MicroStation models dialog (Home ribbon tab -> Primary ribbon group) and review the models created which are highlighted in the image below.

Models -								\times			
Туре	2D/3D	Name	Description	*	Design File	Sheet	Number				
		CDOT Default	Master Model		\12345_RD_Plan Profiles						
		US85-NB - Plan 1			\12345_RD_Plan Profiles						
		US85-NB - Plan 2			\12345_RD_Plan Profiles						
		US85-NB - Plan 3			\12345_RD_Plan Profiles						
		US85-NB - Plan 4			\12345_RD_Plan Profiles						
		US85-NB - Plan 5			\12345_RD_Plan Profiles						
		US85-NB - Plan 6			\12345_RD_Plan Profiles						
		US85-NB - Plan 1 [Sheet]			\12345_RD_Plan Profiles	Plan 1					
		US85-NB - Plan 2 [Sheet]			\12345_RD_Plan Profiles	Plan 2					
		US85-NB - Plan 3 [Sheet]			\12345_RD_Plan Profiles	Plan 3					
		US85-NB - Plan 4 [Sheet]			\12345_RD_Plan Profiles	Plan 4					
		US85-NB - Plan 5 [Sheet]			\12345_RD_Plan Profiles	Plan 5					
		US85-NB - Plan 6 [Sheet]			\12345_RD_Plan Profiles	Plan 6					
i i i i i i i i i i i i i i i i i i i		CDOT Default-3D			\12345_RD_Plan Profiles						
		US85-NB - Profile 1			\12345_RD_Plan Profiles						
D		US85-NB - Profile 2			\12345_RD_Plan Profiles						
		US85-NB - Profile 3			\12345_RD_Plan Profiles						
		US85-NB - Profile 4			\12345_RD_Plan Profiles						
		US85-NB - Profile 5			\12345_RD_Plan Profiles						
		US85-NB - Profile 6			\12345_RD_Plan Profiles						
Là		US85-NB - Profile 1 [Sheet]			\12345_RD_Plan Profiles	Profile	1				
Là		US85-NB - Profile 3 [Sheet]			\12345_RD_Plan Profiles	Profile	3				
		US85-NB - Profile 5 [Sheet]			\12345_RD_Plan Profiles	Profile					

NOTES:

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- There are 2 models created for each profile sheet:
 - a) Profile Drawing model
 - b) Profile 1 (Sheet) Sheet model
- You can select and delete all Drawing/Sheet models if there is a need to re-create sheets (Compress and exit before re-processing though.)

7) Close the Models dialog and at the bottom of the MicroStation view, review the Active View Groups. Open a Plan View, a Profile view & other Sheets and then return to the Plan 6 sheet.

Name	Model	^
🔁 US85-NB - Plan 5 Views	🔊 US85-NB - Plan 5	
🔁 US85-NB - Plan 6 [Sheet] Views	🕒 US85-NB - Plan 6 [Sheet]	
🔁 US85-NB - Plan 6 Views	🔊 US85-NB - Plan 6	
🔁 US85-NB - Profile 1 [Sheet] Views	🕒 US85-NB - Profile 1 [Sheet]	
🔁 US85-NB - Profile 1 Views	🔊 US85-NB - Profile 1	
🔁 US85-NB - Profile 2 Views	🔊 US85-NB - Profile 2	
🔁 US85-NB - Profile 3 [Sheet] Views	🕒 US85-NB - Profile 3 [Sheet]	
🔁 US85-NB - Profile 3 Views	🔊 US85-NB - Profile 3	
🔁 US85-NB - Profile 4 Views	🔊 US85-NB - Profile 4	
US85-NB - Profile 5 [Sheet] Views	🕒 US85-NB - Profile 5 [Sheet]	
🔁 US85-NB - Profile 5 Views	🔊 US85-NB - Profile 5	
🔁 US85-NB - Profile 6 Views	🔊 US85-NB - Profile 6	
		¥
🔁 US85-NB - Profile 1 ' 🔻 📋 👖	2 3 4 5 6 7 8 🛛 🔀 🔎	J

NOTE: The Plan sheets present are the ones we created in Section 9.

9. CROSS SECTIONS

9.1 Section Overview

To generate cross-section sheets, cross section Named Boundaries are generated at proposed cross section locations, drawing models are then created from the named boundaries for each cross-section, and sheet models are then created based on how many drawing models can fit on a sheet. This process will be discussed in this section along with cross section annotation and earthwork.

A few items to keep in mind in regards to OpenRoads cross sections:

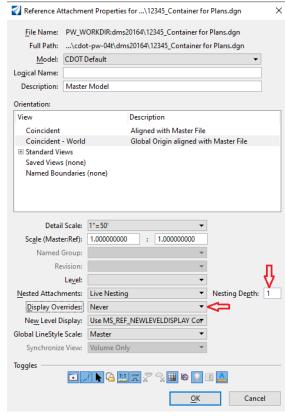
- The cross section is a live slice of the 3D model so any changes to the corridor or terrain means the cross section is automatically updated.
- Cross section annotation is not automatically updated so it has to be redone if the corridor changes.
- The cross section drawing model and sheet models can be created at separate times. This ability allows the user to add new sections as needed, create the drawing model only for these added sections, and then create new sheets for all sections which will allow these added sections to be included in the sheets in the correct order while allowing the existing drawing models which possibly have a lot of specific annotation to not have to be re-created.

Note that cross section annotation should normally be performed in the cross section drawing models.

9.2 Attaching the Container file (or references)

In the following steps, will create a file to reference the container file. In subsequent subsections we will place Named Boundaries and then create 1"=10' cross-sections along CR44. You can create one file for cross-sections or one file per alignment.

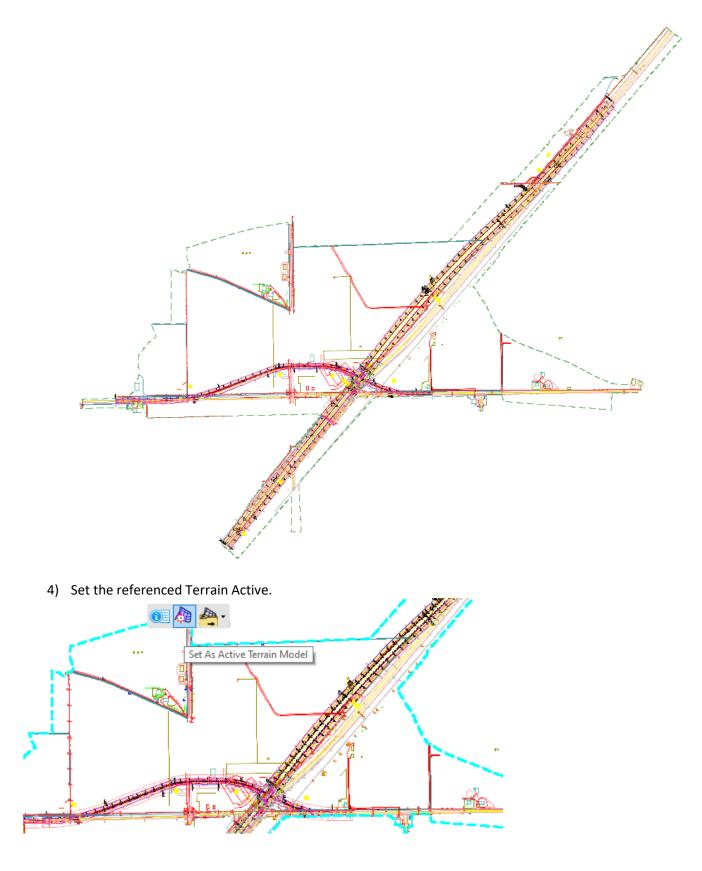
- 1) Create and enter the file 12345_RD_XS_CR44.dgn (Using a 2D Seed file).
- 2) Reference the file 12345_RD_Container for Plans.dgn with the following settings.



NOTES:

- Nesting depth of 1 will bring all the references in the Container file.
- Display Overrides is set to Never.

3) Fit the view which should appear as shown below.



5) Open the References dialog and turn OFF display of the CDOT Default-3D model of the reference file 12345_RD-Plan Profiles_CR44.dgn.

						- Tornes_		- 0							
DT De	👔 Refe	rences (1	1 of 11 ur	nique, 10 display	red)								-		Х
-	Tools	<u>P</u> ropertie	25												
	-	È 🏹	, 🖻 (x 🖘 🆛 [266	19 🕫 🛱		×	Hilite Mode: Non	e 🔻					
	Slot	۵	File Nam	ne ^				٠	Model	Description	Logical	Or	ientation	F	reser
	1		PW_WO	RKDIR:dms2016	4\12345_RD_Co	ntainer for Plan	is.dgn	\checkmark	CDOT Default	Master Model		Co	oincident - Wo	rld ۱	Nirefr
	2	\checkmark	PW_WO	RKDIR:dms2016	4\12345_RD_XS	_CR44.dgn			CDOT Default-3D		Ref	Co	oincident - Wo	rld ۱	Virefi
-	<														1
	Scale 1	.0000000	00	: 1.000	000000	Rotation	00°00'00"		Offset X 0.000		Y 0.000				
\supset	• 🖸 🏒	> 🔒	1:1 🗂 🕺	? 🤸 🎹 🔊 (? 🖸 📥 👳 🛛	Nested Atta	chments: N	o Ne	sting 🔻 N	lesting Depth: 1	Display Overrides:	Allow	•		
	New Le	vel Displa	y: Confi	g Variable 🔻	Georeferenced:	No	-								

6) Hold down your right mouse button and choose Views Plan/3D to open a 3D view. This is required to place the named boundaries and create drawings fox cross sections.

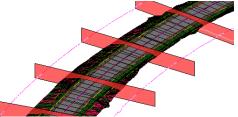
	View Control		1 View
	View Control		2 Views Plan/3D
, p	Сору		2 Views Plan/Profile
	Move		3 Views Plan/Profile/3D
,	Scale		3 Views Plan/XS/3D
<u> </u>	Rotate	٦	4 Views Plan/Profile/XS/3D
1	Mirror	ъ	Ref Adjust Colors
	Select Links	$\mathbf{\mathbf{v}}$	Dynamic XS View
`		E	Profile View
-@E	View Attributes	11	Toggle Construction Class

7) Save Settings

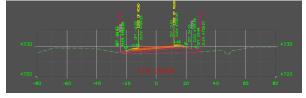
9.3 Creating Cross Section Sheets

9.3.1 Overview

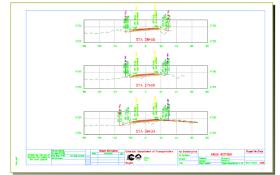
Named Boundaries are created in the 3D view as shown below.



Size of the cross section named boundaries are determined by the corridor and active terrain model plus settings on the Place Named Boundary tool. Drawing models are generated for each cross section named boundary as shown below.



Sheet models are created based on how many of the drawing model "windows" will fit on the sheet based on the "window" size plus cross section configuration variables that dictate the distance off the top/bottom the sheet, distance between sections, etc. An example sheet and these configuration variables are shown below.



The following are steps for using Named Boundaries to generate Cross-Section Sheets.

CIVIL_CROSSSECTION_BOT_MARGIN	WorkSpace	0.08333
CIVIL_CROSSSECTION_NAVIGATOR_ENABLE_DRAFT	WorkSpace	TRUE
CIVIL_CROSSSECTION_REVERSE_STATION_ENABLE	WorkSpace	FALSE
CIVIL_CROSSSECTION_RT_TO_LT_SPACING	WorkSpace	0.16667
CIVIL_CROSSSECTION_SIDE_MARGIN	WorkSpace	0.08333
CIVIL_CROSSSECTION_STACK_TOP_DOWN	WorkSpace	FALSE
CIVIL_CROSSSECTION_TOP_MARGIN	WorkSpace	0.08333
CIVIL_CROSSSECTION_TOP_TO_BOT_SPACING	WorkSpace	0.125

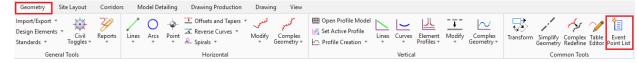
Steps to place named boundaries and create the x-section drawing and sheet models is discussed below.

9.3.2 Event Points

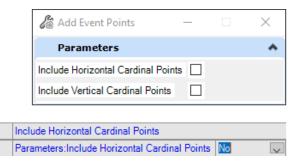
The next section describes the Named Boundary process to place cross-section named boundaries along an alignment at a station interval (and control points if so desired). There are a couple of methods available to add cross-section named boundaries at user defined locations (such as drives, cross-drains, etc.) that are not at an interval or control point. The ideal method for additional cross-sections @ 90 degree angle to the baseline is using Event Points.

1) Open 12345_RD_Geometry.DGN.

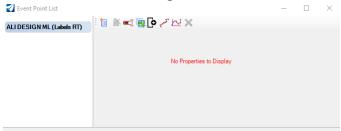
2) From the Geometry ribbon tab, choose the Event Point List command from Common Tools.



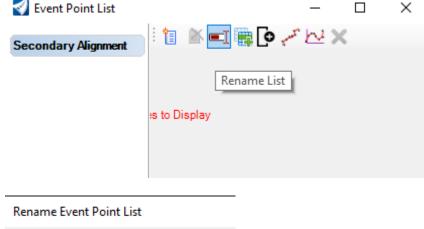
- 3) Choose the Alignment **CR44** when prompted to *Locate Alignment*.
- 4) Confirm No on the next two prompts.



5) The Event Point List dialog is invoked.

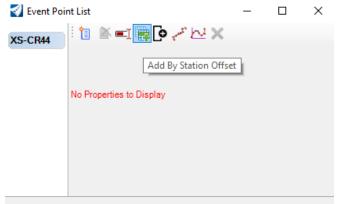


6) Choose the Rename List command and rename it to **XS-CR44.**

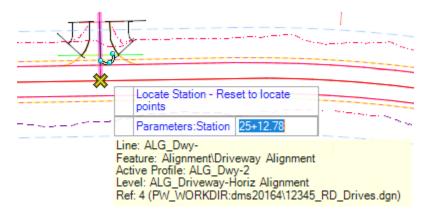


Name:	XS-CR44	
	OK	Cancel

7) Select the Add By Station Offset command.



8) Snap to the CL of Drive around 25+12 on CR44.



9) Confirm the station/offset of 0 with a datapoint and the Event Point is added to the list.

🛐 Event Point List - 🗆 🗙										
XS-CR44	i 📋 🖹 🛋 🏣 🂽 🥓 🔀									
		Method	Station	Offset	Northing	Easting	Description			
	•	Station Offset	25+13.78	-0.000	206767.799	9147				

10) Go through steps 7-9 again continue to add the other driveway around station 36+33. The dialog should appear as shown below.

Event Poi						— [
XS-CR44											
		Method	Station	Offset	Northing	Easting	Description				
	•	Station Offset	25+13.78	-0.000	206767.799	9147					
		Station Offset	36+33.17	-0.000	206446.869	9252					

9.3.3 Placing Named Boundaries

- 1) Return to 12345_RD_XS_CR44.dgn
- 2) Select Named Boundary from the Drawing Production ribbon tab.

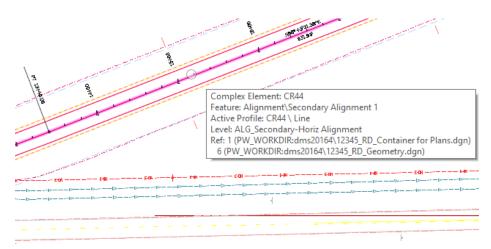
OpenRoads	Modeling	- 😑 🖡 🖥	I 🗟 🔦 🗸 🤌	1	e? 🖹	👻 ₹ D:\0-Wa	ork\MD	OT\2015-	Workflow\C	ORD_Test	ting\WK.dgn [2D	- V8 DGN] - Op	enRoads Designer CONNE	ECT Edit
File Home	Terrain	Geometry	Corridors	Model Det	ailing	Drawing Produ	iction	Drawi	ing Vie	w				
Element Selection	Clip Volume		Update Saved View Settings	Apply Saved View	Place Table	Place Place Note Label	A Place Text		A Change Text Attributes	ABC A ^A	Element Annotation *	Model Annotation *	Named Boundary •	
Selection	Clip		Saved Views		Tables	Notes			ext	G.	Anno	tations	Named Boundaries 🖙	

3) On the Place Named Boundary dialog, select the Civil Cross Section mode and select 20H 10V for the Drawing Seed.

6	🖗 Place Named Boundary	Civil Cross Section —	\times	NOTES:
:		◬◧▥◙◸◜◜◻◻		 Below is a list of Cross Section Drawing Seeds available.
	Drawing Seed:	20H 10V		10H 5V H= Horizontal
	Detail Scale:	1"=20' 👻		
	Group:	(New) 👻		10H 5V - Stacked Scale, V=Vertical
	Name:	Untitled		20H 10V scale
	Description:			20H 10V - Stacked
	Start Location:		⊲	40H 20V
	Stop Location:		▶	40H 20V - Stacked
	Left Offset:	-80.000000		We will discuss more setting on this dialog a
	Right Offset:	80.000000	00 Exector:	
	Interval:	50.000000	00 Iteratura	few steps further down.
	Vertical Exaggeration:	2.000000		
	Top Clearance:	5.000000		
	Bottom Clearance:	2.000000		
	Elevation Datum Spacing:	10.000000		
	Event Point List:	(None) 👻		
		Include Event Points Only		
		Include Control Points		
		Backward Facing		
		Create Drawing		
		Show Dialog		

4) Observe in the lower left MicroStation window. You are being prompted with the following: Place Named Boundary Civil Plan > Identify Path Element

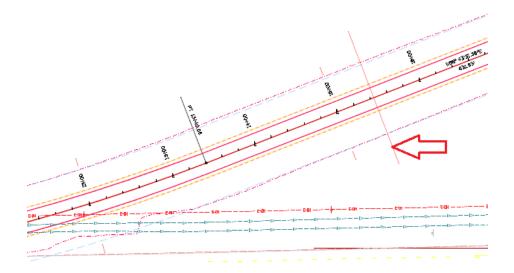
5) Select the CR44 alignment.



6) Next, you are being prompted the following.

Place Named Boundary Civil Plan > Accept/Reject. Identify Path start point to place boundary

7) Move your cursor and notice the graphics which indicates the Start Location.

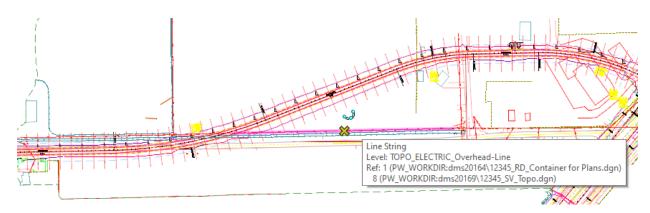


NOTE: You can set this Start Location with a data point, key-in, or lock the start station to the beginning of the alignment by clicking the lock to start button

8) For this example, choose Lock to Start & Lock to End.

\checkmark	Start Location:	0+00.00	
\checkmark	Stop Location:	41+50.52	▶

9) You should see the named boundaries in the 2d view as shown below.

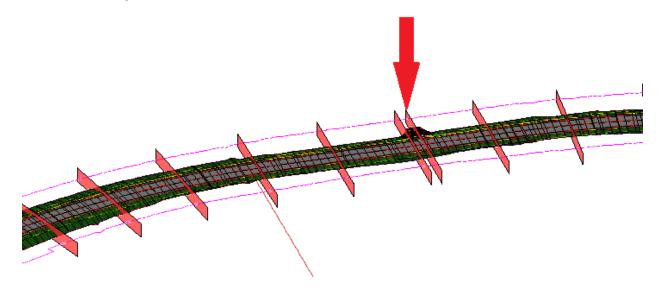


10) Choose the *Event Point List* at the bottom of the dialog we previously created **(XS-CR44)** Also, uncheck Create Drawing & set the Interval to 100. The dialog should be set as follows.

🔏 Place Named Boundar	y Civil Cross Section —	\times	NOTES:
 Place Named Boundar Drawing Seed: Detail Scale: Group: Name: Description: Start Location: Stop Location: Left Offset: Right Offset: 	Image: Constraint of the second sec		 NOTES: Observe the Vertical Exaggeration of 2. This is what gives you the 10 Vertical scale when using the 20H 10V drawing seed. If you set the Vertical scale to 1 when using the 20H 10V drawing seed, you would actually get a 20H 20V scale. Left & Right Offset – Controls the width of the cross-section. Top Clearance – The Top and Bottom clearance add extra 'space' to the cross section
Interval:		00 [10102	- by default, the 'window' around the section
Vertical Exaggeration:			would be the minimum necessary to show the
Top Clearance:			section. Giving clearance values moves the top
Bottom Clearance:			of the 'window' up (and the bottom down) so
Elevation Datum Spacing:	10.000000	~	that you have a bigger view.
Event Point List:	Include Event Points Only	<u>_</u>	,
	Include Control Points Include Control Points		Include Control Points - Will add cross sections
	Backward Facing		at all horizontal & vertical critical points such
⇔	Create Drawing		as PC's, PT's, low points, etc.
	Show Dialog		

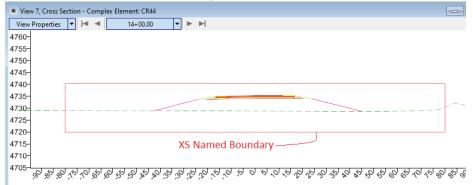
- 11) Data Point to confirm the Start Station & End Station.
- 12) Data Point one more time to accept the Named Boundary Placement.

13) The named boundary dialog will close and the named boundaries will be placed and should be visible to you in the 3D view. They will also be visible in the 2D view if the Default-3D model display is on. Below is an image of the XS Named Boundaries. Also, notice the Named Boundary with the arrow pointing at it below. This Named Boundary was placed at one of the Event Points designated earlier.



NOTES:

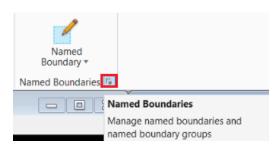
- Any 3D element that cuts through this cross-section named boundary will be displayed on cross-sections once they have been generated.
- It's a best practice to Use the Corridors -> Review -> Dynamic Sections dialog to quickly review cross-sections to ensure that everything that needs to be shown on the cross-sections (Drainage, full template, terrain, etc.), will show up in the XS Named Boundary window which you can see in the cross-section view as long as the Start Station and interval matches what was used when placing the Named Boundaries. See the example below.



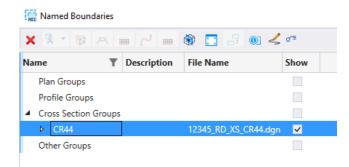
If there are elements that do not fit on the XS, you may want to delete the Named Boundaries & place them again making as-needed adjustments (scale, offsets, Top & Bottom clearance, etc.

9.3.4 Creating Sheets

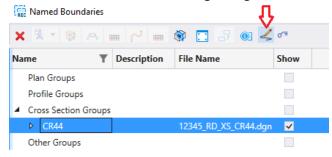
1) After placing all the additional Named Boundaries needed, invoke the **Managed Named Boundaries** as shown below:



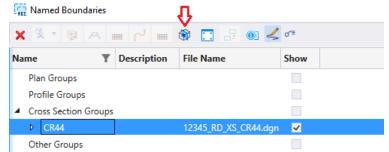
2) Expand the Cross Section Group and choose CR44.



3) Choose the **Show Create Drawing** dialog button at the top of the dialog.

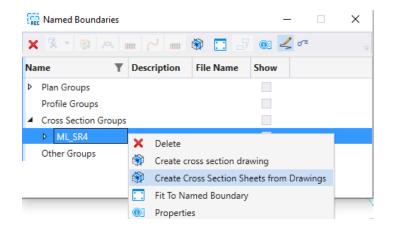


4) Choose the Create Cross Section Drawing button at the top of the dialog.



NOTE:

• You also have the option to right click the Cross Section group and choose **Create Cross Section Sheets from Drawings** which will not create the Drawing models. This is ideal for using in a workflow where additional x-sections have been added (as described in the Notes of the next step) and all sheets are being re-created from the Drawing models.



5) The resulting *Create Drawing* dialog is shown below. Choose OK to create cross-section sheets. ✓ Create Drawing ×

•		
Mod	e: Cross Section	-
One Sheet Per Dg	n:	
View Name:	CR44 - 0+00.00	
Drawing Seed:	20H 10V	•
View Type:	Civil Cross Section	
Discipline:	Civil	
Purpose:	Section View	
	Drawing Model	
Model Name:	CR44 - 0+00.00	
Seed Model:	XS - 20H 10V.dgnlib, 20H 10V	
Filename:	(Active File)	💼 🖡
A	1"=20'	-
Annotation Group:	XS Grid - Offset/Elev 20H 10V	\sim
	Sheet Model	
	Create Sheet Model	
Model Name:	CR44 - 0+00.00	
Seed Model:	XS - 20H 10V.dgnlib, 20H 10V [Sheet]	
Filename:	(Active File)	- B
Sheets:	(New)	•
A	Full Size 1 = 1	•
Drawing Boundary:	20H 10V	•
Detail Scale :	1"=20'	•
	🗌 Add To Sheet Index 🛛 🕼	
	Make Sheet Coincident	
	🗹 Open Model	
	<u>0</u> K	Cancel

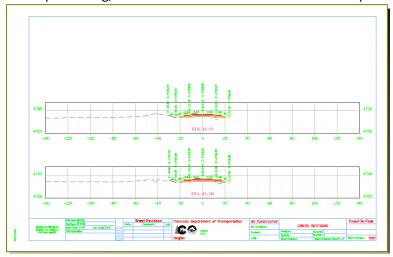
NOTES:

- You can make changes here but none may be necessary.
- Annotation Group The initial annotation group used draws the XS Grid, annotates slopes, and uses the inline offset annotation with no flags. Go to the ANNOTATION\XS Annotation section to see more discussion on the different annotation groups available.
- Pay close attention to the Check Box under Sheet Model on the Create Drawing dialog. If not checked, the Drawing models will be created but the Sheet models would not be created. If you needed to add additional x-sections to already created x-section drawing & sheet models, you can uncheck this and not create the Sheets. You could then delete all the Sheet models and re-cut all sheets with the new xsection added in order by using the right click -> Create Cross Section Sheets from Drawings.

Rec Named Boundaries		-	-	×	
X 🛠 🕫 🗛 🛛	- ~		d E		
Name T	Description File Name Sh	ow			
Plan Groups					
Profile Groups					
 Cross Section Groups 					
ML_SR4					
Other Groups	🗙 Delete				
	Create cross section drag	wing			
	Create Cross Section She	eets fr	om Drawings		
Fit To Named Boundary					
	I Properties				

73%

- 6) Click **OK** to create the cross-section sheets.
- 7) Observe the status bar in the lower right corner that shows the progress.
- 8) After processing, the last sheet model created should be opened.



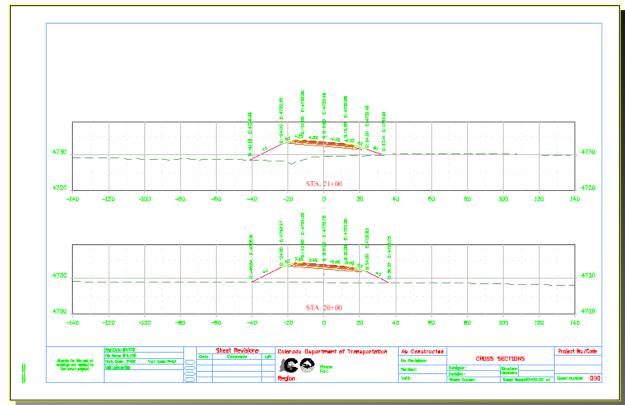
9) Open the Models dialog and review the cross section drawing and sheet models created. A Drawing model is created for each station and sheet models are created based on how many cross-sections can fit on a sheet.

🗇 Mo	dels			-	- 🗆	\times				
Туре	2D/3D	Name ^	Description	* A	Design File	^				
0 1		CDOT Default	Master Model		c:\bms\12	345				
2		CDOT Default-3D			c:\bms\12	345				
		CR44 - 0+00.00			c:\bms\12	345				
		CR44 - 0+00.00 [Sheet]			c:\bms\12	345				
		CR44 - 1+00.00			c:\bms\12	345				
		CR44 - 2+00.00			c:\bms\12	345				
		CR44 - 2+00.00 [Sheet]			c:\bms\12	345				
		CR44 - 3+00.00			c:\bms\12	345				
		CR44 - 4+00.00			c:\bms\12	345				
<u>n</u> enee 1		CR44 - 4+00.00 [Sheet]			c:\bms\12	345				
		CR44 - 5+00.00			c:\bms\12	345				
		CR44 - 6+00.00			c:\bms\12	345				
		CR44 - 6+00.00 [Sheet]			c:\bms\12	345				
		CR44 - 7+00.00			c:\bms\12	345				
		CR44 - 8+00.00			c:\bms\12	345				
		CR44 - 8+00.00 [Sheet]			c:\bms\12	345				
		CR44 - 9+00.00			c:\bms\12	345				
		CR44 - 10+00.00			c:\bms\12	-				
		CR44 - 10+00.00 [Sheet]			c:\bms\12	345				
		CR44 - 11+00.00			c:\bms\12	-				
		CR44 - 12+00.00			c:\bms\12					
		CR44 - 12+00.00 [Sheet]			c:\bms\12					
		CR44 - 13+00.00			c:\bms\12					
		CR44 - 14+00.00			c:\bms\12	-				
L'à		CR44 - 14+00.00 [Sheet]			c:\bms\12	-				
		CR44 - 15+00.00			c:\bms\12					
		CR44 - 16+00.00			c:\bms\12	345. 🗸				

10) Close the model dialog and open the **Active View Group** which should be docked at the bottom of the MicroStation window.

Name	Model	^
🔁 CR44 - 35+00.00 Views	🔊 CR44 - 35+00.00	
🔁 CR44 - 36+00.00 Views	🔊 CR44 - 36+00.00	
🔁 CR44 - 36+33.17 [Sheet] Vi	iews 🕒 CR44 - 36+33.17 [Shee	et]
🔁 CR44 - 36+33.17 Views	🔊 CR44 - 36+33.17	
🔁 CR44 - 37+00.00 Views	🔊 CR44 - 37+00.00	
🖵 CR44 - 38+00.00 Views	🔊 CR44 - 38+00.00	
🔁 CR44 - 39+00.00 [Sheet] Vi	iews 🕒 CR44 - 39+00.00 [Shee	et]
🔁 CR44 - 39+00.00 Views	🔊 CR44 - 39+00.00	
🔁 CR44 - 40+00.00 Views	🔊 CR44 - 40+00.00	
🖵 CR44 - 41+00.00 Views	🔊 CR44 - 41+00.00	
🔁 CR44 - 41+50.52 [Sheet] Vi	iews 🕒 CR44 - 41+50.52 [Shee	et]
🔁 CR44 - 41+50.52 Views	🔊 CR44 - 41+50.52	
		~
🔁 CR44 - 41+50.52 [Sh 🔻	12345678	X -0.0

11) Open the 20+00 (Sheet) & 20+00 Drawing model.



NOTE: At this point, sheets should be reviewed to ensure things like LT/RT Offset and Top/Bottom Clearance are adequate to show everything needed on the cross-sections. If this is not the case, you would generally delete sheets at this point, replace the named boundaries in question with modified depth, width, and/or height, & then re-cut sheets when needed. We will go through a few of these steps in the sections below.

9.3.5 Deleting Sheets & Named Boundaries

We will go through the process of deleting all the sheets and some of the named boundaries in the next few steps. Do note that the NOTES in steps 4 & 5 of the proceeding section discuss adding additional x-section drawing models, deleting sheets, and re-creating sheets.

In our example & in the steps below, we plan on shifting the Offsets at the beginning of CR44 to show more of the right side of the roadway so that work removing the existing CR44 road can be shown.

9.3.5.1 Deleting Sheets

1) Open the Models dialog, select all the cross section sheet models, and choose Delete Models.

Models							×
P							
Туре	2D/3D	Name	Description	*	Design File	Sheet Number	^
		CR44 - 38+00.00	Delete model(s)		c:\bms\12345_RD_XS_CR44.dgn		
		CR44 - 39+00.00			c:\bms\12345_RD_XS_CR44.dgn		
		CR44 - 40+00.00			c:\bms\12345_RD_XS_CR44.dgn		
		CR44 - 41+00.00			c:\bms\12345_RD_XS_CR44.dgn		
		CR44 - 41+50.52			c:\bms\12345_RD_XS_CR44.dgn		
		CR44 - 0+00.00 [Sł	heet]		c:\bms\12345_RD_XS_CR44.dgn	0+00.00	
Là		CR44 - 2+00.00 [Sł	heet]		c:\bms\12345_RD_XS_CR44.dgn	2+00.00	
Là		CR44 - 4+00.00 [Sł	heet]		c:\bms\12345_RD_XS_CR44.dgn	4+00.00	
Là		CR44 - 6+00.00 [Sł	heet]		c:\bms\12345_RD_XS_CR44.dgn	6+00.00	
B		CR44 - 8+00.00 [Sł	heet]		c:\bms\12345_RD_XS_CR44.dgn	8+00.00	
Là		CR44 - 10+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	10+00.00	
Là -		CR44 - 12+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	12+00.00	
Là		CR44 - 14+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	14+00.00	
Là		CR44 - 16+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	16+00.00	
Là -		CR44 - 18+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	18+00.00	
Là		CR44 - 20+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	20+00.00	
B		CR44 - 22+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	22+00.00	
Là -		CR44 - 24+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	24+00.00	
Là -		CR44 - 25+13.78 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	25+13.78	
Là		CR44 - 27+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	27+00.00	
Là		CR44 - 29+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	29+00.00	
Là –		CR44 - 31+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	31+00.00	
Ľà		CR44 - 33+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	33+00.00	
Là		CR44 - 35+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	35+00.00	
Là		CR44 - 36+33.17 [9	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	36+33.17	
- Cà		CR44 - 39+00.00 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	39+00.00	
B		CR44 - 41+50.52 [S	Sheet]		c:\bms\12345_RD_XS_CR44.dgn	41+50.52	

2) Also, delete the Drawing models for cross sections 0+00 to 14+00 because we will replace these with different dimensions in the next section.

Models								\times
	9	🕘 🔲 🎦	×					
Туре	2D/3D	Name	Description	*	Design File	Sheet Nu	mber	^
2 1		CDOT Default	Delete model(s) Model		c:\bms\12345_RD_XS_CR44.dgn			
		CDOT Default-3D			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 0+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 1+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 2+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 3+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 4+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 5+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 6+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 7+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 8+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 9+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 10+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 11+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 12+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 13+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 14+00.00			c:\bms\12345_RD_XS_CR44.dgn			
		CR44 - 15+00.00			c:\bms\12345_RD_XS_CR44.dgn			
EN.		CP44 16:00:00			clame \12245 PD VC CD44 dam			

NOTE that we could have deleted all the drawing models as well and just recreated them all but having this ability to just add new named boundaries without deleting all the existing is needed when you have spent a lot of time annotating cross sections and you don't want to delete them all.

9.3.5.2 Deleting Named Boundaries

1) Open the Named Boundary Manager, select, and then delete Named Boundaries 0+00 to 14+00.

Real Boundaries		-	\times
N 🕺 🕈 🕲 🗚 🛄 📈	🏾 🚳 🗔 🗗 🐽 🚄	or≡	
Na Delete selected named bounda	ary or named boundary group	Show	
Plan Groups			
Profile Groups			
 Cross Section Groups 			
CR44	12345_RD_XS_CR44.dgn	~	
0+00.00	12345_RD_XS_CR44.dgn	~	
1+00.00	12345_RD_XS_CR44.dgn	~	
2+00.00	12345_RD_XS_CR44.dgn	~	
3+00.00	12345_RD_XS_CR44.dgn	~	
4+00.00	12345_RD_XS_CR44.dgn	~	
5+00.00	12345_RD_XS_CR44.dgn	~	
6+00.00	12345_RD_XS_CR44.dgn	~	
7+00.00	12345_RD_XS_CR44.dgn	~	
8+00.00	12345_RD_XS_CR44.dgn	~	
9+00.00	12345_RD_XS_CR44.dgn	~	
10+00.00	12345_RD_XS_CR44.dgn	~	
11+00.00	12345_RD_XS_CR44.dgn	~	
12+00.00	12345_RD_XS_CR44.dgn	~	
13+00.00	12345_RD_XS_CR44.dgn	~	
14+00.00	12345_RD_XS_CR44.dgn	~	
15+00.00	12345_RD_XS_CR44.dgn	~	
16+00.00	12345_RD_XS_CR44.dgn	~	

NOTE: You may be prompted with the following dialog. Choose Yes To All.

		\times
1	Selected named boundary(s) are associated with one or multiple saved views. Are you sure you want to delete the named boundary(s) along with Saved Views(s)?	
	Yes To <u>A</u> ll <u>N</u> o Cancel	

2) Go to File (the backstage area) and choose Tools -> Compress File.

In the next section, we will add these Named Boundaries back but with different offsets.

9.3.6 Modifying Named Boundaries

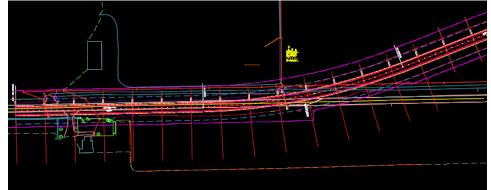
XS Named Boundaries can be modified in the 3D view but it is awkward to do this and the annotation doesn't recognize the modified Named Boundary which is a pretty major issue. A best practice is to:

- Delete the Drawing model(s) & the Named Boundary(s) you need to modify (As we just performed in the previous section).
- Use the Named Boundary tool to place the Named Boundary(s) again modifying the LT/RT offsets and or Bottom/Top clearance as needed. Make sure you choose the Group previously created instead of creating a new one. (As we will do in the next few steps).
- 1) Open the Named Boundary tool, select the cross-section mode, set the 20H 10V Drawing Seed, and choose the CR44 alignment. Then set the dialog as shown below.

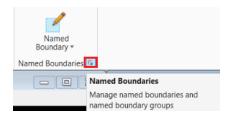
Place Named Boundary Civil Cross Section − □ ×			
		A 🖓 🏢 🛐 🖊 🗹 🎞	
	Drawing Seed:	20H 10V 👻	
	Detail Scale:	1"=20' 🗸	
	Group:	CR44 -	
\checkmark	Start Location:	0+00.00	◀
\checkmark	Stop Location:	14+00.00	▶
	Left Offset:	-60.000000	oo
	Right Offset:	180.000000	oo
	Interval:	100.000000	00 Initia
Vertical Exaggeration:		2.000000	
\checkmark	Top Clearance:	5.000000	
\checkmark	Bottom Clearance:	2.000000	
Elevation Datum Spacing:		10.000000	
	Event Point List:	(None) 👻	
		Include Event Points Only	
		Include Control Points	
		Backward Facing	
		Create Drawing	
		Show Dialog	

NOTE: One big change here is changing the *Group* from New to **CR44** which means the Named Boundaries about to be placed will be added to the CR44 group that already exists instead of a new group being created. You normally want all the Named Boundaries for one alignment in the same Named Boundary group.

2) Confirm the remaining prompts and the revised Named Boundaries at the beginning of the project are placed.



3) Invoke the Managed Named Boundaries as shown below:



3) Choose the **Show Create Drawing** dialog button at the top of the dialog.

Rec Named Boundaries			
X 🞗 T 🕲 🗚 🛛		🕸 🗖 🖓 🖬 👗	ď≡
Name 🛛 🔻	Description	File Name	Show
Plan Groups			
Profile Groups			
Cross Section Groups			
▶ CR44		12345_RD_XS_CR44.dgn	~
Other Groups			

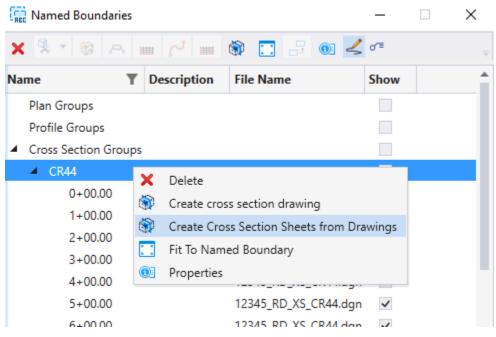
4) Expand CR44 to ensure the added Named Boundaries are displayed. Select 0+00 to 14+00, right click, and choose **Create cross section drawings.**

🗙 🎗 🔹 🍪 🖉	3 ∎	<u>ہ</u>	ш	۱		2	o∕≡		
Name	Ŧ	Descrip	otion	File N	lame		Show		
Plan Groups									
Profile Groups									
 Cross Section Gr 	oups								
CR44				12345	_RD_XS_CR4	4.dgn	\checkmark		
0+00.00				12345	_RD_XS_CR4	4.dgn	~		
1+00.00				12345	_RD_XS_CR4	4.dgn	~		
2+00.00				12345	_RD_XS_CR4	4.dgn	~		
3+00.00				12345	_RD_XS_CR4	4.dgn	~		
4+00.00			x	Delete			_		
5+00.00			8		ross section		_		
6+00.00			⊕¥ (§)				2		
7+00.00			19 1 2		ross Section		s from Di	rawings	
8+00.00				12345	_RD_XS_CR4	4.dgn	~		
9+00.00				12345	_RD_XS_CR4	4.dgn	~		
10+00.00)			12345	_RD_XS_CR4	4.dgn	~		
11+00.00)			12345	_RD_XS_CR4	4.dgn	~		
12+00.00)			12345	_RD_XS_CR4	4.dgn	~		
13+00.00)			12345	_RD_XS_CR4	4.dgn	~		
14+00.00)			12345	_RD_XS_CR4	4.dgn	~		
15+00.00)			12345	_RD_XS_CR4	4.dgn	~		
16+00.00	1			12345		4 dan	1		

4) Uncheck Create Sheet Model and then click OK to regenerate just the drawing models for 0+00 to 14+00.

📢 Create Drawing	×
Mode: Cross Section One Sheet Per Dgn:	•
View Name: CR44 - 0+00.00	
Drawing Seed: 20H 10V	•
View Type: Civil Cross Sectio	n
Discipline: Civil	
Purpose: Section View	
Drawing Model	
Model Name: CR44 - 0+00.00	
Seed Model: XS - 20H 10V.dgn	nlib, 20H 10V
Filename: (Active File)	
A 1''=20'	▼
Annotation Group: XS Annotation 20H	I 10V 🗸
Sheet Model	Model
Model Name: CR44 - 0+00.00	
Seed Model: XS - 20H 10V.dgn	nlib, 20H 10V [Sheet]
Filename: (Active File)	💼 🖡
Sheets: (New)	Ψ.
Full Size 1 = 1	.
Drawing Boundary: 20H 10V	Ψ.
Detail Scale : 1"=20' (By Name	d Boundary) 🔹 👻
Add To Sheet I	Index 🕼
Make Sheet Co	oincident
🗹 Open Model	
	<u>O</u> K Cancel

5) Reopen the Multi-Model view and on the Named Boundary manager dialog, right click CR44 and choose **Create Cross Section Sheets from Drawings.**



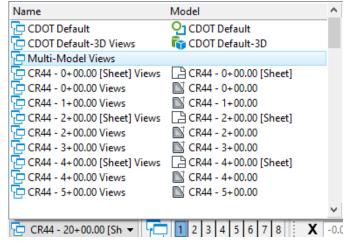
6) You are then prompted the following dialog. Choose OK to create just the sheet models.

Ą	Create Sheets from D	rawings	\times
	Drawing Seed:	20H 10V 👻	
	Model Name:	CR44 - 0+00.00-1	
	Seed Model:	XS - 20H 10V.dgnlib, 20H 10V [Sheet]	
	Filename:	(Active File)	💼 📮
	Sheets:	(New) 👻	
	A	Full Size 1 = 1	
	Drawing Boundary:	20H 10V 👻	
	Detail Scale :	1"=20' (By Named Boundary) 🔹	
		🗌 Add To Sheet Index 🛛 🕼	
		Make Sheet Coincident	
		Open Model	
		<u>о</u> к с	ancel

 NOTE that you can write to previously created sheets by choosing the Sheet instead of having Sheets set to (New) if you were just going through this process for one or two sections.

9.3.7 Cross-Section Navigator

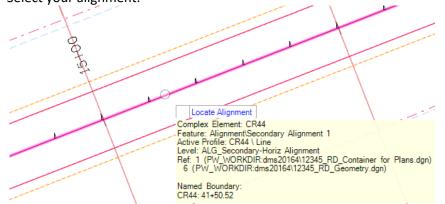
1) Return to the Multi-Model View.



- 2) Make sure you have both the Default & Default-3D models open.
- 3) Select the Cross Section Navigator.

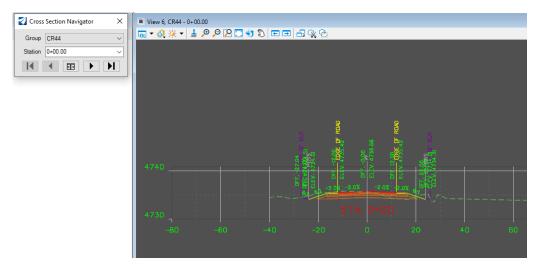
Drawing Prod	luction	Dra	awing U	tilities	Collabor	ate View	Help				
~A 🖂	Α	_A ₿	A#	ABC		A	ABC	Stationing	4	1	1"=50' *
Place Place Note Label	Place Text	Edit Text	Change Text Attributes		Civil Labeler	Element Annotation •	Drawing Model Annotation •	🔁 Plan View Labeling *	Cross Section Navigator	Named Boundary •	ACS Plane Lock
Notes		1	lext .	G.	Labels 🕞		Annotations	L ²	Review	Named Boundaries	Drawing Scales

4) Select your alignment.



5) Open & then Data Point in View 6 when prompted to Select or Open View.

6) The view should display a cross section drawing model (0+00 below) and Cross Section Navigator is opened. Use the tool to view other cross sections.



NOTE: You can annotate in the view that is displaying the cross section.

9.3.8 Skewed X-Sections

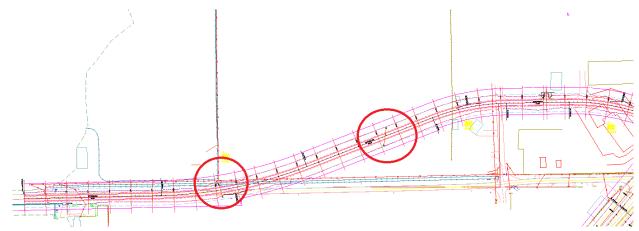
We will go through the process of creating Skewed X-Sections in this section. We will create a couple of Drainage X-Sections along CR44 but we will put these in a different named Name Boundary group and ultimately create a separate sheet for the drainage x-sections so these drainage x-sections will not be mixed in order with the x-sections already cut.

1) Open the Multi-Model View.

Name	Model	^
🔁 CDOT Default	CDOT Default	
🔁 CDOT Default-3D Views	👘 CDOT Default-3D	
🔁 Multi-Model Views		
🔁 CR44 - 0+00.00 [Sheet] Views	🕒 CR44 - 0+00.00 [Sheet]	
🔁 CR44 - 0+00.00 Views	🔊 CR44 - 0+00.00	
🔁 CR44 - 1+00.00 Views	🔊 CR44 - 1+00.00	
🔁 CR44 - 2+00.00 [Sheet] Views	🕒 CR44 - 2+00.00 [Sheet]	
🔁 CR44 - 2+00.00 Views	🔊 CR44 - 2+00.00	
🔁 CR44 - 3+00.00 Views	🔊 CR44 - 3+00.00	
🔁 CR44 - 4+00.00 [Sheet] Views	🕒 CR44 - 4+00.00 [Sheet]	
🔁 CR44 - 4+00.00 Views	🔊 CR44 - 4+00.00	
🔁 CR44 - 5+00.00 Views	🔊 CR44 - 5+00.00	
		4
🔁 Multi-Model Views 👻 🖵	1 2 3 4 5 6 7 8	~

2) Set View 1 as the Active view and attach the file **12345_RD_Drainage.dgn**

3) There are two cross-drains at the areas below.



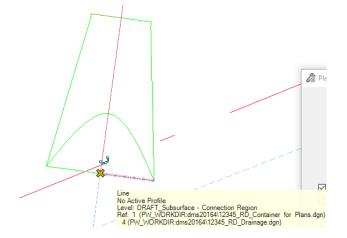
4) Zoom into the East most cross-drain (around 17+30) & invoke the Named Boundary tool.

5) Choose the **Cross-Section 2 Point tool**, set the *Drawing Seed* to **20H 10V**, identify CR44 while being prompted to Identify Path Element, and set the name to CR44_Drainage.

🔏 Place Named Boundary Ci	vil Cross Section 2 Points 🖵 🗌	Х
	∧₽ ≣≬<mark>∕</mark>₫ ₫	
Drawing Seed:	20H 10V 👻	
Group:	(New) 🗸	
Name:	CR44_Drainage	
Description:		
Vertical Exaggeration:	2.00000	
Top Clearance:	5.00000	
Bottom Clearance:	2.00000	
Elevation Datum Spacing:	10.000000	
	Backward Facing	
	Create Drawing	
	Show Dialog	

NOTE: You can choose the previously created Group instead of having this set to (New) if you wish to include these sections with a previously created group.

6) Enter the 1st point on the Left side of CR44 and at the end of the Flared End Section and then enter the 2nd point on the Right side at the end of the Flared End Section.

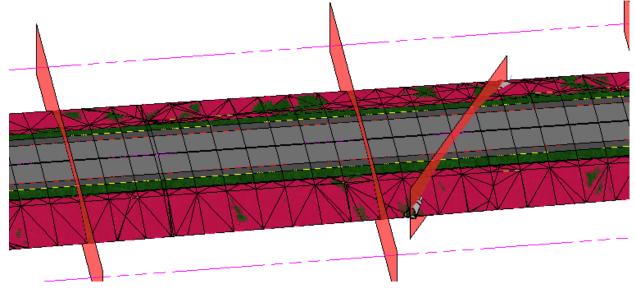


7) Data point to Accept the placement of the Named Boundary.

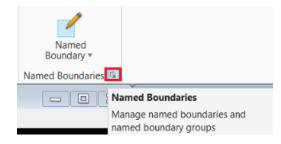
8) Perform the same process on the cross-drain @ 9+20. Choose the CR44_Drainage Group instead of creating another New Group.

🔏 Place Named Boundary Ci	vil Cross Section 2 Points	—		Х
	A 🖓 🏢 🕅 🖊	Ì 🛃 🗆	IJ	
Drawing Seed:	20H 10V		•	
Group:	CR44_Drainage		•	
Vertical Exaggeration:	2.000000			
Top Clearance:	5.000000			
Bottom Clearance:	2.000000			
Elevation Datum Spacing:	10.000000			
	Backward Facing			
	Create Drawing			
	Show Dialog			

9) Review the skewed Named Boundaries.



10) Invoke the Named Boundary dialog.



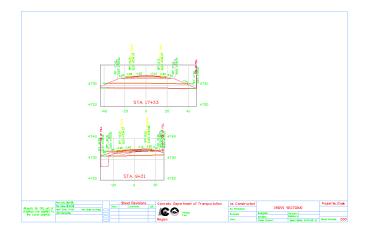
11) Go through the steps below.

Rec Named Boundaries		3	1
X 🞗 🕈 🎯 🖂	···· / ····	🛞 🗔 📑 🞯	∠ _ σ=
Name T	Description	F Create cross section	drawing
Plan Groups			
Profile Groups			
Cross Section Group	s		
▶ CR44		12345_RD_XS_CR44.d	gn 🗸
CR44_Drainage		12345_RD_XS_CR44.d	gn 🔽
Other Groups	2		

12) Click OK on the Create Drawing dialog to create the X-Section Drawing & Sheet models.

📢 Create Drawing	:	×
Mo		
View Name	CR44_Drainage - 9+20.86	
Drawing Seed	20H 10V -	
View Type	Civil Cross Section	
Discipline	Civil	
Purpose	Section View	
	Drawing Model	
Model Name	CR44_Drainage - 9+20.86	
Seed Model	XS - 20H 10V.dgnlib, 20H 10V	
E Filename	: (Active File) 💼 📮	
<u>A</u>	1"=20' -	
Annotation Group	XS Annotation 20H 10V	
	Sheet Model Create Sheet Model	
Model Name	CR44_Drainage - 9+20.86	
Seed Model	XS - 20H 10V.dgnlib, 20H 10V [Sheet]	
E Filename	: (Active File) 💼 📮	
Sheets	(New) 🔻	
A	Full Size 1 = 1	
Drawing Boundary:	20H 10V -	
Detail Scale :	1"=20' 🗸	
	Add To Sheet Index Make Sheet Coincident Open Model	
	<u>O</u> K Cancel	

13) Review the Drainage XS.



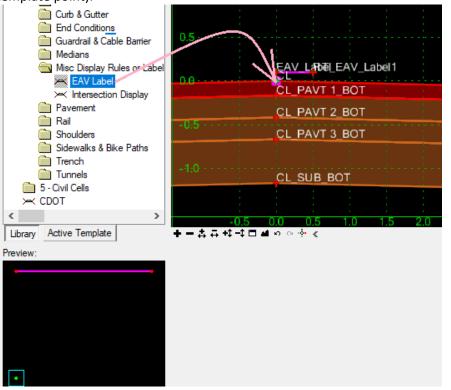
9.4 Annotating Cross Sections

Annotation of cross sections should be performed in the drawing model of the cross section. See the ANNOTATION section for cross-section annotation processes other than End Area Volumes which are discussed in the section below.

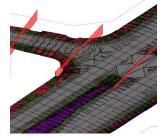
9.5 End Area Volume Report

If you want earthwork on cross-section sheets, you will need to process the End Area Volume Report in the file where cross-section named boundaries exist after Cut/Fill Volume elements have been created. The steps below will take you through this process.

Also, for earthwork to be annotated, the template must have the EAV Label template component (shown selected below) placed on the template (generally placed on the CL template point).



1) Remaining in the files 12345_RD_XS_CR44.DGN and with View 1 the active view, reference the file 12345_RD_EW.DGN (This file contains the Cut/Fill Volume elements & you should see them in the 3D view once the reference is attached).



2) Select one of the Named Boundaries in View 2 (Default-3D mode) and review its Civil Properties in Element Properties. Select the actual Station in Element Properties.

Image Boundaries (1) Image 26+00.00 General Name 26+00.00 Description Detail Scale 1"=20" Group CR44 Civil Properties Station 26+00.00 Left Offset -80.000" Right Offset 80.000" Interval 100.0000" Vertical Exaggeration 2.0000" Use Top Clearance True Top Clearance True Bottom Clearance False End Area Volume Xml Fragment False Include Control Points False	erties	▼			
General Name 26+00.00 Description Description Detail Scale 1"=20' Group CR44 Civil Properties Station Station 26+00.00 Left Offset -80.000' Right Offset 80.000' Interval 100.000' Vertical Exaggeration 2.0000 Use Top Clearance True Top Clearance 5.000' Use Bottom Clearance True Bottom Clearance 2.000' Elevation Datum Spacing 10.0000 Backward Facing False End Area Volume Xml Fragment False Include Control Points False	名 Elements (1)				
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Group CR44 Civil Properties 26+00.00 Left Offset -80.000' Right Offset 80.000' Interval 100.000' Vertical Exaggeration 2.0000 Use Top Clearance True Top Clearance True Bottom Clearance False Include Control Points False Clip Properties Clip Properties	Description				
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Vertical Exaggeration 2.0000 Use Top Clearance True Top Clearance 5.000' Use Bottom Clearance 2.000' Elevation Datum Spacing 10.0000 Backward Facing False End Area Volume Xml Fragment Include Control Points False Clip Properties	Right Offset	80.000'			
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Backward Facing False End Area Volume Xml Fragment Include Control Points False	Bottom Clearance	2.000'			
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Include Control Points False Clip Properties		T GIOG			
Clip Properties					
	Include Control Points	False			
Forward Depth 0 000'	Clip Properties				
	Forward Depth	0.000.			

Notice that there is no End Area Volume XML Fragment. We will next run the End Area Volumes Report and the End Area Volume info will be added to this field.

3) From the Home ribbon tab, select the Civil Analysis -> End Area Volume Report.

File Home Terrain Geometry	Site Layout Corrie	dors Model Detailing	Drawing Production	Draw	ing View
Sone ▼ Default Image: 0 to 1 mining Image: 0 to 1 mining Image: 0 to 1 mining Image: 0 to 1 mining	• <u>•</u> 0 • Explo	Attach Tools v	Element Selection	ports C	Corridor Iysis • Corridor Reports • Manager
Attributes		Primary	Selection	Mc 🛬	Analyze Point
m to	~	✓ 1	No Feature Definition	盆	Analyze Between Points
Explorer	→ ╄ ×	View 1, Default		<u></u>	Analyze Volume
🔀 File	*		Ð O 🗖 🛶 🧑	쓥	Inverse Points
😝 Items	*		- <u></u>	<u></u>	Analyze Trace Slope
Resources				<u>A</u>	Analyze Pond
<u> </u>	·				Element Component Quantities
JopenRoads Model	*			🦔	Create Cut Fill Volumes
				~	Quantities Report By Named Boundary
Search	<u>א</u> פ			# 9	Mass Haul Diagram
▷ ズ RWD-XS.dgn (Default)				00	End Area Volumes Report
				8	Cross Section Report
				19	3D Drive Through

4) Select the *Named Boundary Group* **CR44** and confirm this Named Boundary with a data point.

🔏 End Area Vol	_	\times
Parameters		*
Named Boundary Group	CR44	\sim

5) You are prompted with the message below. We will choose Station 31+00 for the Start of a Volume Exception area and choose 33+00 for the End of the Volume Exception area & then Reset to process earthwork.



6) Once complete, the End Area Volume report is generated. Review this report.

🞻 Bentley Civil Report Browser - C:\Users\Keith.Boteler\Ap	pData\Local\Tem	iip (ite igeo	ogeynann							
File Tools										
File Tools Cant Cant Cant Cant Cant Cant Cant Can	$\sim \sim \sim$	Section Se	V V	R CR44	nd Area eport Created Time:		uly 22, 202			
CrossSectionGradebookWide.xsl	\otimes	- V - V	nt Name: rid Factor:		units in this repo	t are in feet,	square feet	and cubic feet unl	ess specified othe	rwise.
CrossSectionGradebookWide.xsl EarthworkQuantities.xsl ElementsComponentQuantitiesReport.xsl ElementsComponentQuantitiesReportSummary.xsl EndAreaVolume.xsl	Baseline	Input Gr	rid Factor:	Note: All u	····· Station	Quantitie	is			Mass
CrossSectionGradebookWide.xsl EarthworkQuantities.xsl ElementsComponentQuantitiesReport.xsl ElementsComponentQuantitiesReportSummary.xsl EndAreaVolume.xsl MassHaulToTIW.xsl	Baseline Station	Input Gr	rid Factor: Area	Note: All u - Cut Volume	Station Adjusted	Quantitie - Factor	es Area	-Fill	Adjusted	Mass Ordinate
CrossSectionGradebookWide.xsl EarthworkQuantities.xsl ElementsComponentQuantitiesReport.xsl ElementsComponentQuantitiesReportSummary.xsl EndAreaVolume.xsl MassHaulToTIW.xsl Quantities by Named Boundary Report.xsl	Baseline Station 0.000	Input Gr Factor 1.000	Area 41.898	Note: All u - Cut Volume 0.000	Adjusted	Quantitie Factor 1.000	Area 0.809	- Fill Volume 0.000	Adjusted 0.000	Mass Ordinate 0.000
CrossSectionGradebookWide.xsl EarthworkQuantities.xsl ElementsComponentQuantitiesReport.xsl ElementsComponentQuantitiesReportSummary.xsl EndAreaVolume.xsl MassHaulToTIW.xsl	Baseline Station 0.000 100.000	Factor 1.000	Area 41.898 57.791	Note: All 0 - Cut Volume 0.000 4984.428	Station Adjusted 0.000 4984.428	Quantitie Factor 1.000	Area 0.809 0.000	- Fill Volume 0.000 40.450	Adjusted 0.000 40.450	Mass Ordinate 0.000 4943.978
CrossSectionGradebookWide.xsl EarthworkQuantities.xsl ElementsComponentQuantitiesReport.xsl ElementsComponentQuantitiesReportSummary.xsl EndAreaVolume.xsl MassHaulToTIW.xsl Quantities by Named Boundary Report.xsl SightVisibilityAlternatReport.xsl	Baseline Station 0.000	Input Gr Factor 1.000	Area 41.898	Note: All u - Cut Volume 0.000	Adjusted	Quantitie Factor 1.000	Area 0.809	- Fill Volume 0.000	Adjusted 0.000	Mass Ordinate 0.000
CrossSectionGradebookWide.xsl EarthworkQuantities.xsl ElementsComponentQuantitiesReport.xsl ElementsComponentQuantitiesReportSummary.xsl EndAreaVolumexsl MassHauITOTIW.xsl Quantities by Named Boundary Report.xsl SightVisibilityAtemateReport.xsl SightVisibilityReport.xsl	Baseline Station 0.000 100.000	Factor 1.000 1.000 1.000	Area 41.898 57.791	Note: All 0 - Cut Volume 0.000 4984.428	Station Adjusted 0.000 4984.428	Quantitie Factor 1.000 1.000	Area 0.809 0.000	- Fill Volume 0.000 40.450	Adjusted 0.000 40.450	Mass Ordinate 0.000 4943.978

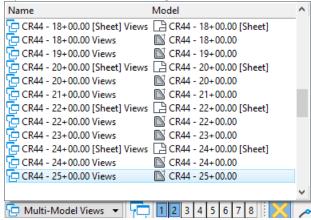
7) Close the report.

8) Select one of the Named Boundaries in View 2 (Default-3D mode) and review its Civil Properties in Element Properties again. Select the actual Station in Element Properties.

C Elements (1)	
Rec Named Boundaries (1	I)
▷ Rec 26+00.00	
-HEL	
General	
Name	
Description	
Detail Scale	
Group	
Civil Properties	
	26+00.00
Station Left Offset	26+00.00 -80.000'
Station	
Station Left Offset Right Offset	-80.000'
Station Left Offset Right Offset	-80.000' 80.000' 100.000'
Station Left Offset Right Offset Interval	-80.000' 80.000' 100.000' 2.0000
Station Left Offset Right Offset Interval Vertical Exaggeration Use Top Clearance	-80.000' 80.000' 100.000' 2.0000
Station Left Offset Right Offset Interval Vertical Exaggeration Use Top Clearance	-80.000' 80.000' 100.000' 2.0000 True 5.000'
Station Left Offset Right Offset Interval Vertical Exaggeration Use Top Clearance Top Clearance	-80.000' 80.000' 100.000' 2.0000 True 5.000' True
Station Left Offset Right Offset Interval Vertical Exaggeration Use Top Clearance Top Clearance Use Bottom Clearance Bottom Clearance Elevation Datum Spacing	-80.000' 80.000' 100.000' 2.0000 True 5.000' True 2.000' 10.0000
Station Left Offset Right Offset Interval Vertical Exaggeration Use Top Clearance Top Clearance Use Bottom Clearance Bottom Clearance Elevation Datum Spacing Backward Facing	-80.000' 80.000' 100.000' 2.0000 True 5.000' True 2.000' 10.0000 False
Station Left Offset Right Offset Interval Vertical Exaggeration Use Top Clearance Top Clearance Use Bottom Clearance Bottom Clearance Elevation Datum Spacing Backward Facing	-80.000' 80.000' 100.000' 2.0000 True 5.000' True 2.000' 10.0000 False xml version="1.0" encoding="utf-16"? <crosssectionsta< td=""></crosssectionsta<>

Notice that earthwork info has been added the End Ara Volune XML fragment field. This is required prior to annotating cross-sections.

9) Open the 25+00 XS Drawing model.

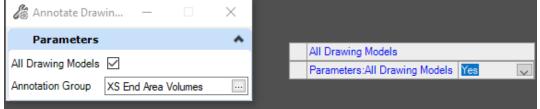


10) From the Drawing Production ribbon tab, choose the Model Annotation command.

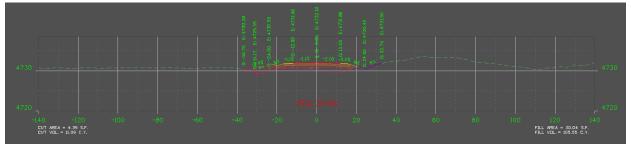
	Draw	ing Production	Drawing	Vi	ew		
٩	ত্র	A A ^B	A	ABC	A	ABC	🖶 Stationing
	Place Label	Place Edit Text Text	Change Text Attributes	A.,	Element Annotation +	Model Annotation •	
No	otes	Т	ext	E.		Annotations	G.

11) Select the XS End Area Volumes Annotation group.

🔏 Annot	ate Draw	/ing	—		\times
Paran	neters				*
All Drawing	Models	\checkmark			
Annotation	Group	XS End	d Area Vo	olumes	
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			_		×
	e s Section				
	s Section Drawing	1			
	📁 Grid -	Offset/	Elev		
÷	📁 Flags				
÷		• /Ela /	lueliue a \		
	📁 Offse 📁 Offse			Flags	
	Offse			nage	
÷	📁 Grid ·	Offset/	Elev - Fla	-	
	🔗 XSG			-	
	ಿ XSE 🗬 XSG				
	e xs s		Dumera		
	🖉 XS L		-		
	🔗 XS R				
2) Check the	All Dra	wing N	Aodels	checkbo	ox and t



13) Review the earthwork placed on the CR44 - 25+00 model and other models to see the earthwork.



As mentioned earlier, for earthwork to be annotated, the template must have the EAV Label template component (shown selected below) placed on the template (generally placed on the CL template point).



10. SUPERELEVATION DIAGRAM

Below are steps to generate a sheet which displays a Superelevation Diagram in the profile view. Superelevation must have been calculated and applied to the corridor and referenced along with the corridor to the Named Boundary file. You can create the super diagram when you set up sheets (Section 10.1 below) or through an annotation group to sheets already created (Section 10.2).

10.1 Using a Drawing Seed

The steps below will add a superelevation diagram to the Profile area when you set up Plan & Profile Sheets.

10.1.1 Attaching the Container file (or references)

- 1) Create and enter the file **12345_RD_SuperDIAGRAM-CR44.dgn** (Using a 2D Seed file).
- 2) Reference the file **12345_RD_Container for Plans.dgn** with a Nesting Depth of 1 as described in Section 5.2 of this manual.
- 3) Reference the file **12345_RD_Super-CR44.dgn.**

10.1.2 Placing Plan Named Boundaries

1) Follow the steps in section 5.3 of this manual with the following exceptions.

Set the following Drawing Seed and scale as shown below.

🔏 Place Named Bo	🍰 Place Named Boundary Civil Plan 🛛 🗌							
	n 🖓 📖 🌒 🖊 🛃 🎞							
Drawing Seed:	Plan-Profile-Superelevation - PLAN 🔹	Ŷ						
Detail Scale:	1"=50' 👻							
Name:	Plan 1							
Description:								
Group:	(New) 👻							
Name:	Multi-Select Mode							
Description:								
Start Location:		◀						
Stop Location:		▶						
Length:	700.000000							
Left Offset:	-75.000000							
Right Offset:	75.000000							
Overlap:	0.000000							
Boundary Chords:	10							
	Create Drawing							
	Show Dialog							

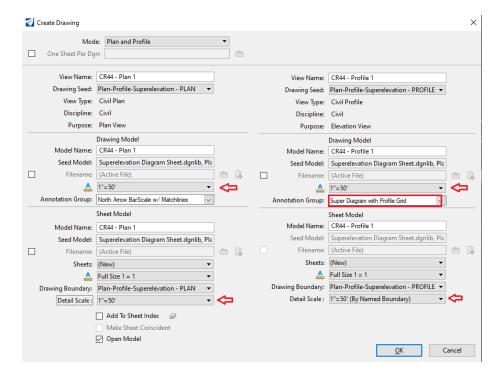
10.1.3 Placing Profiled Named Boundaries

1) Follow the steps in section 5.4 of this manual with the following exceptions. Set the following Drawing Seed and scale as shown below.

🔏 Place Named Boundary	r Civil Profile —	\times	
	a 🖓 🔳 🗑 🖯 🗹 🎞		
Drawing Seed:	Plan-Profile-Superelevation - PROFILE 🔹		
Detail Scale:	1"=50' 🔹		
Name:	Profile 1		
Description:			
Method:	From Plan Group 👻		
Plan Group:	CR44 -		
Group:	(New) 🔻		
Name:	CR45		
Description:	From Plan Group: CR44		
Vertical Exaggeration:	1.000000		View 7, AttachedLongSection - CR44
Available Profile Height:	200.000000	ee	
Top Clearance:	0.500000		4850-
Bottom Clearance:	0.500000		
Elevation Datum Spacing:	10.000000		4800-
Station Datum Spacing:	10.000000		
Profile Shifts:	Datum Stations 👻		4700-
	Use Terrains		4650-
	Use Active Vertical		4600-
	Whole Conduits Only		Const.
	Create Drawing		0400 04 1.34 05 1.35 05 05 1.50 040 040 040 040 040 1040 1040 1040 10
	Show Dialog		

10.1.4 Creating Sheets

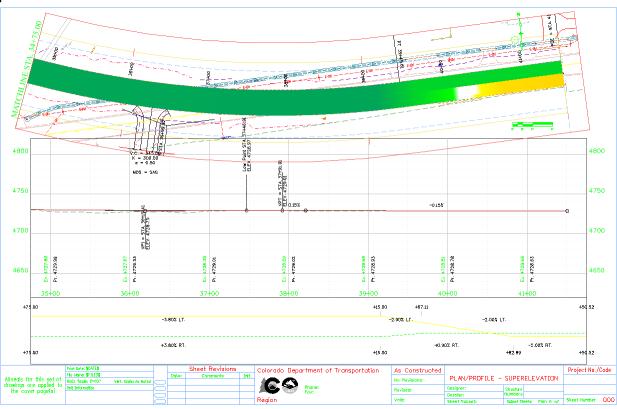
1) Follow the steps in section 5.6 of this manual with the following exceptions Modify the scales designated below if needed and observe the Super Diagram Annotation Group.



🛐 Resolve Aliases for Definition: Superelevation Diagram Lines 🛛 🛛 🛛 🗙								
Name	Туре	Target	-					
Left	Superelevation	CL - LT_EOP						
🗊 Right	Superelevation	CL - RT_EOP	Ŧ					
		0	K					

2) You should be prompted with the following dialog. Set the Targets and click OK.

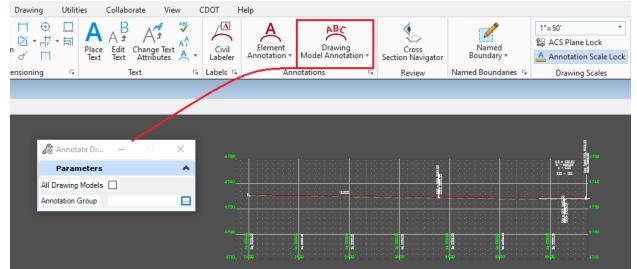
 The sheets will process and you should be eventually moved into the last sheet model created. Below is an example. Make note of the Super diagram at the bottom of the profile.



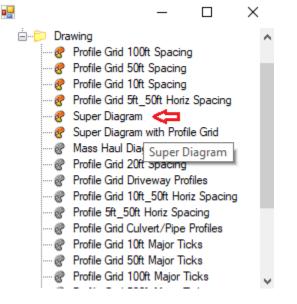
10.2 Using an Annotation Group

If you have Plan/Profile sheets already set up, you can add a superelevation diagram to the profile draw models using the steps below.

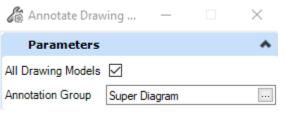
- 1) Open the file that contains the Drawing/Sheet models and reference the superelevation to the file in addition to the corridor that has the superelevaton assigned.
- 2) Open a Profile Drawing model and invoke the Drawing Model Annotation tool.



3) Choose the Super Diagram annotation group as shown below.



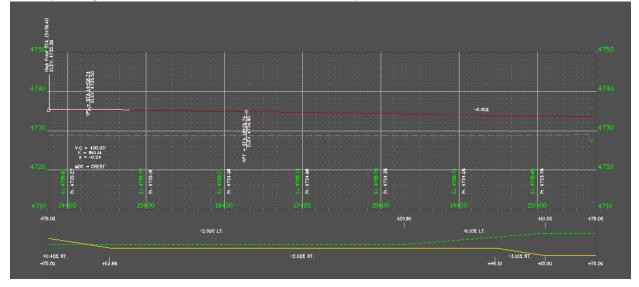
4) Confirm All Drawing Models and then confirm the prompts to kick off the process.



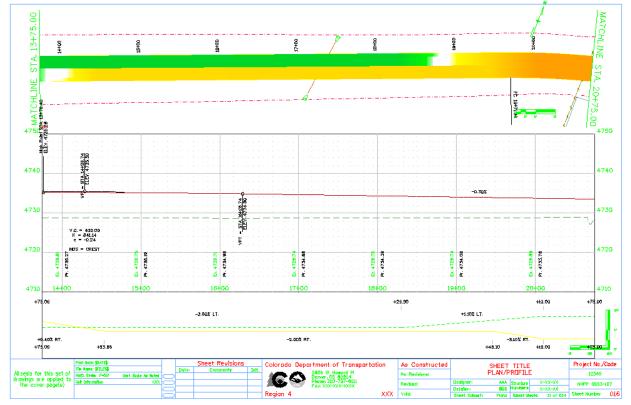
5) You should be prompted the following dialog. Fill out the Targets and click OK.

👔 Resolve Aliases for Definition: Superelevation Diagram Lines 🛛 🗖 🗌								
Name	Туре	Target						
Left	Superelevation	CL - LT_EOP						
⊃ Right	Superelevation	CL - RT_EOP	*					
		C	Ж					

6) The Super diagram should be added @ the bottom of the profile area as shown below.



7) Move to a sheet model and then potentially move the profile drawing model references to fit the super on the sheet or potentially go back to the profile drawing model and move the super up there.



11. ANNOTATION

11.1 Overview

The Annotation tools available in OpenRoads Designer are found under the Drawing Production ribbon tab and are shown below.

Drawing Proc	duction	Drawing	Utiliti	es (Collabo	rate Vie	w (CDOT H	Help					
	→	⊢ ⊕		Δ	,Β	14	ABC	/ A	Α	ABC		4		1:100 *
Place Place	Dimensio	_ 1 <u>%</u> • rf7 •	1	Place	A .≄ Edit	Change Text	AA	Civil	Element	Drawing		Cross	Named	🔀 ACS Plane Lock
Note Label	Element			Text	Text	Attributes	<u>A</u> -	Labeler	Annotation *	Model Annotation	-	Section Navigator	Boundary *	Annotation Scale Lock
Notes	Dim	ensioning	Fai		Т	ext	G,	Labels 🕞	Anr	notations	G.	Review	Named Boundaries 🕞	Drawing Scales

- Civil Labeler Non-Feature based labeling that provides more of a manual placement of labels in the Plan, Profile, and XS design/drawing models. Examples of the types of labels include Sta/Offset, Stat/Elevation, Offset/Elevation, Distance/Bearing, Intersection labels, Curve data, etc.
- Element Annotation Feature Based annotation used to annotate Alignments, Survey elements, etc.
- Drawing Model Annotation This has to be ran in a Drawing model and is used to annotation items like:
 - Profile Grid, Datum, & Profile
 - o Cross-Section Gird, Datum, Offset/Elevations, Slopes
 - o ROW, Guardrail, etc. on Cross-Sections

Most of OpenRoads annotation is automatically updated when changed and the file it resides in is opened. A couple of examples of this automatic updating are;

- If a curve in an alignment is changed, the Stationing & Curve data is automatically updated.
- If a line whose distance/direction are labeled with Civil Labeler is modified, the length/bearing are update.

The exception to this automatic update of annotation when the annotated element changes is crosssection annotation. Cross-Sections have to be re-annotated if the Corridor model changes.

Annotation should normally be performed in the design or drawing models when the Named Boundary process has been used to create sheets.

11.2 Civil Labeler

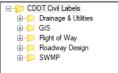
11.2.1 Overview

The civil labeler is a production-focused annotation tool for the civil environment. Stored as part of a workspace, label definitions are easily shared while maintaining constancy and compliance with standards. Label definitions bring together Text Favorites, Text Styles, Dimension Styles, Element Templates, custom prompting, border frames, and lock settings into a single, repeatable label definition. In addition, civil labels can target multiple elements allowing more complex labels than other annotation tools. For example, the ability to target two geometry elements and compute offsets between geometry or interesting stations.



- 3) Open 12345_RD_Plan Profiles_CR44.dgn
- 4) Invoke Civil Labeler & expand the **CDOT Civil Labels** folder when the + sign appears next to it. (It takes a few seconds for the labels to load).

Ӓ Civil Labeler Tool - CDOT_Civil Labeler.xml



5) Review the label types under each category.

📇 Civil Labeler Tool - CDOT_Civil Labeler.xml

🖃 🎓 CDOT 🗇	Civil Labels	
🖶 🥟 Dra	iinage & Utilities	
😟 🎾	Storm Plan Notes	
- I D	Node - Name	
	Node - Name - No Leader	
	Node - Name NE Elev	
	Node - Name Sta-Off Elev	
l 🖻	Node - Name Sta-Off Inv	
🖨 🃂 GIS	6	
	County Name	
	Engineering Region	
D	Highway Route Name	
D	Lake Name	
	Local Road Name	
	Major Road Name	
	Milepoint Reference Number	
🗈	Railroad Owner	
	Section Number	
	Stream Name	
	Structure ID-Type	
	Township Name	
😑 📂 Rig		
ت	Arcs	
	General	
ĒÞ	Linear	
÷>		
	adway Design	
1 1	Cross Section	
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	Erosion Log - 20in	
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	Road Name	
-0	Silt Fence	
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i	Topsoil Stockpile	
	1	

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6) Drive down into the Right of Way -> Linear folder and select the **Bearing & Length** label. Review the dialog. Observe the Place button on the various settings to the right of the dialog.

📇 Civil Labeler Tool - CDOT_Civil Labeler.xml

	ROW - Bea	ring and Length			
tir-ri⊃ Drainage & Utilities tir-ri⊃ GIS	Method:	Select Elements			
i⊟ information in the second seco	Leader:	None	~	Extension:	2.00
🗄 😳 General	Frame:	None	~	Offset:	0.50
iani inear □ Bearing	Divider:	None	~		
Bearing and Length Bearing and Length [Inline] Length Length Length and Bearing			Use Select	ion 🗌 Us	se Fence
Length and Bearing [Inline] 	Rotatio	n: Tangent			~
Broadway Design Broadway Design Broadway Design					
				Place	Close
	2			A 💾 🖱	

11.2.2 Enable Label Manager

In this section, we will show you how to create your own XML file to change/add label settings if you want. This is not a requirement of use but an option only which will let you create or copy labels as needed. You can see that the Civil Labeler looks at the **CDOT_Civil Labeler.xml** file that is in the workspace by default. We will Save the XML within the project area in these steps.

1) Choose the **Enable Label Manager** button in the lower left of the right frame of the dialog.

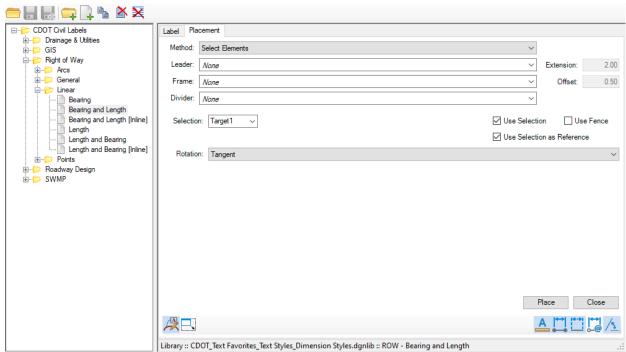
Civil Labeler Tool - CDOT_Civil Labeler.xml			-	_	
⊡~⊱ CDOT Civil Labels ⊕-⊃ Drainage & Utilities	ROW - Bear	ing and Length			
⊞⊃ GIS	Method:	Select Elements			
i⊟ <mark>∕</mark> Right of Way i∰ ∫ Arcs	Leader:	None	~	Extension:	2.00
im-p General ⊡>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Frame:	None	~	Offset:	0.50
Bearing	Divider:	None	~		
Bearing and Length Bearing and Length [Inline] Length and Bearing Length and Bearing [Inline] Points Roadway Design SWMP	Rotatio	n: Tangent	Use Selecti	on 🗌 Us	v
	₽				Close
				<u>A</u> 🚰 🗂	<u>_</u> / <u>\</u>

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2) See the results below. This adds a *Label* tab at the top of the dialog and also the ability to copy labels, create labels, create folders, etc.

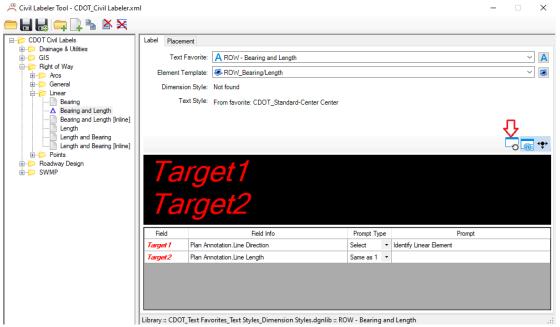




3) Select the Label button at the top of left of the dialog.

Civil Labeler Tool - CDOT_Civil Labeler.xr	nl	
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	Label Placement	
⊕…© Drainage & Utilities		
i∰ <mark>)</mark> ⊃ GIS	Text Favorite:	A ROW - Bearing and Length
🗄 🗁 Right of Way		
i ⊕ 📁 Arcs	Element l'emplate:	SROW_Bearing/Length
🕀 💬 General	Dimension Style:	Not found
🚊 🖓 🗁 Linear		
Bearing	Text Style:	From favorite: CDOT_Standard-Center Center
···· 📄 Bearing and Length		

4) Review the dialog with the Label tab chosen. This is where the label is set up. Review the dialog below. Disable the View Independent button if it is enabled. Note that if this setting is enabled, when a view rotates, the label will rotate with the view. This is nice for some labels such as curve labels so the text stays readable at all times, but not ideal for Bearing and Length labels placed on the same angle as the element that is being rotated.



5) Choose the Save file as command.

Civil Labeler Tool - CDOT_Civil Labeler.xn	nl		
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	Label	Placement	
i∰…i⊃ Di Save file as ∰…i⊃ GIS		Text Favorite:	AR
i⊟ip Right of Way i∰ip Arcs	E	ement Template:	遷 R
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6) You should be prompted with a Select Wizard dialog. Choose No wizard and then you should be prompted with a Save Document As dialog as shown below. Choose the Select button to select the folder to save this XML to.

Folder		Save
Roadway	Select	Cancel
Document		
Name:	12345_RD.XML	
Description:	12345_RD.XML	
File Name:	12345_RD.XML	
Format:	XML Format	

- 💯 Select Folder \times Select Folders 🗄 💯 03 Post-Construction ٨ 💯 04 Final Documents 🖃 💯 05 Project Standards 💯 Output Files 💯 Supplemental Picklists 🦉 WorkSet Standards 🗁 💯 应 Data 💯 Macros 💯 Seed 💯 Sheet Borders 💯 Superelevation 💯 Symb 💯 Template Library < > pw:\\cdot-pw.bentley.com:cdot-pw-04t\Documents\02 Mir 🗸 <u>0</u>K <u>C</u>ancel
- 7) Select the folder below under your project.

8) Returning to the Save file as command, name the file *WorkSetName_Civil Labeler.xml*

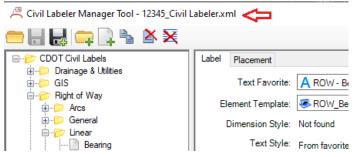
Folder Feature Defi	nitions <u>S</u> elect	<u>S</u> ave Cancel
Document		
Name:	12345_Civil Labeler. xml	
Description:	12345_Civil Labeler. xml	
File Name:	12345_Civil Labeler. xml	
Format:	XML Eormat	

NOTE: If it is named WorkSetName_Civil Labeler.xml and place it in the Feature Definition folder then that .xml will load instead of the one from the WorkSpace when you open Civil Labeler in future ORD sessions.

9) You will be prompted by PW to Check In this XML file. Check it in.

- Documents -		
Name Enter text	t here	
√ [®] 12	345_Civil Labeler. xml	
		2
Folder:	02 Minor Projects\CDOT Training Projects\12345 - CDOT Plans	> Production\05 Pro
Folder:	02 Minor Projects\CDOT Training Projects\12345 - CDOT Plans i new version during Check In	-

10) Now, notice by looking at the top of the dialog that you are pointing at your own custom XML file.



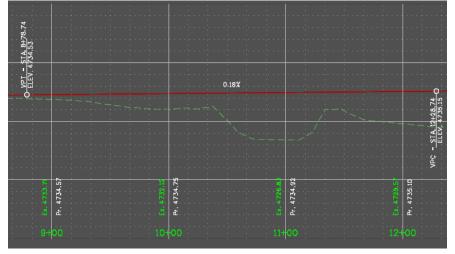
11) Choose the Placement toggle at the top of the dialog to move back into the placement mode.

11.2.3 Plan & Profile Annotation

Annotation of Plan & Profile should be performed in design or drawing models. The coordinate system is valid in the Plan View drawings models so Civil Accudraw can be used to locate Station/Offset or coordinate values. Below are a few examples of manually annotating Plan and Profile models.

11.2.3.1 Profile Annotation

1) Remaining in **12345_RD_Plan Profiles_CR44.dgn**, open the Profile 2 Model. You should see the channel around 11+00. We will label Station/Elevation of a few of the VPI's of this ditch.



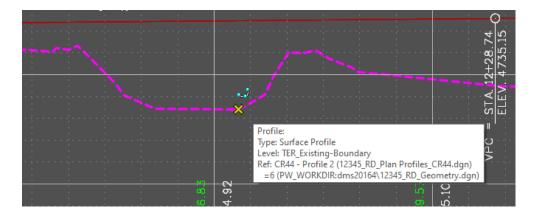
2) Select the ribbon tab Drawing Production and the command Civil Labeler.

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File	Home Terrai	n Geome	try Site	Corridors	Model De	tailing	Drawing Proc	luction	Dra	wing U	Itilities	Collabor	ate View	Help	
°€ ∎ -	Element Selection	Clip Volume 🕄	Create Saved View	Update Saved View Settings	Apply Saved View	Place Table	A O Place Place Note Label	A Place Text	A ≇ Edit Text	Change Tex Attributes		Civil Labeler	Element Annotation *	Drawing Model Annotation •	Stationing
Primary	Selection	Clip		Saved Views	E.	Tables	Notes		Т	ext	E.	Labels 🕞		Annotations	Fa

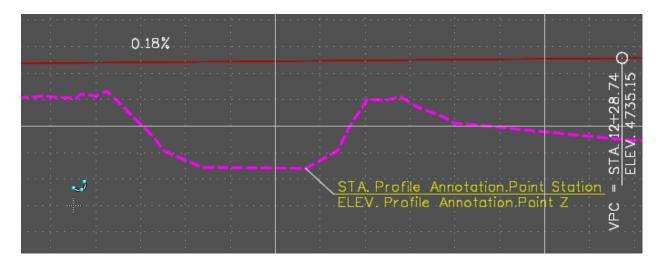
nl		-	
PROF - Station-Elevation Method: Data Point			
Leader: Auto Left Right	~	Extension	0.10
Frame: None	~	Offset	0.50
Divider: Split	~		
Rotation: View Horizontal			~
			Close
r	Method: Data Point Leader: <u>Auto Left Right</u> Frame: <u>None</u> Divider: Split	PROF - Station-Blevation Method: Data Point Leader: Auto Left Right ~ Frame: None ~ Divider: Split ~ Rotation: View Horizontal	PROF - Station-Elevation Method: Data Point Leader: Auto Left Right Extension. Frame: None Offset Offset Divider: Split Offset Rotation: View Hortzontal 2) Place

3) Navigate to the Profile folder, choose the Station-Elevation labels and click Place.

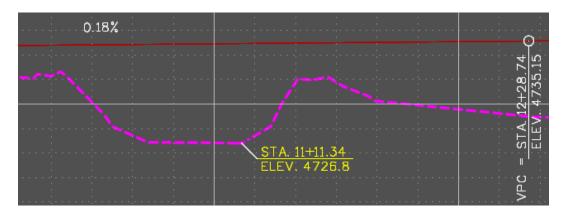
4) You are prompted to Identify Profile. Select the existing profile and then snap to the lower right of the channel bottom to identify the point to label.



5) A label should appear on your cursor as shown below.



6) Move the label to the approximate location shown below and data point to place the label. The station/offset should change to the actual station/offset.



7) Continue labeling a few more Ditch VPI's.

11.2.3.2 Plan Annotation

1) Open the Plan 5 View Group

Name	Model	^
🔁 CDOT Default	🔁 CDOT Default	
🔁 CDOT Default-3D Views	👘 CDOT Default-3D	
🔁 CR44 - Plan 1 Views	🔊 CR44 - Plan 1	
🔁 CR44 - Plan 2 Views	🔊 CR44 - Plan 2	
🔁 CR44 - Plan 3 Views	🔊 CR44 - Plan 3	
🔁 CR44 - Plan 4 Views	🔊 CR44 - Plan 4	
🔁 CR44 - Plan 5 Views	🔊 CR44 - Plan 5	
🔁 CR44 - Plan 6 Views	🔊 CR44 - Plan 6	
🔁 CR44 - Profile 1 Views	🔊 CR44 - Profile 1	
🔁 CR44 - Profile 2 Views	🔊 CR44 - Profile 2	
CR44 - Profile 3 Views	🔊 CR44 - Profile 3	
🔁 CR44 - Profile 4 Views	🔊 CR44 - Profile 4	
		~
🔁 CR44 - Plan 5 Views 🔻 🗌	1 2 3 4 5 6 7 8	\times

We will label the intersection of CR44 with US85-SB & NB alignments.



 Hover over the US85 SB alignment and you should see a LT_EOP_IN element. Turn this level off using the Reset menu. This is done to make the US85 alignments easily selectable in the next steps.

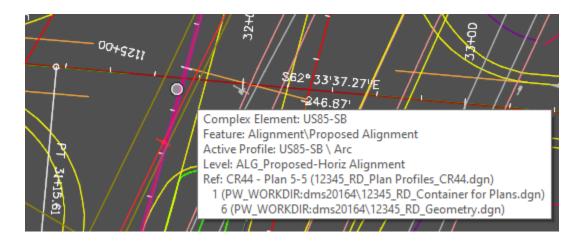
Steps.	
	32400
1152+00	\$62°33'37.27/E
	7/ 246.87
	Complex Element: LT_EOP_IN Belongs To: US85-NB
7 13 / 1/ 1/	Feature: Linear\Template Points\Pavement\TempPoint-Pavement Edge - HMA
$\langle \rangle \langle \langle \rangle \rangle \langle \rangle \langle \rangle \langle \rangle \rangle \langle \rangle \langle \rangle \langle \rangle \langle \rangle \rangle \langle $	Active Profile: ProfileByTemplate \ Arc
	Level: MOD_TempPoints-Pavement Edge
	Ref: CR44 - Plan 5-5 (12345_RD_Plan Profiles_CR44.dgn)
	1 (PW_WORKDIR:dms20164\12345_RD_Container for Plans.dgn)
	3 (PW_WORKDIR:dms20164\12345_RD_Corridor-US85.dgn)

3) Select the ribbon tab *Drawing Production* and the command **Civil Labeler.**

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File	Home Terrai	n Geomet	ry Site	Corridors	Model Det	ailing	Drawing Prod	uction	Drawing	Utilities	Collabor	ate View	Help	
~ € ∎ ▼ ⊚	Element Selection	Clip Volume 🕄	Create Saved View	Update Saved View Settings	Apply Saved View	Place Table	A or Place Place Note Label	A Place Text	A ∯ A Edit Chang Text Attrib		Civil Labeler	Element Annotation +	Drawing Model Annotation *	Stationing Plan View Labeling *
Primary	Selection	Clip		Saved Views	Fa	Tables	Notes		Text	5	Labels 🕞		Annotations	Fa

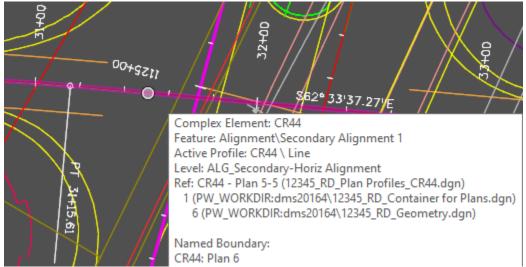
4) Navigate to the Roadway Design\Plan\Intersecting Elements folder, choose the Intersecting Geometry – Stations [with Names] label and click Place.

Civil Labeler Tool - CDOT_Civil Labeler.xml				-	
	PLAN - Stat	ion Equatio			
B → C GIS GIS Gift of Way Cross Section		Auto Left		Extension: Offset:	0.10
Plan ⊕-▷ Arcs ⊕-▷ Begin Labels ⊕-▷ End Labels ⊕-▷ General ⊟-▷ Intersecting Elements	Divider:				
	1	Offset 1: Offset 2:			
Intersecting Geometry - Stations [with Names and Coordin; A Intersecting Geometry - Stations [with Names] Intersecting Geometry - Stations Only Linear Points					
	'	Rotation:	View Horizontal		~
< >					

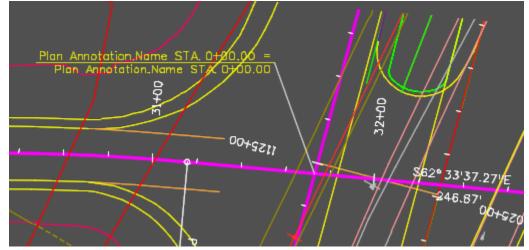


5) Once prompted to Identify First Alignment, choose the US85-SB alignment.

6) Once prompted to Identify Second Alignment, choose the CR44 alignment.



7) A label pointing to their intersection should appear.



8) Data Point to place the label in the area shown below and then Reset to exit the command.



9) Label the CR44 / US85-NB intersection as shown below.



11.2.4 XS Annotation

11.2.4.1 Offset/Elevation labels

- 1) Open **12345_RD_XS_CR44.dgn** & the cross section **drawing model 3+00.**
- 2) Select the ribbon tab *Drawing Production* and the command **Civil Labeler.**

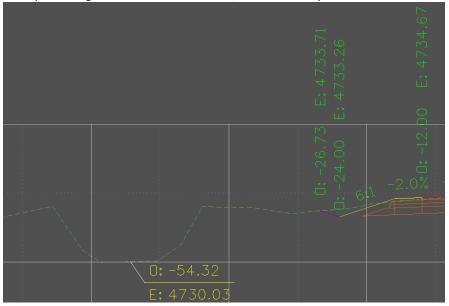
S	penRoads Modeling	* M *	T 🗇 👔 (i 🛃 🛃 💊	* A 🖈 =	;	C:\F	rogram	Data\Bentley	∕∖OpenR	oads D	esigner CE 1	0.10\Configurat	ion\WorkSpaces\MDO	T_Standards_CE\WorkSets\l
File	Home Terra	in Geome	try Site	Corridors	Model De	tailing	Drawing Prod	uction	Drawing) Uti	ilities	Collabor	ate View	Help	
ିଷ () ()	Element Selection	Clip Volume 🕄	~~>	Update Saved View Settings	Apply Saved View	Place Table	Place Place Note Label	A Place Text	A ∄ / Edit Char Text Att	↓ nge Text ributes		Civil Labeler	Element Annotation *	Drawing Model Annotation *	Stationing
Prima	ry Selection	Clip		Saved Views	Ga.	Tables	Notes		Text		Gi.	Labels 🕞		Annotations	Fa

3) Navigate to the Cross Section folder, choose the Offset Elevation label and click Place.

Civil Labeler Tool - CDOT_Civil Labeler.xr	h	—	\sim
CDOT Civil Labels	XS - Offset-Bevation (2 Lines) Method: Select Elements		
B- Right of Way B- Cross Section Bevation Offset-Bevation	Leader: Auto Left Right ~] Offset:	0.10
⊕- <mark>⊃</mark> Plan ⊕- ⊃ Profile ⊕- ⊃ SWMP	Use Selec	tion 🗌 U	se Fence
	Rotation: View Horizontal		~
		Place	Close

- Section cut graphics Terrain Model: 21907. Sun Topo-LiDAR_Merge Level: TER_Existing-Boundary/ Ref: CR44 - 3400.00 (PW_WORKDIR.dms20164112345_RD_XS_CR44.dgn) Ref (PW_WORKDIR.dms20164112345_RD_Container for Plans.dgn) Ref. 7 (PW_WORKDIR.dms20164112345_SV_Terrain.dgn)
- 4) Snap to the Left Ditch and move your cursor to where you want to place the label.

5) Data point to get the correct elevation/offset and to place the label.



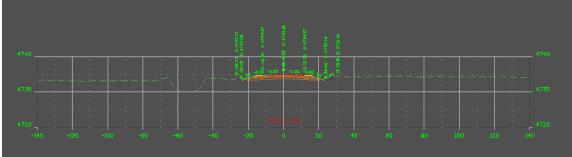
11.3 XS Annotation

11.3.1 Annotation Groups

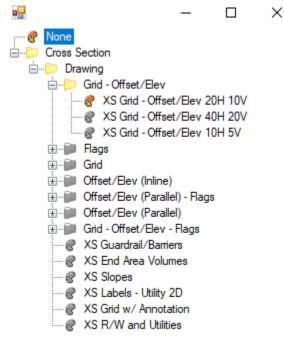
As mentioned in the Cross-Section section of this manual, the initial annotation group used when crosssection sheets are created is one of the XS Grid – Offset/Elev * shown below. These draw the XS Grid, annotates slopes, and uses the inline offset annotation with no flags.



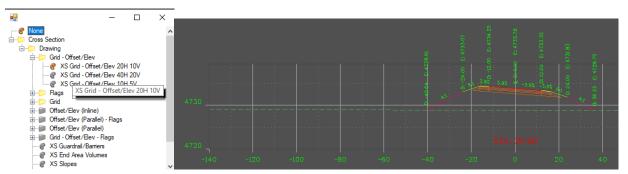
This initial annotation is shown below.



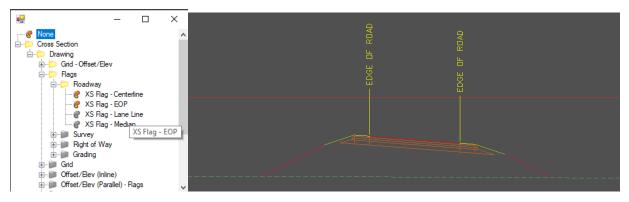
Available annotation group folders are shown below and then examples are given after that showing what most of these will produce.



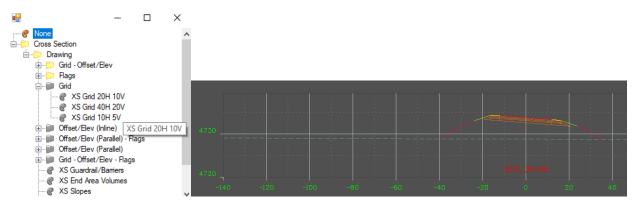
11.3.2 Grid-Offset/Elev



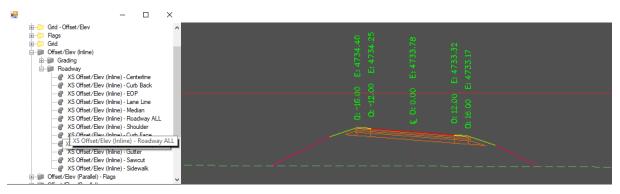
11.3.3 Flags



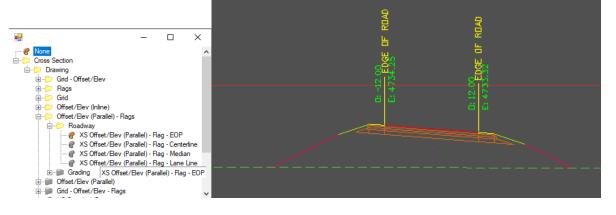
11.3.4 Grid



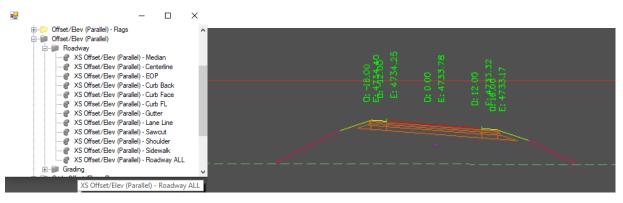
11.3.5 Offset/Elev (Inline)



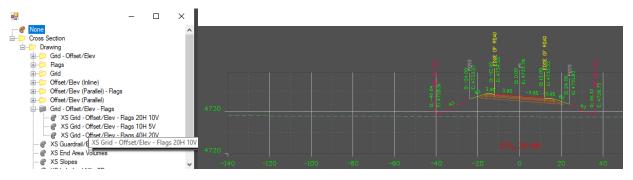
11.3.6 Offset/Elev (Parallel) – Flags



11.3.7 Offset/Elev (Parallel)

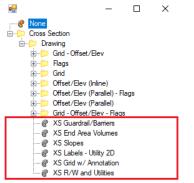


11.3.8 Grid – Offset/Elev – Flags



11.3.9 Others

The following annotation groups that are not under a folder categorization are for the most part, selfexplanatory. We have already been through the XS End Area Volume and we will go through adding ROW in section 11.5 below.



11.3.10 Removing Annotation Groups

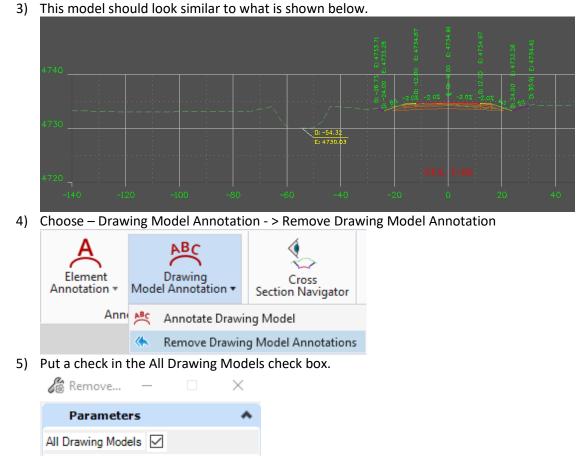
Note that running an additional XS annotation group will add to the annotation that is already present which in some cases could create overlaps in text. If you wish to replace an annotation group, you will need to use the **Remove Drawing Model Annotations** and then use the Drawing Model Annotation command to add the new group(s). When you use the **Remove Drawing Model Annotations** command, you can't choose an annotation group to remove so currently, all annotation is removed. The Remove Annotation command is demonstrated in the section below.

11.4 Corridor Changes

If anything about the Corridor model changes (profile, superelevation, model changes such as pavement width, ditch depth, shoulder width, pavement depth, etc.) the annotation will need to be updated. Steps below go through this process.

In the steps below, we will assume the design profile has changed on the CR44 alignment and the corridor model has changed. To update the annotation on the cross-sections:

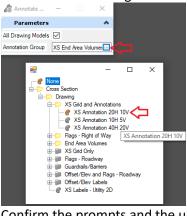
- 1) Open the file 12345_Rd_XS_CR44.dgn
- 2) Although you can go to any of the cross-section drawing models to perform the update, we will go to CR44 3+00.00



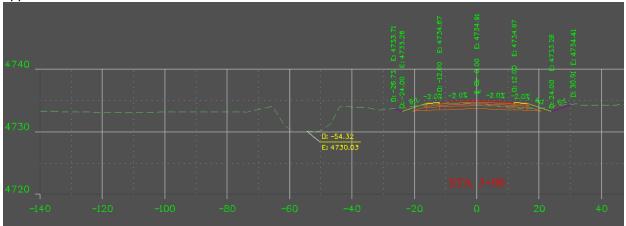
6) Data point to confirm all models. All annotation except the label placed by the Civil Labeler has been removed.

	CR44 - 3+00.00				
	🌾 🚽 🛓 🔎 🔎 🎦 🛄	+) E = - C + +			
		OFF5 ELEV. 4			
)	Choose the D	Drawing Model An	notaion -> Anno	tate Drawing Mode	21
	Element Annotation *	Drawing Model Annotation •	Cross Section Navigator	Named Boundary -	

8) Check the All Drawing Models checkbox and choose the Annotation Group shown below.



9) Confirm the prompts and the updated grid, offset/elevation offset labels, station, etc. should appear.



- 10) You would also have to choose and run any other annotation groups (such as XS End Area Volumes, Flags Right of Way, etc. We will not do this but you would do the following to update the earthwork.
 - a. Open the Multi-model view of the XS file.
 - b. Run the End Area Volume Report again to update the earthwork based on the profile change.
 - c. Go back to one of the XS drawing models
 - d. Choose the Drawing Model Annotation command.
 - e. Choose the XS End Area Volumes annotation group and data point to confirm the prompts and the earthwork should be added back.

🔏 Annotate	—		<				
Parameters			*				
All Drawing Models Annotation Group		rea Volumes					
 View 1, CR44 - 3+00.0 → Q ※ → ↓ 		\$) () 🖃 🕻	∍∣₽₽%₽	-		-	_
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-140 -120 DJT #PEA - 31-40 % DJT WIL - 19422 C							100 120 Fill AFEA - 0.42 Fill Vill - 0.43 C

11.5 Adding ROW

We will go through the steps of showing the location of proposed right of way on cross-sections. This process will work for existing and proposed ROW and also Easement. To accomplish this, you must profile the existing and/or proposed ROW which is performed in the first few steps below and then we will apply an annotation group in the XS file.

- 1) Open the file **12345_Rd_ROW_Prop.dgn**. This is just a 2D file so we will reference the terrain & set it active so we can profile the ROW.
- 2) Turn OFF all references including 12345_RD_ROW_EX.DGN which should already be off.
 References (5 of 5 unique, 0 displayed)

Tools	<u>P</u> ropertie	S								
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Slot	🖻 🏸	File Name 🔷	•	Model	Description	Logical	Orientat			
1		PW_WORKDIR:dms20164\12345_RD_Corrid	dor-CR44.dgn	CDOT Default	Master Model		Coincid			
2		PW_WORKDIR:dms20164\12345_RD_Corric	dor-Intersections.dgn	CDOT Default	Master Model		Coincid			
3		PW_WORKDIR:dms20164\12345_RD_Corric	dor-US85.dgn	CDOT Default	Master Model		Coincid			
4		PW_WORKDIR:dms20164\12345_RD_Geom	netry.dgn	CDOT Default	Master Model		Coincide			
5		PW_WORKDIR:dms20164\12345_RD_ROW_	_Ex.dgn	CDOT Default	Master Model		Coincide			
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Ne <u>w</u> L	evel Displa	y: Config Variable Georeferenced: N	lo 🔻							

3) Attached the Existing Ground Terrain from the Survey folder. The file name is 12345_SV_Terrain.DGN9

- 4) Set the Terrain Active. Set As Active Terrain Model
- 5) Turn OFF display of the Default-3D reference file of the Default model in view 1.

1 - 1	} 🔖 🗁 📡 🔿 🧇	d († 17 (14 fo 🛱 🚰	🖄 🖄	Hilite Mode: Bou	undaries 🔻
Slot 🏴	File Name ^			•	Model	Description
1	PW_WORKDIR:dms20	164\12345_RD_Cor	ridor-CR44.dgn		CDOT Default	Master Model
2	PW_WORKDIR:dms20	164\12345_RD_Cor	ridor-Intersections.do	jn	CDOT Default	Master Model
3	PW_WORKDIR:dms20	164\12345_RD_Cor	ridor-US85.dgn		CDOT Default	Master Mode
4	PW_WORKDIR:dms20	164\12345_RD_Geo	ometry.dgn		CDOT Default	Master Mode
5	PW_WORKDIR:dms20	164\12345_RD_RO\	W_Ex.dgn		CDOT Default	Master Mode
7	V PW_WORKDIR:dms20	164\12345_RD_RO\	W_PROP.dgn		CDOT Default-3D	
6	PW_WORKDIR:dms20	169\12345_SV_Terra	ain.dgn	~	CDOT Default	Master Model
<						

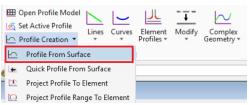
6) On the feature definition toolbar (available under Geometry -> General Tools -> Standards), choose Match Feature (1 below). Select one of the proposed ROW lines to set the feature to Right of Way (Prop) and then set the Use Active Feature toggle on (2 below).

2)	Horizontal	V
X-ROW		🖂 🧬 📥 📥 🖉 🔛 🔂
v 1, Default		1)

7) Select all the proposed ROW elements.



8) Select the **Profile from Surface** command.



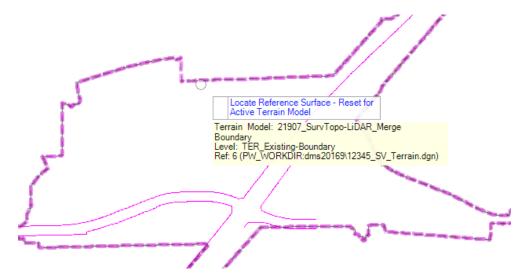
9) Fill out the dialog as shown below.

S	Profile Fro		×
	Point Selection	All	\sim
	Profile Adjustment	None	\sim
	Draping Option	Triangles	\sim
\checkmark	Horizontal Offsets	0.0000	
\checkmark	Vertical Offsets	0.0000	
	Range		*
	Lock To Start	\checkmark	
\checkmark	Start Distance	0.0000ft	
	Lock To End	\checkmark	
\checkmark	End Distance	0.0000ft	
	Feature		*
Fea	ture Definition	Use Active Featu	ire
Nan	ne	X-ROW	

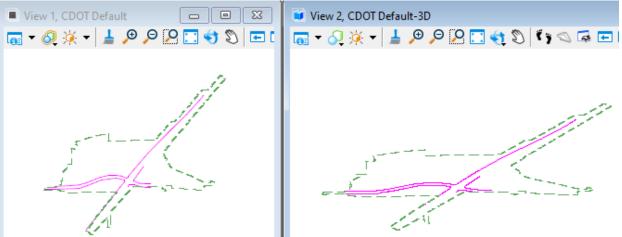
10) Data Point as prompted.



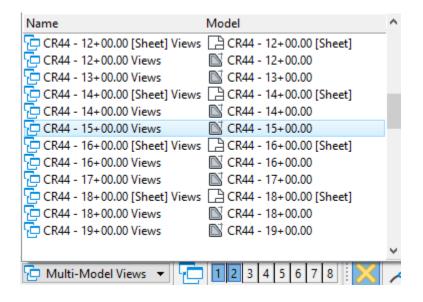
11) Select the terrain model and then confirm all the prompts to profile all the elements.



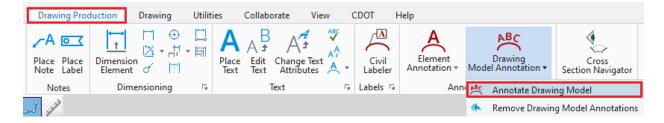
12) From the Reset menu, open the Plan/3D views and make sure the ROW lines are profiled.



- 13) Open the 123455_RD_XS_CR44.DGN file and referenced 12345_RD_ROW_Prop.
- 14) Open the Drawing Model of CR44 15+00



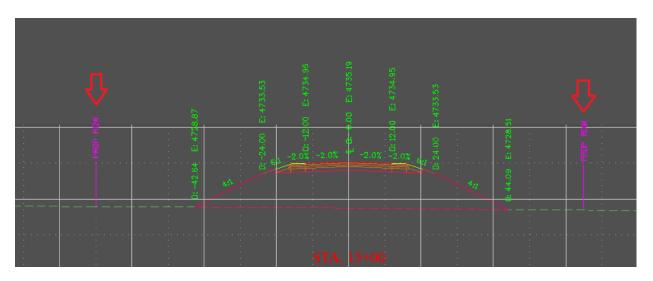
15) Choose Annotate Model from the Drawing Production ribbon tab.



- \times 8 None ~ - Cross Section . ⊡…)⊃ Drawing i ... i Grid - Offset/Elev i ⊕... 📁 Roadway @ XS Flag - Easements XS Flag - Right of Way ⊕.... Grading 🗄 🗇 📁 Grid ¥
- 17) Check on All Drawing Models and confirm with data points the remaining prompts.

hnnotate Draw	/in	_		\times
Parameters				*
All Drawing Models	\checkmark			
Annotation Group	XS L	abel - Ri	ght of Wa	y Flaç …

18) Review the Proposed ROW label placed on the cross-sections.



11.6 Patterning & Hatching

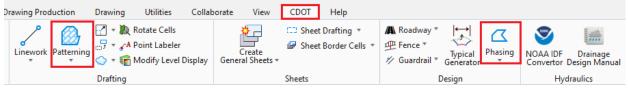
11.6.1 Overview

Pattern tools are available on the Drawing workflow as shown below.

3	Drawing	Ŧ	🛛 - 😑 🖶 🕻	o 🔓 🔸 - 🔶	📌 🚔 🔹 📵	🗞 🛛 pv	v:\\cdot-pw.bentle	ey.com:cdot-pw-04	t\Documents\02 Min	or Projects\CDOT Training P
File	Home View	v An	inotate Atta	ch Analyze	Curves	Constraints	s Utilities	Drawing Aids	Content Mesh	Collaborate CDOT
Plac Tex			A O	Dimension Element		Place Table	$\begin{array}{c} \bullet & \circ^{\theta} \circ - \\ \bullet & \circ \\ \bullet & \bullet \\ \bullet & \bullet \\ \bullet & \circ \\$	Place Active Cell **	Hatch area 3 to 1	Label Terrain Contours
	Text	F2	Notes	Dimensio	ning 5	Tables	Detailing 🛛 🛱	Cells 5	Patterns	Terrain Model

There are also a couple of Pattern/Hatch tools available on the CDOT menu as shown below. These tools on the CDOT menu will set the level, kick off the command, and set the Pattern cell.

w:\cdot-pw.bentley.com:cdot-pw-04t\Documents\02 Minor Projects\CDOT Training Projects\12345 - CDOT Plans Production\01 Pre-Construction\Drawings\Roadway\1234!

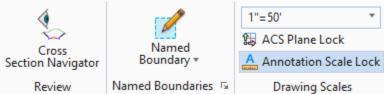


11.6.2 General process

- 1) Open the file 12345_RD_PavemenrRemovalShading.dgn
- 2) There are multiple pavement removal shapes in this file that need to be cross-hatched (red below) and one shape that has been cross hatched (Yellow below).



3) Go to Drawing Production & verify the Drawing Scale is set to 1''=50'.



4) Go to the **Drawing** *Workflow* -> **Annotate** *Ribbon tab* -> **Patterns** *Ribbon group* and choose the **Match Pattern Attributes**

🚺 Drawing 🔹	🛯 - 😑 🖬 K	d la 🔶 - 🥕 y	1 🔒 🛓 🕦 🤇	b ∓ pv	w:\\cdot-pw.bentle	ey.com:cdot-pw-04	t\Documents'	\02 Min	or Projects\CDOT	Training P
File Home View An	notate Atta	ich Analyze	Curves Co	onstraint	s Utilities	Drawing Aids	Content	Mesh	Collaborate	CDOT
A A A A A A A A A A A A A A A A A A A	Note Euser	Dimension Element of		Place Table	$\begin{array}{c} \bullet & \circ^{\theta} \circ - \\ \bullet & \circ \end{array}$	Place Active Cell		2 . ***	Label Terrain Contours	
Text 🕞	Notes	Dimension	ning 🕞	Tables	Detailing 🕞	Cells 🕞	Patterr	ns	Terrain Mod	el
No Feature Definition	No Feature Definition									
CDOT Default	0 = 4 @		~				to r		hose of an existing	

5) Ensure that Match Symbology is checked and then select the Yellow cross-hatch area to the left.

🔏 Match Pattern Attributes	_	\times		7//
✓ Match Symbol	logy		Shape Level: DES_Removals	

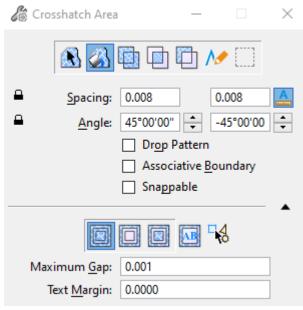
6) Go to the Home Ribbon tab and verify that DES_Removals is the active level.

None	* DES_Removals	*						
4 * 🗟 0	* 🔄 1 * 🎑 0 * 🗛 0	٣						
Attributes								

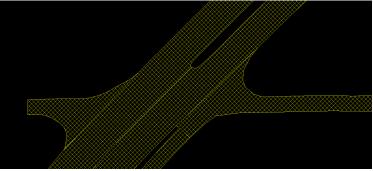
7) Go back to the Annotate Ribbon tab and select the Crosshatch command.

V Drawing	• 🐼 • 😑 🔒	🛃 Îo 🔸 + 🥕 📌 🚔 📱 📵	🗞 🗧 pw:\\cdot-pw.bentle	ey.com:cdot-pw-04ť	\Documents\02 Min	or Projects\CDOT Training
File Home View	Annotate Atta	ach Analyze Curves C	onstraints Utilities	Drawing Aids	Content Mesh	Collaborate CDO1
A A A A A A A A A A A A A A A A A A A	Place Place Note Label	$\begin{array}{c c} & & & \\ & \uparrow \\ \hline \\ Dimension \\ Element \\ \hline \\ \end{array} \begin{array}{c} & & \\ \hline \\ \\ \end{array} \begin{array}{c} & \\ \\ \\ \\ \\ \\ \end{array} \begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{array} \begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	$\begin{array}{ c c c c }\hline & & & & & & & & & \\\hline \hline & & & & & & & &$	Place Active Cell	Hatch Area	Label Terrain Contours
Text	Notes	Dimensioning 🕞	Tables Detailing 🗔	Cells 🕞	Patterns	Terrain Model

8) Below are the settings that should be pre-set since you matched the already patterned shape to the left.



9) Data point in the shapes to flood these areas.



NOTE:

To get the hatching to be placed at an angle along the element, do the following: Rotate the view so that the edge of the shape you want to draw the angle from is at horizontal and then when you hatch it, the hatching is placed at the intended angle along the shape.

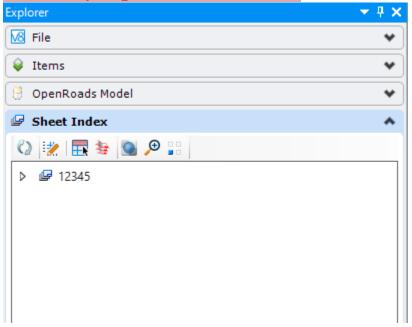
11.7 Setting up 2D D&U Linear Data For Display on Cross Sections

Below is a link a supplemental workflow to outline the steps to take MicroStation based utility linear data and configure it for annotation of utility data in Cross sections outside of the full D&U modeling effort.

https://www.codot.gov/business/designsupport/cadd/ord/setting-2d-linear-data-in-crosssections

12. SHEET INDEX

Sheet Index is found on Project Explorer as shown below and is used to manage DGN files that contain your Sheets. <u>It's extremely important that all Sheets are created in a Sheet model because Sheet</u> Index will only recognize sheet models as sheets.

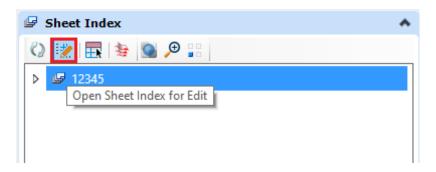


Notice the folder name above matches the workset name for your project shown below. Sheet Index information is stored in the DGNWS file.

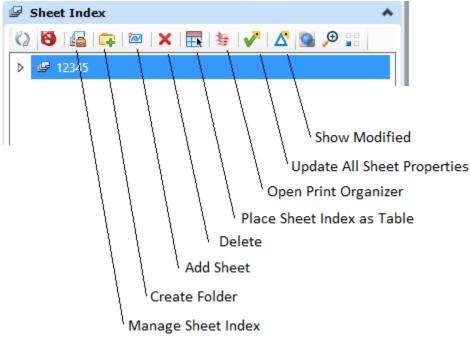
ProjectWise Explorer CONNECT Edition		
D <u>a</u> tasource <u>F</u> older <u>D</u> ocument <u>V</u> iew <u>T</u> ools <u>W</u> indow <u>H</u> elp		
፤ 🖺 😪 🕾 🖶 🕒 📴 📰 📰 🞯 💭 🦓 🗸 Search 與		✓ ▶ -
🕴 🗣 👻 🚽 🔀 🖕 Address 🔯 pw:\\cdot-pw.bentley.com:cdot-pw-04T\Documents\02 Minor	Proje	cts\CDOT Training Projects\12345 - CDOT \lor
 12345 - CDOT Plans Production 0 Project Development 0 O Project Developments 0 O Project Developments 0 O Project Standards 0 O Project Standards 0 WorkSets 0 WorkSets 0 WorkSets 0 D Project Developments 0 D Project Developments 0 D Project Standards 0 D Project	^	E List ● Spatial Name Enter text here ✓ 12345 ✓ 12345.dgnws

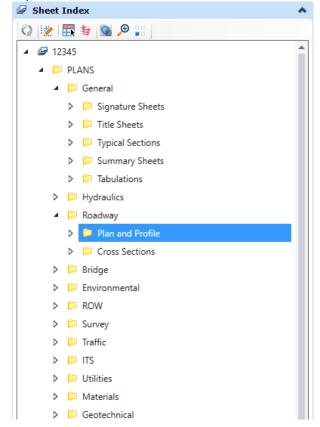
12.1 Open the Sheet Index for Edits

- 1) You can be in any DGN file to access the Sheet Index but let's open the **12345_RD_Title.dgn** file.
- 2) Open Project Explorer and select the Sheet Index tab.
- 3) Sheet Index is by default, not open for edits so from the sheet index menu, Choose the **Open Sheet Index for Edit** command.



4) Notice all the commands that appear on the menu.





5) Expand the folders as shown below.

12.2 Adding Sheets to Sheet Index

12.2.1 Overview

There are 3 ways to add sheets to Sheet Index:

• From the Models dialog -> You can drag & drop a sheet model into a Sheet Index folder.



• Through the Sheet Index Add Sheet command -> Shown below.

☞ Sheet Index						
() 🔕 🔓 🖙	🔤 🗶 💽 😵 😵 📰					
4 🕼 12345	Add Sheet					

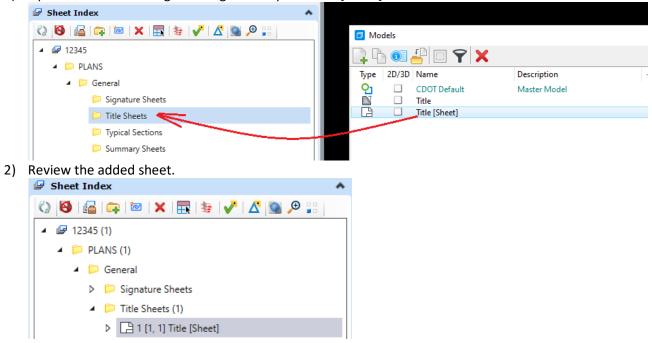
• Through the Create Drawing dialog -> Check the Add to Sheet Index check box on the Create Drawing dialog when creating sheets through the Named Boundary process. The button to the right below will allow you to select the Sheet Index folder the Sheet will be placed in.

🜍 Create Drawing		×
Name:	Title-1	
Drawing Seed:	Roadway Title Sheet 🔹	
View Type:	Detail	
Discipline:	Civil	
Purpose:	Enlarged Detail	
	Create Drawing Model	
Seed Model:	Roadway Title Sheet.dgnlib, Roadway Title S	
Filename:	(Active File)	💼 📮
A	Full Size 1 = 1	
	Create Sheet Model	
Seed Model:	Roadway Title Sheet.dgnlib, Roadway Title S	
Filename:	(Active File)	🖨 📮
Sheets:	(New) 🔻	
A	Full Size 1 = 1	
Drawing Boundary:	Roadway Title Sheet 🔹	
Detail Scale :	1"=5000' (By Named Boundary) 🔹	
	Add To Sheet Index	P
	Make Sheet Coincident	
	Replicate Drawing in Sheet File	
	🗹 Open Model	
	<u>O</u> K	Cancel

NOTE: This method will not be discussed below.

12.2.2 Drag & Drop a Model

1) Open the Models dialog and drag and drop the Title [Sheet] model in the Title Sheet folder.



3) Select the Title Sheets folder and review Properties. These settings control the Sheet number, Number of digits, Show Leading Zero, etc. Also note the Total Sheet Count as well.

General	*
Folder Name Title Sheets	
Sheet Numbering Controls	*
Automatic Naming of Sheet	On
Increment	1
Inherit Naming Rule From Parent	Off 🗸
Number of Digits	3
Sheet Number Prefix	
Sheet Number Suffix	
Show Leading Zero	Off
Start Number	1
Total Sheets Count	1

12.2.3 Add Sheet command

1) Select the Typical Sections folder and choose the Add Sheet command.

Explorer	🗢 🗄 🗙
🔀 File	*
Items	*
🔮 OpenRoads Model	*
🕼 Sheet Index	*
🕼 🕙 🔊 🖓 🔛 📰 🗙 🔜 🚱 🕼	
▲ 🕼 12345 (1)	
PLANS (1) Add Sheet	
🔺 📁 General (1)	
🔺 📁 Title Sheets (1)	
I [1, 1] Title [Sheet]	
Typical Sections	
Summary Sheets	

2) On the resulting dialog, choose the 12345_RD_Typical Sections.dgn file and click OK at the bottom of the dialog.

🛃 Add Sheet	\times
Select	
Documents Folder 🔯 Roadway	
Name ^ ^ /	
Image: Weight of the second	
12345_RD_Title.dgn 12345_RD_Typical Sections.dgn 12345_RD_Weld County.dgn	
GIS Vicinity Map for ORD 10.10 version.dgn Signature Test CH	
<	
Application: All Applications	\sim
Add Remove	
Name Enter text here	
<	>
ОК Са	ncel

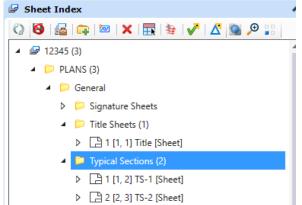
3) On the resulting dialog, all sheet models in the previously selected file should be displayed. Select the two Sheet models and choose OK.

🖳 Add Sheet	×
🔇 🧕 🗩 📑	
▲ 🔀 c:\bms\cdot-pw-04t\dms20164\12345	_RD_Typical Si
TS-1 [Sheet]	
TS-2 [Sheet]	
	•
ОК	Cancel

4) You may be prompted to Check In the DGN file. If so, choose the Check In button.

General Comment
Documents
Name
Enter text here
V 12345_RD_Typical Sections.dgn
< >
Folder: 02 Minor Projects\CDOT Training Projects\12345 - CDOT Plans Production\01 Pre
Create new version during Check In
Version:
Check In Update Server Copy Free Close

5) Expand the Typical Sections folder to see the added sheets.



Notice the (3) by the 12345 & PLANS folder which is the total sheets currently in the Sheet index for this project.

6) Add the following sheets to the specified folders below:

· .							
	12345_RD_Tabulation_Fencing.dgn	\PLANS\General\Tabulations					
	12345_RD_Plan Profiles_US85.dgn	\PLANS\Roadway\Plan and Profile					
12345_RD_Plan Profiles_CR44.dgn		\PLANS\Roadway\Plan and Profile					

Review the added sheets below & note that there are now 18 total sheets.

Explorer 🗸 🗸	Ψ×							
M File	*							
📦 Items	*							
🖲 OpenRoads Model	*							
₽ Sheet Index	*							
🗘 🙆 🚘 🖙 🔯 🗙 🔜 😫 🗸 🙆 🚇 🔡								
▲ <i>G</i> 12345 (18)								
▲ ▷ PLANS (18)								
 General (1) 								
Title Sheets (1)								
Typical Sections (2)								
Summary Sheets								
D D Tabulations (1)								
Hydraulics								
🔺 📁 Roadway								
🔺 📁 Plan and Profile (14)								
I [1, 5] US85-NB - Plan 1 [Sheet]								
2 [2, 6] US85-NB - Plan 2 [Sheet]								
Image: A state of the state								
A [4, 8] US85-NB - Plan 4 [Sheet]								
Image: Section 10 (Section 2018) Image: Section 2018 Image								
Image: Control of the second secon								
Figure 1 (2010) [2010] [201								
Image: Second								
▷ 🕒 9 [9, 13] CR44 - Plan 1 [Sheet]								
▶ 上当 10 [10, 14] CR44 - Plan 2 [Sheet]								
▷ 🕒 11 [11, 15] CR44 - Plan 3 [Sheet]								
▷ □ 12 [12, 16] CR44 - Plan 4 [Sheet]								
▷ 🕒 13 [13, 17] CR44 - Plan 5 [Sheet]								
▷ 🕒 14 [14, 18] CR44 - Plan 6 [Sheet]								

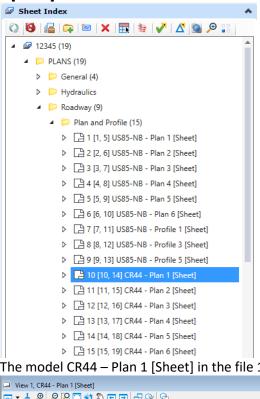
7) Choose the Make Sheet Index Read Only button.



8) You should be prompted to check in the DGNWS file if working in ProjectWise.

Check In	\times
General Comment	
Documents	
Name	
Enter text here	
 ✓ 12345.dgnws 	
Folder: 02 Minor Projects\CDOT Training Projects\12345 - CDOT Plans Production\05 Pro Create new version during Check In	
Version:	
Check In Update Server Copy Free Cancel	

 You can actually use Sheet Index to navigate to different models/files. Double click CR44 – Plan 1 [Sheet]



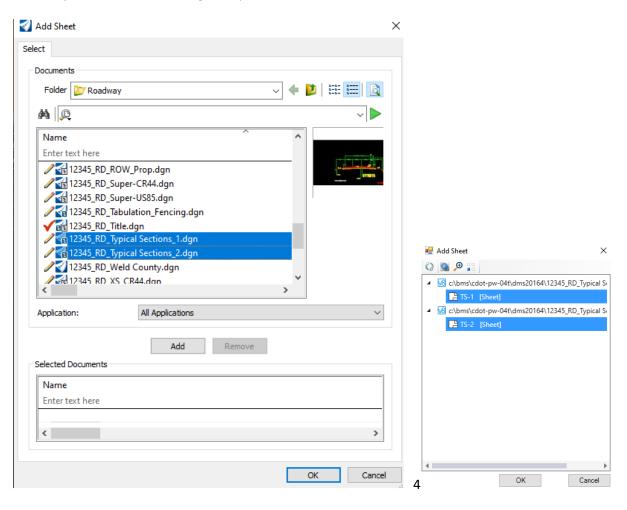
10) The model CR44 – Plan 1 [Sheet] in the file 12345_RD_Plan Profiles_CR44.dgn will be opened.



11) Open the Sheet Index for edits again.

12.2.4 Add Sheet command (from Multiple DGN files)

You can choose multiple files when performing the Add Sheet command. We will not perform this exercise but the steps in the preceding section can be used and the dialogs below show dialog images from steps 2 & 3 when selecting multiple DGN files.



12.3 Moving Sheets

You can select a sheet, hold down your left mouse button, & move a file if needed as shown below although we will not move any in this example.

▲ Plan and Profile (15)
 ▲ 1 [1, 5] US85-NB - Plan 1 [Sheet]
 ▲ 2 [2, 6] US85-NB - Plan 2 [Sheet]
 ▲ 3 [3, 7] US85-NB - Plan 3 [Sheet]
 ▲ 4 [4, 8] US85-NB - Plan 4 [Sheet]
 ▲ 5 [5, 9] US85-NB - Plan 5 [Sheet]
 ▲ 6 [6, 10] US85-NB - Plan 6 [Sheet]
 ▲ 6 [6, 10] US85-NB - Profile 1 [Sheet]
 ▲ 8 [8, 12] US85-NB - Profile 3 [Sheet]
 ▲ 9 [9, 13] US85-NB - Porfile 3 [Sheet]
 ▲ 10 [10, 14] CR44 - Plan 1 [Sheet]
 ▲ 11 [11, 15] CR44 - Plan 2 [Sheet]

12.4 Sheet Border Annotation

CDOT sheets have been set up with Text Fields on them so they can be populated with Workset Properties.

 Review the title block area of this Plan & profile sheet. Observe that the Sheet Number is 013 for CR44-Plan 1[Sheet]. Notice that you see X's in several areas. These are the text fields that will change when the Workset Properties are changed which is discussed in the next couple of steps.

									0' 25'	0' 50'
	Init. Colorado Department of Transportation 2829 W Howard Pl Denver, CD 80204		As Constructed	SHEET TITLE PLAN/PROFILE				Project No./	Code	
Init.			No Revisions:				XX 1234-567			
	Region #	Phone: XXX-XXX-XXX Fax: XXX-XXX-XXX	Revised:	Designer:		Structure	x-xx-xx	12345		
				Detailer:	BBB	Numbere	X-XX-XX			
R			Void:	Sheet Subset:	bset: Plans Subset She		ets: 10 of 015	Sheet Number	013	

- 2) Open the Sheet Index for edits again if it's not open for edit.
- 3) Select the **12345** folder in Sheet Index, right click, and then choose Properties. Fill out the Index Properties as shown below.

Properties (Sheet Index)		▼ ₽ ×
Link Tree (1)		
🛃 12345 (18)		
Index Properties		*
Address	2829 W Howard Pl	
City, State, & Zip	Denver, CO 80204	
Const. Project Code	12345	
Contractor	XXXX X XXXX	
County	Weld	
Engineer of Record (EOR)	XXXX X.XXXX	
EOR Initials	XXX	
Fax	XXX-XXX-XXXX	
Federal Aid Project No.	NHPP 0853-107	
Phone	303-757-9011	
Project Code	NHPP 0853-107	
Project Description	US Highway 85	
Project Engineer	XXXX X.XXXX	
Project Location 1	456 North Street	
Project Location 2	123 Main Street	
Project No.	12345	
RE Initials	XXX	
Region No.	4	
Resident Engineer (RE)	XXXX X.XXXX	
State Hwy No.	XXX	
Structure No. 1	X-XX-XX	
Structure No. 2	X-XX-XX	
Unit Leader Initials	XXX	
Sheet Numbering Cont	trols	*

4) Go back to Project Explorer and choose the **Update All Sheet Properties** command. Be patient because this is updating title block fields on all sheets.

🕼 Sheet Index	*	
🗘 🙆 🔓 📪 🗖 🗙 📻	🗸 🖉 🖉 🚺	4750
4 🔄 12345 (18)	Update All Sheet Properties (Teo	chnology Preview)
4 📁 PLANS (18)		4740
D General (4)		

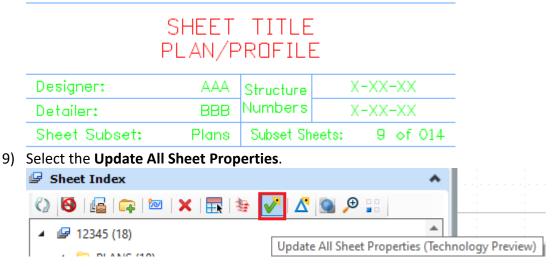
5) Review the changes on the sheet. Note that you may have to zoom in/out in the view for the changes to show up initially.

	0	'	,						0' 25'	a' 50'
	Colorado Depa	rtment of Transportat	tion	As Constructed		SHEET	TITLE		Project No./	Code
Init.	Init. 102 102 102 102 102 102 102 102 102 102		No Revisions:	PLAN/PROFILE			Ξ	12345		
				Revised:	Designer:		Structure		NHPP 0853-	107
		Pax: AAA-AAA-AAAA			Detailer: BBB Numbers X-XX-XX		X-XX-XX			
	Region 4		XXX	Void:	Sheet Subset:	Plans	Subset SH	eets: 9 of 014	Sheet Number	013

- 6) Navigate to PLANS\Roadway\Plan and Profile in Sheet Index and choose CR44 Plan1 [Sheet].
- 7) Go to Element Properties. Add your initials as Designer & Detailer and change the Sheet Title to CR44.

Pro	operties (Sheet Ind	ex)	🗢 🕈 🕇 🗙
4	🗇 Model Link ((1)	
	🔺 📑 9 [9, 13]	CR44 - Plan 1	[Sheet]
	CR44	4 - Plan 1 [She	et]
	General		*
Γ	Exclude From A		
	Exclude From S Link Type		лт Sheet Model
	Sequence Num		3
	Sheet Number		
	Link Name	1	2345_RD_I
	File Name	1	2345_RD_I
	Full Path		:\bms\cdot
	Model Name	(:R44 - Plan
	Sheet Proper	rties	*
	Designer	AAA	
	Detailer	BBB	
	Sheet Subset	Plans	
	Sheet Title	CR44	

8) Notice the settings on the Title Sheet have not changed to match your edits.



10) You may have to Zoom In/Out but the settings on the title block should have updated.

CR44 PLAN/PROFILE							
Designer:	HKB Structure X-XX-XX						
Detailer:	HKB	HKB Numpers X-XX-XX					
Sheet Subset:	Plans	s Subset Sheets: 9 of 014					

Note that the edits above just changed one sheet. You can change multiple sheet settings at once by selecting all the sheets you wish to apply the edits to. Let's perform this in the next few steps.

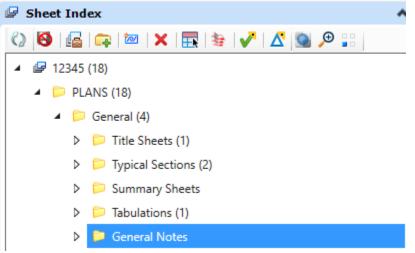
- 11) Select ALL the Plan & Profile sheets and change the Designer & Detailer to your initials.
- 12) Select all the US 85-NB Plan & Profile sheets and change the Sheet Title to US85.
- 13) Select all the CR44 Plan & Profile sheets and change the Sheet Title to CR44.
- 14) Review the Title Block changes based on these last few steps.

12.5 Create Folders

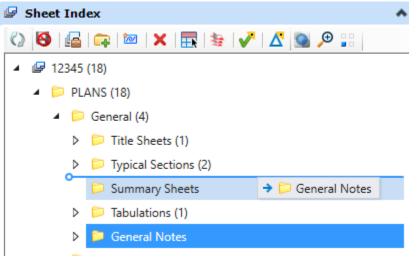
You can create folders, if needed, in the Sheet Index with the command shown below.



1) Expand the \PLANS\General folder, select the \General folder, and create a folder named \General Notes.



2) Move this folder between the \Typical Sections & \Summary Sheets folders just by dragging & dropping the folder.



12.6 Sheet Properties

 Select the workset 12345 in Sheet Index and review Properties. We've collapsed Index Properties to put the focus on Sheet Numbering Controls which is shown below. We will not change anything here but review what could be changed in regards to Sheet Numbering Controls.

Properti	es (Sheet Index)		4 ×
<u>م</u>	Link Tree (1)		
	🕼 12345 (18)		
In	dex Properties		*
Sł	eet Numbering Controls		*
A	utomatic Naming of Sheet	On	
In	crement	1	
In	herit Naming Rule From Parent	Off	
N	umber of Digits	3	
S	heet Number Prefix		
S	heet Number Suffix		
	1 N N N	Off	
S	how Leading Zero		
	now Leading Zero art Number	1	

 Select the PLANS\Roadway\Plan and Profile folder & review the Sheet Numbering Controls can be folder specific. Notice the Inherit Naming Rule From Parent is Off so any changes to folders above the \Plan & Profile folder would not impact the sheets in the \Plan & Profile Shoulder.



3) Select the PLANS\General\General Notes folder created in the previous exercise. Edit the properties to match the ones that are set for the Plan and Profile folder (shown in the previous step).

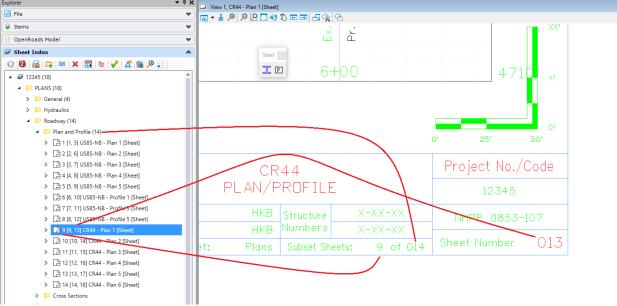
Before	Edits	After Edits	
Properties (Sheet Index)	~ ₽ ×	 Properties (Sheet Index)	👻 🕂 1
🔺 📂 Folder Link (1)		🔺 핟 Folder Link (1)	
芦 General Notes		📁 General Notes	
General	*	General	*
Folder Name Gene	eral Notes	Folder Name General Note	s
Sheet Numbering	Controls	Sheet Numbering Contro	ls 🔺
Automatic Naming of Increment	1	Automatic Naming of St On Increment 1	
Inherit Naming Rule I Number of Digits	3	Inherit Naming Rule Frc Off	
Sheet Number Prefix	-	Number of Digits 3	
Sheet Number Suffix		Sheet Number Prefix	
Show Leading Zero	On	Sheet Number Suffix Show Leading Zero Off	
Start Number Total Sheets Count	1	Start Number 1	
	0	otart Hambel	

12.7 Sheet Numbers and Sheet Numbering Edits

12.7.1 Sheet Numbering

Sheet & Subset Sheet Numbers are calculated by how many sheets are present in the Sheet Index and in what order. These are automatically populated in the Sheet/Subset Sheet fields as shown and discussed in the example below. If you add or delete a sheet to the plans, the Sheet Number for all sheets below that sheet should update to reflect that additional sheet.

 You should still be in model CR44 – Plan 1 [Sheet]. Observe the image below. This should explain how the sheet numbers and subset sheet numbers are generated and populated from the number of sheets in the folders in Sheet Index.



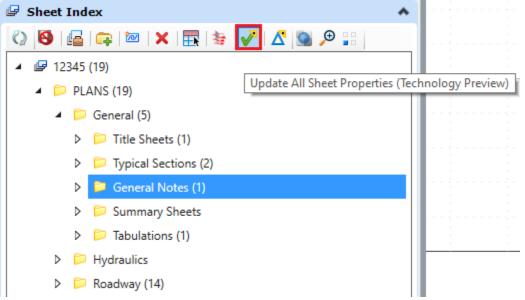
12.8 Add/Delete a Sheet to/from the Plan Set

Sheet Numbers will automatically populate when new sheets are added or sheets already in the Sheet Index command are removed. We will go through and add a sheet to the Sheet Index and make sure the Sheet Number field has been updated in the following steps.

1) Remaining in the-12345_RD_Plan Profiles_CR44.dgn & the model CR44 – Plan 1 [Sheet], add the file, **12345_RD_General Notes.dgn** to the PLAN\General\General Notes folder using the Add Sheets command.



- 2) Notice that the Sheet Number didn't change for the model we are in. It was Sheet Number 13.
- 3) Choose the Update All Sheet Properties.



4) Give it a little time to process but the Sheet Number should change from 13 to 14 in the CR44 – Plan 1 [Sheet] model.

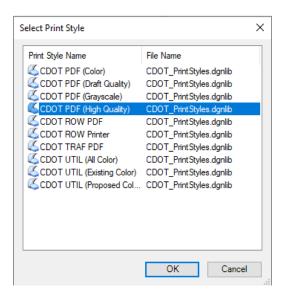
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12.9 PDF Creation Process

1) In the Sheet Index, select the 12345 workset and choose **Open Print Organizer**.



2) Choose the desired print style and click **OK**.



3) Print Organizer is invoked.

🜍 12345.pset - Print Organizer				_	
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V PLANS	Name PLANS EXHIBITS	File Name	Model	Print Style	View Group

4) Click the print icon, verify the **Destination** is correct. Choose the browse icon to change the path and name the file if needed and then click OK.

Print	×
	Configuration
Print Range —	Copies Number of copies: 1
Submit as:	Create print file Single print job
Destination:	CDOT Plans Production \05 Project Standards \Output Files \12345.pdf ☑ Open print file after creation
	OK Cancel

NOTE: A pset is not necessary if the print organizer is launched from the sheet index.

5) View PDF created during the process.

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