Labs for MicroStation XM

Colorado Department of Transportation

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Software Versions

The software products referred to in this publication are furnished under a license and may only be used in accordance with the terms of such license. This document intended for use with the following software versions:

MicroStation® version 08.09.04.88 InRoads® version 08.09.02.16 0209 – Version 04.00 CDOT Configuration

Document Conventions

There are several conventions that are used throughout this document to indicate actions to be taken or to highlight important information. The conventions are as follows:

<u>ltem</u>	Meaning
View Perimeter	a command name or a file that you are to select
Tools > Options	a command path that you are to select – usually from the pull-down menus
Document Name	the name of a document that is not hyperlinked
Emphasis	style used when referring to important word or phrases
<u>Hyperlink</u>	style used when you have a direct link to another document on the web
Key in	entering data with the keyboard
Quote	style used to indicate an external source quotation
Note: text	information about a command or process that you should pay particular attention to
1. Numbered Steps	actions that you are to perform as part of the lab activities
<d> or Data</d>	press the data button on the mouse
< R> or Reset	press the reset button on the mouse
<t> or Tentative</t>	press the tentative button on the mouse

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LAB 1 - Getting Started in MicroStation

Chapter Objectives:

After completing this exercise you will know how to:

- Start MicroStation
- Open a MicroStation design file
- Use the MicroStation mouse buttons
- Navigate the MicroStation interface
- Use the **View Control** commands
- Assign view controls to the mouse wheel
- Float and dock toolbars
- Show and hide tools on toolbars
- Access the MicroStation Key-in box

Lab 1.1 - Starting MicroStation

To start MicroStation:

1. Select Start >All Programs > Bentley > MicroStation V8 XM > MicroStation V8 XM Edition

or

Double-click on the MicroStation V8 XM Edition icon located on your desktop.



MicroStation will start and the **MicroStation Manager** dialog box will appear on your screen.

📕 MicroStation N	Manager - C:\Pro	ojects\12345\De	esign\Drawing	s\Refe	erence_Fil	es\							×
Look in:	Neference_	Files		•	G 🦻	Þ		Ď	8	*		3D - V8 DGN	
Recent Places		nterchange.dgr ntersec100SH86 Model.dgn Model55.dgn Model65.dgn Model##.dgn Phasing.dgn Prof.dgn	1	Size									
Network	File name: Files of type:	12345DES_/ MicroStation	DGN Files (*.dg	n)		•		Ope Cano Optio	:el		User: Project: Interface:		•

Lab 1.2 - The MicroStation Manager Dialog Box

The **MicroStation Manager** is your file management interface in MicroStation. It allows you to create, rename, delete, and open files as well as set workspace parameters. Within MicroStation Manager the user will set three important components: User, Project, and Interface. Setting these components allow you to more easily access the project directory structure and customize the MicroStation interface.

Note: Do not press **<Enter>** after you key data in a dialog box unless you are ready to apply the settings. Use the **<Tab>** key or your mouse cursor to move from one field to the next to choose or enter your setup options before you **Apply** or **OK** the command.

Opening files

- 1. In the lower right-hand portion on the dialog box set the three components as shown below
 - User: CDOT User
 - Project: **12345**
 - Interface: CDOT

Note: The Project option automatically sets the directory to C:\Projects\12345. You'll lean more about the project configuration file (PCF) in chapter 4.

- 2. In the MicroStation Manager, navigate to \Design\Drawings\Reference_Files folder.
- 3. Highlight 12345DES_Model.dgn as the design file to open.
- 4. A thumbnail preview of the file is shown.
- 5. Select **OK** to open the design file.

6. This is a design model file of CDOT project SH 86, which will serve as the example project for this class as well as other CDOT training classes.

📕 MicroStation I	Manager - C:\Pro	ojects\12345\De	sign\Drawings	\Refe	rence_Fi	es\						×
Look in:	Beference_	Files		•	G 🤌	Þ	•	Ď	3	*	3D - V8 DGN	
Recent Places Desktop COOT User Computer		nterchange.dgr ntersec100SH86 Model.dgn Model55.dgn Model65.dgn Model##.dgn Phasing.dgn Prof.dgn	1	Size								
Network	File name: Files of type:	12345DES_/ MicroStation	DGN Files (*.dgn)		•		Oper Canc Option	el			 •

Note: The CDOT Menu opens automatically. You'll use this menu later. For now, minimize or close the CDOT menu.

Lab 1.3 - Working with the Mouse

While in MicroStation, your mouse operations include:

<D> Data (usually the *left* button) for selecting tools, highlighting fields, moving dialog boxes, confirming actions, etc.

R> Reset (usually the *right* button) for terminating commands, rejecting actions, etc.

<T> Tentative (usually the *middle* button or scroll wheel) for snapping to existing elements at exact locations.

Lab 1.4 - Access Pull-Down Menus

Use pull-down menus to select settings and non-drawing commands from the application window. You can either post a menu (display it until you select a function from the menu) or open the menu and select a command all in one step.

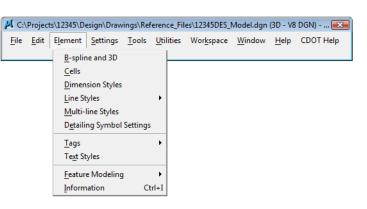
Post a pull-down menu from the command window

1. Point your cursor to **File** in the application window and select it by **clicking** the data point once **<D>**.

- 📕 C:\Projects\12345\Design\Drawings\Reference_Files\12345DES_Model.dgn (3D V8 DGN) ... 📧 File Edit Element Settings Tools Utilities Workspace Window Help CDOT Help New... Ctrl+N Open... Ctrl+O Ctrl+W Close Save Ctrl+S Save As... Compress Ctrl+F Save Settings Project Explorer <u>R</u>eference Raster Manager Models Import Export Print Preview Ctrl+P Print Batch Print Associate.. Properties Alt+Enter Protection a Send... 1_C:\Projects\12345\Design\Drawings\Reference_Files\12345DES_Model.dgn 2 C:\Workspace\Workspace-CDOT_XM\Standards-Global\MicroStation\Seed\3D-Seed_CDOT.dgn 3 C:\Documents and Settings\All Users\Application Data\Bentley\WorkSpace\Projects\Untitle...\2222.dgn 4 C:\Program Files\Workspace-CDOT_XM\Standards-Global\MicroStation\Seed\3D-Seed_CDOT.dgn Exit
- The pull-down menu appears.

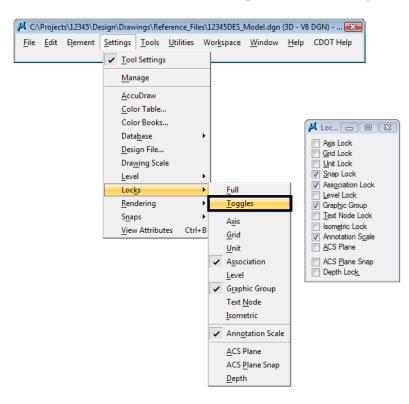
- Menu names followed by ... indicate a dialog box will open when you select the item.
- Names with an arrow to the right indicate there is a sub-menu associated with the item.
- You can also use the keyboard to select a command from a menu.
- The bottom portion of the file menu will display a file history allowing the user to open previously opened files more easily.
- 2. Use the up and down arrow keys on your keyboard to move up and down an item list or move your cursor.
 - Text to the right of an item indicates the hot key or shortcut to use to activate the command (e.g., Ctrl+N means to hold down the Ctrl key and type N).
 - Underlined letters indicate a shortcut key to choose an item from a menu.

3. Move your cursor to **Element** to show the element pull-down menu.



Lab 1.5 - Open a Settings Box

1. Select **Settings > Locks > Toggles** to open the **Locks** settings box.



Note: A settings box, like the Locks box, does not have any command buttons (**OK**, **Close**, etc.). Settings boxes can be left open while working in MicroStation.

2. Close the Locks settings box by selecting the X in the upper right hand corner.

📕 Loc 📼 💷 💌
Axis Lock
Snap Lock
Association Lock
Level Lock
Grap <u>hi</u> c Group
Isom <u>etric</u> Lock ✓ Annotation Scale
ACS Plane
ACS Plane Snap Depth Lock

Lab 1.6 - Control Views

Turn on additional views

1. From the View Toggles box (lower left of the screen), toggle *on* views 2, 3 and 4. <D>.

View Groups			
G - O	▼ 🍐 ▼ 🔁 CDOT Default	▼ 1 2 3 4 5 €	5 7 8

Note: By default, views 1-4 open in screen 1, views 5-8 open in screen 2. To move a view to a different screen, select the "M" control menu and choose **Change Screen**.

ዞ View 1 - Top			
ø	Restore		
	Move		
	Change Screen		
	Size		
-	Minimize		
	Maximize		
x	Close	Alt+F4	
	View Attributes		
	Level Display		
	View Save/Recall		

Eile Edi	Contract Contract Table 110	lities Workspace Window	Hele COOT Hele			
	t Liement Settings Loois Uti		Help Coor Help			
1 🖻 📂	🖸 😓 👗 🗟 🗠 🛛	🛥 🚭 ? 🕞 (none) 🕶	Default	·	🔁 • 🗈 • 🛐 • 😭 • 🥩 • 🖏 • 🤇	D 🗄 🐨 • 🍇 🧶 🗷 💆 🖧 📐)
	📕 View 1 - Top				📕 View 2 - Right Isometric	
₹ □,				1		K Element Selection 📼 🖼
+ [™] - 0 A → [™]						
··· [+]				E		
₹ . × ⊡						
		• • • • • • • • • • • • • • • • • • •	<u>% 6 <</u>			B & 4, % &
	📕 View 3 - Back				📕 View 4 - Left	
				E.		
لم 🗱	ा • ▲९९ा व य. ∭ ∕ ⊙ * <i>२</i> × ∕		<u>%</u> G <u>(</u>	•	ଭ ୶ ≜ ୧ ୧ ୦ ଲ ଲ ମ ଜ ଲ ଲ ଲ ।	H 7. % % G · m ·
		L 🔟		•	 ● 問題 ● 目前 	9 7, % % 6 (m)

2. Select **Window > Tile** to arrange the views.

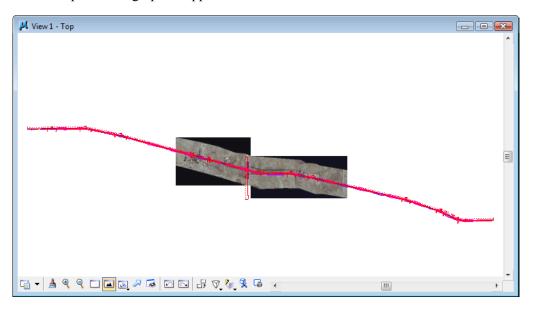
Fit View 1

1. From the View Control toolbar in View 1, select **Fit View**.

🗚 C:\Projects\12345\Design\Drawings\Reference_Files\12345DES_Model.dgn (3D - V8 DGN) - MicroStation V8 XM Edi	tion
[;] <u>F</u> ile <u>E</u> dit <u>El</u> ement <u>S</u> ettings <u>T</u> ools <u>U</u> tilities Wor <u>k</u> space <u>W</u> indow <u>H</u> elp CDOT Help	
🛅 📂 🗔 🖓 👗 🐁 🖍 🗠 🗠 🛥 🥸 ?	
View 1 - Top	
+	
S ² , →,	
	+
	III.
G - A Q Q D D A G D D A V V S G	

All of the plan view graphics appear in the view.

Fit View



Rotate all views to top

1. From the View Control toolbar in View 2 select Rotate View.

 Image: Second state view

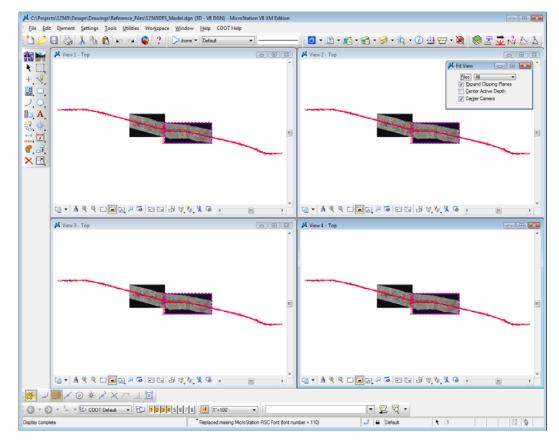
2. In the Rotate View tool settings box, set Method to Top.

📕 Rotate View	
Method: Top	•

3. **<D>** in View 2 to change it to a top view (verify the view name is Top).

📈 View 2 - Top	
	E
	+
	<u>+</u>

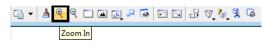
4. **Fit** view 2.

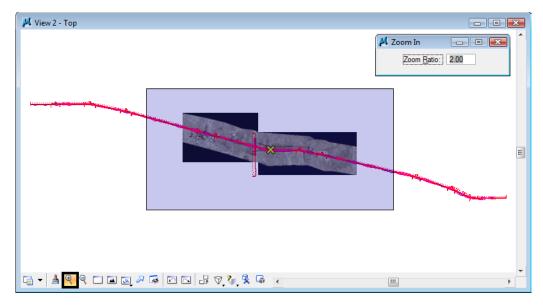


5. Repeat the above steps to rotate views 3 and 4 to a **Top** view and **Fit** the views.

Zoom In within a view

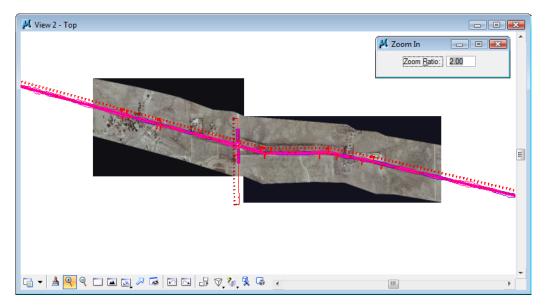
1. From the View Control toolbar in View 2, select Zoom In.

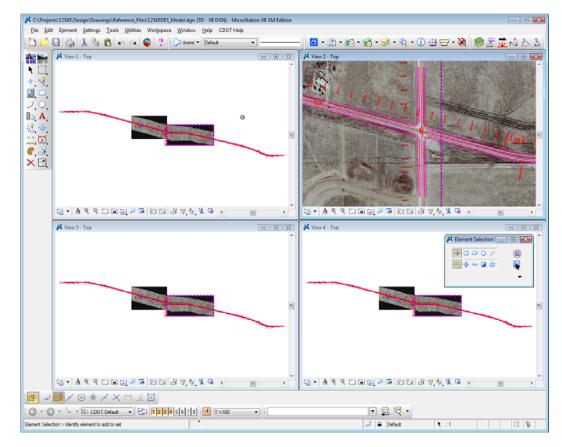




2. Place your cursor (the X cross-hair) in the center of the intersection and place a data point <D>.

The view is updated to **Zoom In** twice as close. The center of the view is the data point you identified.





3. Continue placing data points until you've zoomed in to the intersection as shown.

4. Reset **<R>** to end the **Zoom In** command.

Turn off the raster files

The model file has aerial photos attached. These raster images can be turned off while working in the file.

1. Select File > Raster Manager.

Raster Manager : 2 of 2 listed	- • •
<u>File Edit View Display Settings Utilities</u>	
E + IE 🐴 🛯 🔣 🤚 💕 🅿 🀯 🖧 🖓 🖧 🎲 🖉 🛈	
🕼 🖓 File Name Description Logical Name	8 ≽ \land 🦻
Q	
🕼 🚱 🚱 O9a.TIF	1
🖉 🚱 10a.TIF	1
<	
	-
1 2 3 4 5 6 7 8 🍓 🖾 🌆 Tint: 🔲 Transparency: 📕	

2. Select both .TIF files using the shift or ctrl key.

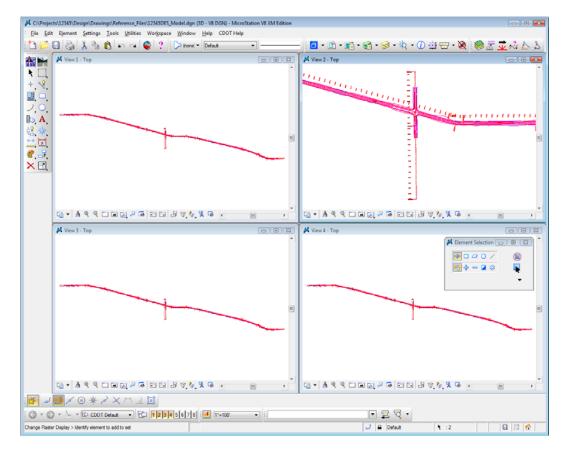
- 3. From the View toggles, bottom left of the dialog bog, toggle off all Views (1-8).
- 4. Close the **Raster Manager** box.

Zoom out in a view

1. From the View Control toolbar in View 2, select Zoom Out.

The view is updated to zoom out twice as far.

2. Again in View 2, **<D>** in the center of the intersection to zoom out again until you can see the entire intersection cross road.



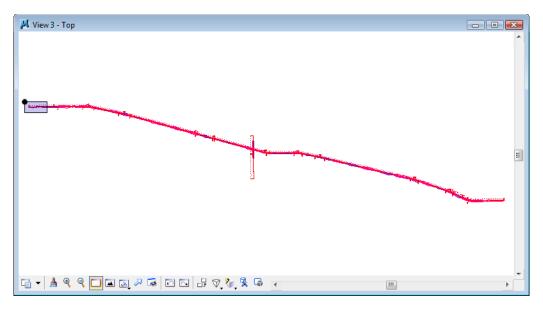
Use the Window Area command

1. From the View Control toolbar in View 3, select Window Area.

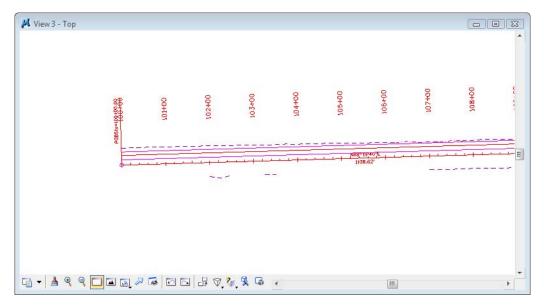


2. **<D>** above and to the left of the beginning of the project.

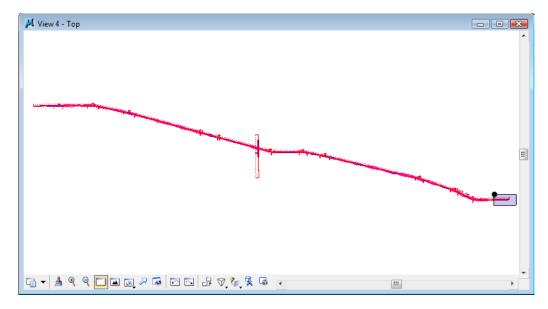
3. **<D>** again below and to the right of the first point as shown (this will draw a box around what you want to show close-up).



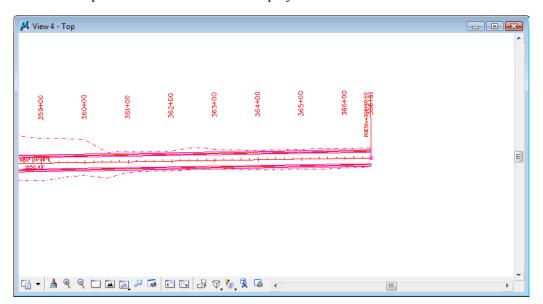
The view is updated to show the alignment at the beginning of the project.



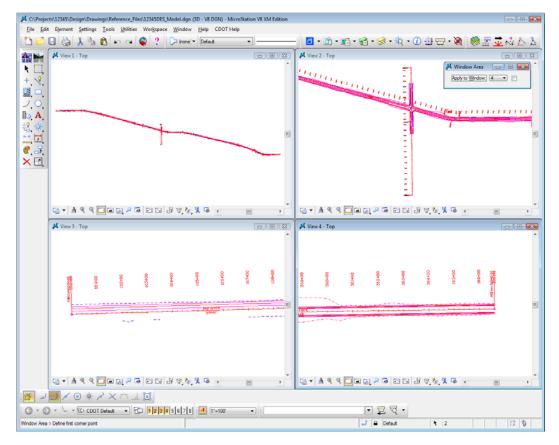
4. While still in the **Window Area command**, move your cursor over to View 4 and **<D>** above and to the left of the alignment end as shown.



5. **<D>** again below and to the right of the alignment end.



The view is updated to show the end of the project.

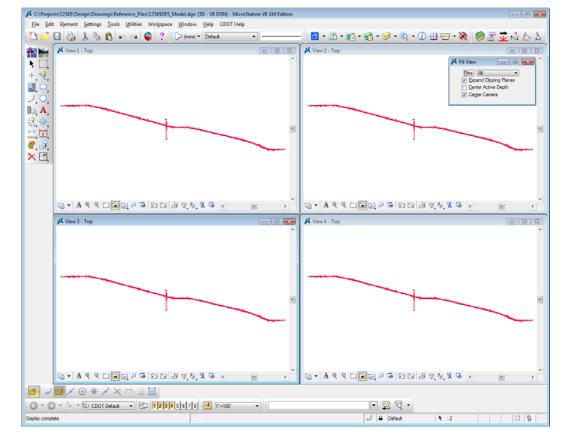


Your views should look similar to the illustration below.

Fit views

1. From View 2, select **Fit View**.

All of the graphics in View 2 are displayed in the view. The **Fit View** command is a handy way to see all graphics on levels that are on.



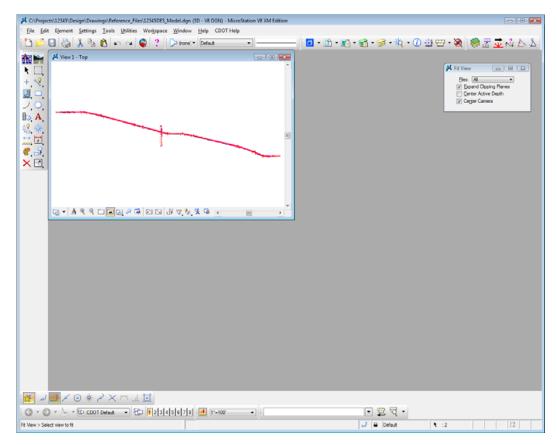
2. With the Fit command active, <D> in views 3 and 4 to select these views to fit.

Close some views

1. Toggle off views 2, 3 and 4 on the View Toggles box.



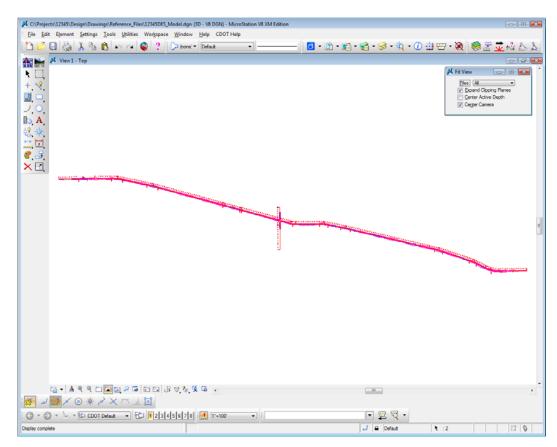
Note: You can also **click** the X icon in the view's upper right corner to close it or you can **double-click** on the M icon, the control menu icon, in the upper left corner of a view.



Make view one fill the screen

1. Select the **Maximize** button in the upper right corner of View 1.

2. **Fit** View 1.



Lab 1.7 - Mouse Wheel Settings

Note: If you do not have a mouse with a wheel, go to the next section titled *Try Out Tool Boxes*.

Use the wheel on the mouse to Zoom In/Out

- 1. Position your cursor over the center of the intersection.
- 2. Roll the wheel up; this zooms in on your graphics.
- 3. Roll the wheel back; this zooms out.
 - *Note:* If you <**T**> on a location before rolling the wheel MicroStation will zoom in/out around that point.

Change the wheel settings

1. Select Workspace > Preferences > Mouse Wheel.

2. Set the Wheel to Pan Left/Right.

Preferences [CDOT User]	
<u>Category</u> Database Input Look and Feel Mouse Wheel Operation Position Mapping Raster Manager Reference Spelling Tags Task Navigation Text View Options	Name for preferences Set Mouse Wheel Preferences. Wheel: Pan Left/Right Ctrl + Wheel: Pan With Zoom Shift + Wheel: Pan With Zoom Alt + Wheel: Pan Left/Right Zoom In/Out Ratio: 2.000 Navigate Distance (Cursor/Wheel): 3 Navigate Distance (Mouse): 10 % Navigate Distance (Mouse): Sets default action when you roll the mouse wheel.	QK Cancel Defaults

- 3. Select **OK** to accept the changes and close the dialog box.
- 4. Move your mouse wheel back and forth to pan in the view.
 - **Note:** You can also **Pan** by selecting the pan command on the **View Control** toolbar. Specify a "from" and "to" point to move in the view.



You can also **Pan** by pressing **<Shift>** on the keyboard and click **<D>** in the view. Then, drag your cursor in the direction you wish to move.

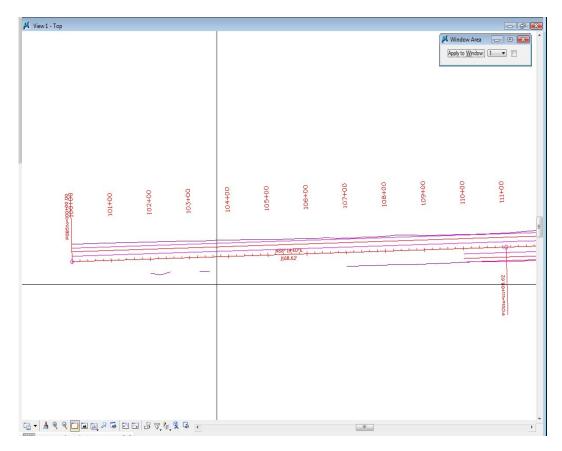
- a. Practice panning with the **Pan** tool.
- b. Practice panning using **<Shift>+<D>**.
- **Note:** After you start panning, you can release the both the **<Shift>** and the **<D>** keys. **<D>** again to end the command.

5. Set your wheel for the view control option you prefer (Workspace > Preferences > Mouse Wheel).

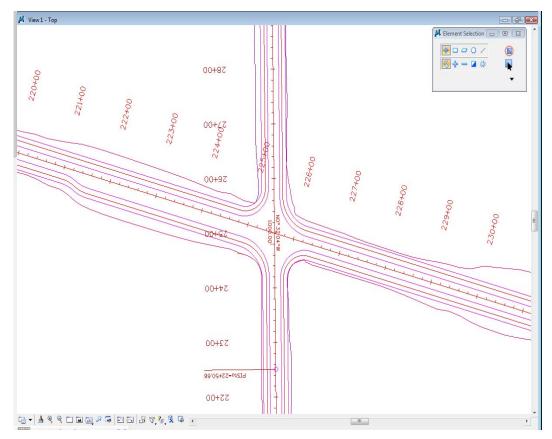
Preferences [CDOT User]	
Category Database Input Look and Feel Mouse Wheel Operation Position Mapping Raster Manager Reference Spelling Tags Task Navigation Text View Options	Name for preferences Set Mouse Wheel Preferences. Wheel? Zoom In/Out Ctrl + Wheel: Pan With Zoom Shift + Wheel: Pan With Zoom Alt + Wheel: Pan Uth Zoom Zoom In/Out Ratio: Zoom In/Out Ratio: Zoom In/Out Ratio: Zoom In/Out Ratio: Navigate Distance (Cursor/Wheel): 3 Navigate Distance (Mouse): 10 % Navigate Distance volume Sets default action when you roll the mouse wheel.	QK Cancel Defaults

Pan the project site

1. **Window** in to the beginning of the project as shown.

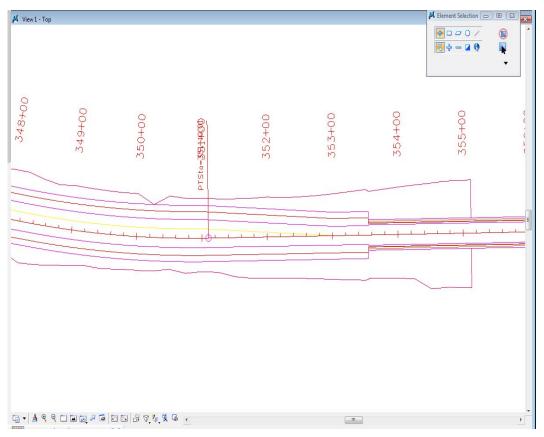


- 2. Use panning to review the SH 86 project site.
 - Start at the POB (STA 100+00) and pan to the right along SH 86.



• Pan across the intersection (between STA 220+00 and 230+00).

• Continuing panning to the right through the transition from rural 2-lane to urban 2-lane with curb and sidewalk (around STA 353+00).



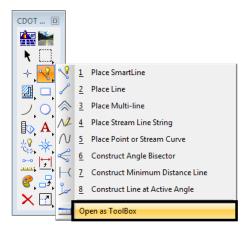
• Stop at the POE.

4 View1-Top							↓ Element Selection ↓ □ ↓ □ ↓ □ ↓ ↓)
361+00	362+00	363+00	364+00	365+00	366+00	POESta=366+60.50 366161		
	+ + + + + + + + + + + + + + + + + + +							

Lab 1.8 - Try Out Tool Boxes

Pull a tool bar from the main palette

- 1. Select and hold down the **Place SmartLine** icon from the **CDOT Main** tool palette to display the **Linear Elements** tool bar.
- 2. Hold down the data button **<D>** and drag your cursor to the bottom to the Open as ToolBox.



3. Select the Place SmartLine command.



The Tool Settings box shows this command's settings options.

4. Select the **Place Line** command from the **Linear Elements** toolbar and notice the changes in the Tool Settings box.

Linear Elements	🖊 Place Line	- • •
& M N < H ≟	Length: Angle:	

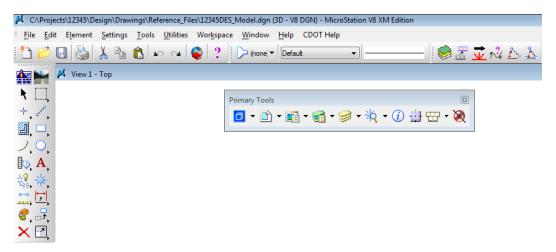
The Tool Settings box updates for each tool selected.

5. Close the Linear Elements toolbar by clicking the x in the upper right corner.

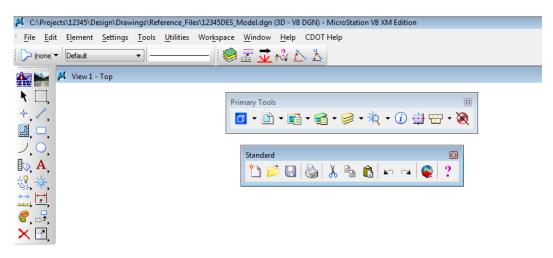
Float and Dock Toolbars

Float the Primary Toolbar

- 1. Position your cursor over the edge of the **Primary Tools** toolbar at the top of the application window.
- 2. Hold down the data button and drag the toolbar until it "floats" in the view.



3. Repeat for the **Standard** toolbar.

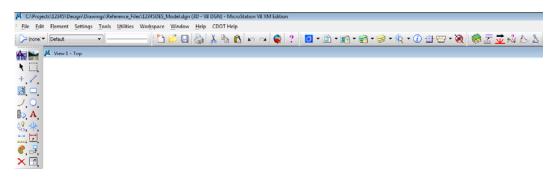


Toggle the Primary Tools toolbox off/on

1. Select Tools > Primary.

The Primary Tools toolbox is turned off.

- 2. Select **Tools > Primary** again to toggle it back on.
- 3. Dock the **Primary Tools** and **Standard** toolbars back to the upper right corner of the application window by dragging the title bar with the data button.

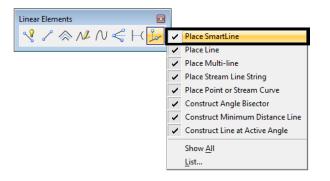


Note: Any toolbar can be docked on the perimeter (top, bottom, left, or right sides) of MicroStation's application window.

Show/Hide Tools

1. Open the Linear Elements toolbar as shown above.

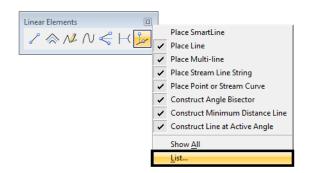
2. Right-click anywhere on the Linear Elements toolbar. In the list of tools, toggle off Place SmartLine.



The SmartLine tool is removed from the toolbar.



- 3. Right-click <R> again and turn Place SmartLine back on.
- 4. **Right-click <R>** and choose **List.**



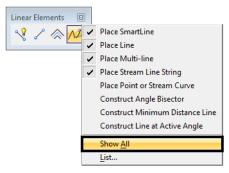
5. Toggle *off* the last four tools.

Show/Hide Tools Click to Show or Hide Tools Image: Place SmatLine Place Line Place Routh-line Place Stream Line String Place Point or Stream Curve Construct Angle Bisector Construct Minimum Distance Line Construct Line at Active Angle	QK Cancel
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6. Choose OK.

The toolbar is updated to show these tools hidden.

7. Right-click <R> and select Show All.



All tools are now shown on the toolbar.

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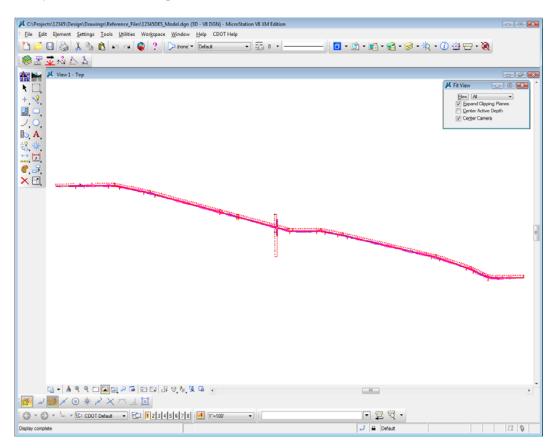
8. Close the Linear Elements toolbar (click the X in the upper right corner)

Note: Use this procedure to customize any toolbar to show just the tools you want.

Lab 1.9 - Using the Key-In Box

Open and dock the key-in box

1. Verify the **Key-in** box is opened and docked.



Note: If the Key-In box is not open, select Utilities > Key-in to open it.

2. Float the **Key-in** box from its docked position.

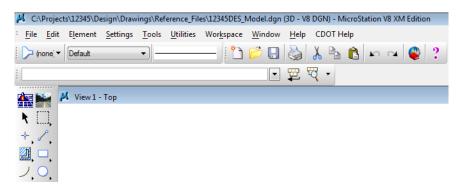
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3. Expand it by grabbing the bottom of the box and dragging down.

📕 Key-in		
✓ Key-in I visug webdrop window wset zoom		

Key-ins can be selected from the list but are typically typed directly into the box.

4. Grab the title bar of the key-in box and drag it to the blank space at the top of the application window.



The **Key-in** box docks beside the other tool bars in the application window.

Note: You can also dock the Key-in box at the bottom of the screen if you prefer.

Lab 1.10 - Save settings

Save settings in the file so the views will look the same when you next open the design file.

- 1. **Fit** View 1.
- 2. In the **Key-in** box you just docked, place a data point to set the focus in this box (you will get a blinking cursor).
- 3. Key in *File* (short for File design), then press <Enter> on the keyboard.



Note: You always press <Enter> or <Tab> after key-ins in the Key-in box.

Keep the **Key-in** box docked. It is where you will key in all MicroStation commands.

Note: To **Save Settings**, you could also select **File > Save Settings** or use the short cut **CTRL-F**. Most commands can be accomplished with either key-ins or by selecting from the menu or toolbars.

By saving settings, the next time you enter this design file, it will be exactly as you left it.

- 4. Choose File > Exit to exit MicroStation and your design file.
 - Note: You can change your MicroStation user preferences to always save setting upon exiting the file. Select Workspace > Preferences > Operation and toggle on Save Settings on Exit. Just remember that if you're working in another user's file, you'll change their setting.

LAB 2 - Levels

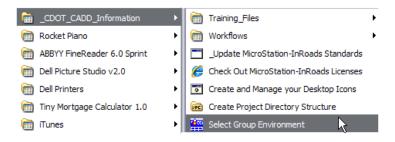
Chapter Objectives:

After completing this exercise you will know how to:

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

Lab 2.1 - Starting MicroStation

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



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

CDOT Select Group Environment	- • ×
Bridae xxMulti-Discipline	ок
	Cancel
	About

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

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

📕 MicroStation I	Manager - C:\Pr	ojects\12345\D	esign\Drawings'	\Refe	rence_Fil	es\							×
Look in:	Reference_	Files		•	G 🤌	Þ	···· •	Ď	8	*		3D - V8 DGN	
Recent Places Desktop CDOT User CODT User Computer		nterchange.dgi ntersec100SH86 Model.dgn Model55.dgn Model65.dgn Model##.dgn Phasing.dgn Prof.dgn	1	Size									New
Network	File name: Files of type:	12345DES_ MicroStation	DGN Files (*.dgn))		•		Oper Canc Option	el]	User: Project: Interface:		•

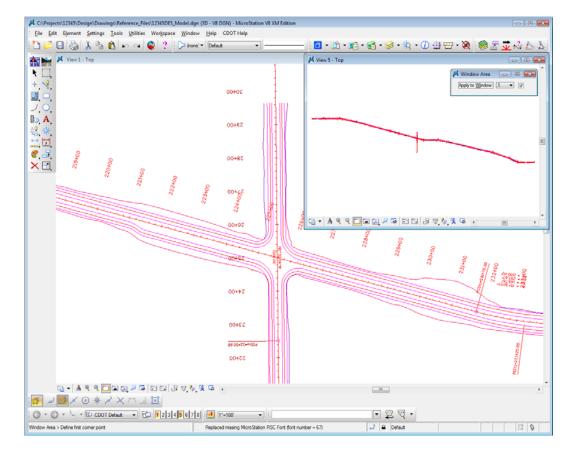
View 1 is a plan view of the entire project that you set up in the last lab.

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

→ CDOT Default → 12345678

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

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	Move	
	Change Screen	
	Size	
-	Minimize	
	Maximize	
x	Close Alt+F4	
	View Attributes	E
	Level Display	
	View Save/Recall	
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7. In View 1, Window Area around the intersection as shown.

Lab 2.2 - Working with levels

Sorting Levels

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



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

Level Display					. • 🛃
1 2 3 4 5 6 7 8 View Display					
🌾 🚺 🏳 (none) 🔻 Levels 🔹 🞑	•				
- 12345DES_Model.dgn					
4 12345SURV_Topo 100.dgn					
Name	Number	File	Logical	Used 🔻	
ALG_COGO_Points	19001	12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment	19029	12345DES_Model.dgn			
LG_PROPOSED_Hor-Alignment-Sta	19030	12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta	19031	12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Text	19032	12345DES_Model.dgn			
ALG_PROPOSED_Hor-Cardinals	19033	12345DES_Model.dgn			
ALG_SECONDARY_Hor-Alignment-Sta	19043	12345DES_Model.dgn			
ALG_SECONDARY_Hor-Alignment-Sta	19044	12345DES_Model.dgn			
ALG_SECONDARY_Hor-Cardinals	19046	12345DES_Model.dgn			
Default	0	12345DES_Model.dgn			
DES_ROADWAY_Curb-Top	14041	12345DES_Model.dgn			
DES_ROADWAY_Edge-Of-Road-Oil	14016	12345DES_Model.dgn			
DES_ROADWAY_Lane-Line	14044	12345DES_Model.dgn			
DES_ROADWAY_Misc	14045	12345DES_Model.dgn			
DES_ROADWAY_Point-of-Slope-Selec	14046	12345DES_Model.dgn			
DES_ROADWAY_Shoulder	14047	12345DES_Model.dgn			
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn			
DES_ROADWAY_Top-of-Cut	14052	12345DES_Model.dgn			
ORAFT LC-Center WT-3	22018	12345DES_Model.dgn			
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ALG_EVENT_Points ALG_EXISTING_Hor-Alignment	19002	Alignments.dgnlib			

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

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

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



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

📕 Level Display					×
2 3 4 5 6 7 8 View Display -					
🔁 (none) ▼ Levels ▼	-				
⊡-12345DES_Model.dgn					
123455URV_Topo 100.dgn					
-wo 123453 ORV_10p0100.dgn					
Name	Number	File	Logical	Used 🔻	
ALG_COGO_Points					1
ALG_PROPOSED_Hor-Alignment					
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta					
ALG_PROPOSED_Hor-Alignment-Text					
ALG_PROPOSED_Hor-Cardinals					
ALG_SECONDARY_Hor-Alignment-Sta					
ALG_SECONDARY_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_SECONDARY_Hor-Cardinals		12345DES_Model.dgn			
Default	0	12345DES_Model.dgn		•	
DES_ROADWAY_Curb-Top					
DES_ROADWAY_Edge-Of-Road-Oil					
DES_ROADWAY_Lane-Line		12345DES_Model.dgn			
DES_ROADWAY_Misc					
DES_ROADWAY_Point-of-Slope-Selec					
DES_ROADWAY_Shoulder	14047				
DES_ROADWAY_Toe-of-Fill		12345DES_Model.dgn			
DES_ROADWAY_Top-of-Cut					
DRAFT_LC-Center_WT-3					

5. Scroll through the list of levels.

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

🖊 Level Display				- • •	X
2 3 4 5 6 7 8 View Display -					
🔃 🏳 (none) 🔻 Levels 🔽	•				
- 12345DES_Model.dgn					-
48 12345SURV Topo100.dgn					
Name	Number *	File	Logical	Used	*
Default	0	12345DES_Model.dgn		•	=
TOPO CULVERT Cast-Iron					
TOPO CULVERT Corr-Steel-Pipe					
TOPO CULVERT End-Sec-Corr-Stl-Pipe					

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

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

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

✓ Level Display □ 2 3 4 5 6 7 8 Mew Display ▼ ✓ □ ○ (none) ▼ Levels ▼ 2 ✓ □ ○ (none) ▼ Levels ▼ 2 ✓ □ ○ (none) ▼ Levels ▼ 2 ✓ □ □ 12345DES_Model.dgn 2 ✓ □ 12345SURV_Topo 100.dgn 12345SURV_Topo 100.dgn					
Name *	Number	File	Logical	Used	
ALG_COGO_Points	19001	12345DES_Model.dgn		•	Ξ

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

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

🖊 Level Display						×
1 2 3 4 5 6 7 8 View Display	•					
none) 🔻 Levels 💌		•				
E-12345DES_Model.dgn						
12345SURV_Topo 100.dgn						
Name ^		Name	L	Logical	Used	
	~			Logical	Used	-8
ALG_COGO_Points		Library	2345DES_Model.dgn			-
	~	Number	gnments.dgnlib			
		Description	gnments.dgnlib gnments.dgnlib			
	~	File	anments.danlib			
	~	Logical	gnments.dgnlib			
		Color	gnments.dgnlib			
		Style	gnments.dgnlib			
		Weight	gnments.dgnlib			
			gnments.dgnlib			
		Material	gnments.dgnlib			
		Lock	gnments.dgnlib			
		Plot	gnments.dgnlib			
	~	Used	gnments.dgnlib			
		Elements	gnments.dgnlib gnments.dgnlib			
		New Level	gnments.dgnlib			
	-		anments.danlib			
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		<u>L</u> ist	gnments.dgnlib			
		19021 A	lignments.dgnlib			

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

Turn levels on/off using Level Display

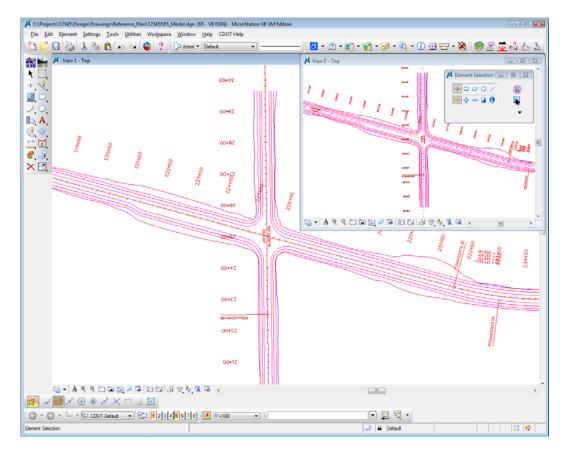
1. With the levels now sorted by name, **<D>** on the column heading **Used** until all used levels are brought to the top of the list. This now sorts all used levels alphabetically.

🗸 Level Display					x
1 2 3 4 5 6 7 8 View Display -					
🕅 🔛 🏳 (none) 🔻 Levels 🔽	•				
- 12345DES_Model.dgn └ 12345SURV_Topo100.dgn					
Name	Number	File	Logical	Used 🔻	
ALG_COGO_Points	19001	12345DES_Model.dgn		•	Ξ
ALG_PROPOSED_Hor-Alignment		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta					
ALG_PROPOSED_Hor-Alignment-Text					
ALG_PROPOSED_Hor-Cardinals		12345DES_Model.dgn			
ALG_SECONDARY_Hor-Alignment-Sta					
ALG_SECONDARY_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_SECONDARY_Hor-Cardinals					
Default	0	12345DES_Model.dgn		•	
DES_ROADWAY_Curb-Top					
DES_ROADWAY_Edge-Of-Road-Oil					
DES_ROADWAY_Lane-Line		12345DES_Model.dgn			
DES_ROADWAY_Misc					
DES_ROADWAY_Point-of-Slope-Selec					
DES_ROADWAY_Shoulder	14047				
DES_ROADWAY_Toe-of-Fill		12345DES_Model.dgn			
DES_ROADWAY_Top-of-Cut					
DRAFT_LC-Center_WT-3					

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

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

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



3. Window Area around the same intersection location in View 5 as in View 1.

4. In **Level Display**, toggle *off* View Index 1 and toggle *on* View Index 5 and scroll through the level list.



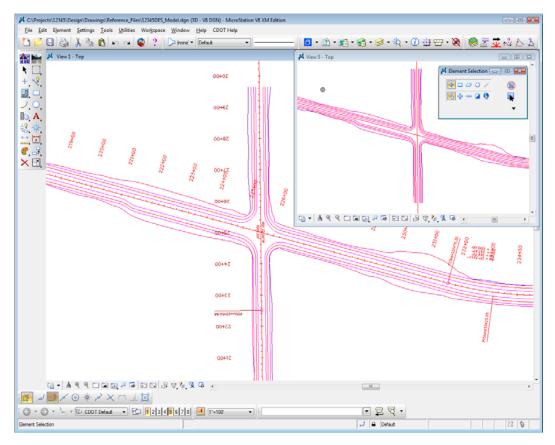
Level Display					~
🔎 🔃 🍃 (none) 🔻 [Levels]	-				
	-				
- 12345DES_Model.dgn					
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Name	Number	File	Logical	Used 🔻	1
ALG_COGO_Points	19001	12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment					
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG PROPOSED Hor-Alignment-Text	19032	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Cardinals	19033	12345DES_Model.dgn			
ALG_SECONDARY_Hor-Alignment-Sta					
ALG_SECONDARY_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_SECONDARY_Hor-Cardinals					
Default	0	12345DES_Model.dgn		•	
DES_ROADWAY_Curb-Top					
DES_ROADWAY_Edge-Of-Road-Oil					
DES_ROADWAY_Lane-Line		12345DES_Model.dgn			
DES_ROADWAY_Misc					
DES_ROADWAY_Point-of-Slope-Selec					
DES_ROADWAY_Shoulder	14047				
DES_ROADWAY_Toe-of-Fill		12345DES_Model.dgn			
DES_ROADWAY_Top-of-Cut					
DRAFT_LC-Center_WT-3					

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

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

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

Level Display 1 2 3 4 6 7 8 View Display ✓	•				×
E-12345DES_Model.dgn					
12345SURV_Topo100.dgn					
					_
Name	Number	File	Logical	Used	_
ALG_COGO_Points	19001	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Alignment	19029	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Alignment-Sta	19030	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Alignment-Sta	19031	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Alignment-Text	19032	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Cardinals	19033	12345DES_Model.dgn		•	
ALG_SECONDARY_Hor-Alignment-Sta		12345DES_Model.dgn		•	
ALG_SECONDARY_Hor-Alignment-Sta		12345DES_Model.dgn		•	
ALG_SECONDARY_Hor-Cardinals	19046	12345DES_Model.dgn		•	_
Default	0	12345DES_Model.dgn		•	
DES_ROADWAY_Curb-Top		12345DES_Model.dgn			
DES_ROADWAY_Edge-Of-Road-Oil		12345DES_Model.dgn			
DES_ROADWAY_Lane-Line	14044	12345DES_Model.dgn			
DES_ROADWAY_Misc					
DES_ROADWAY_Point-of-Slope-Selec					
DES_ROADWAY_Shoulder	14047				
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn			
DES_ROADWAY_Top-of-Cut	14052				
DRAFT_LC-Center_WT-3	22018				
Auta EXIS DINIa Hor-Alignment-Sta-Minor					



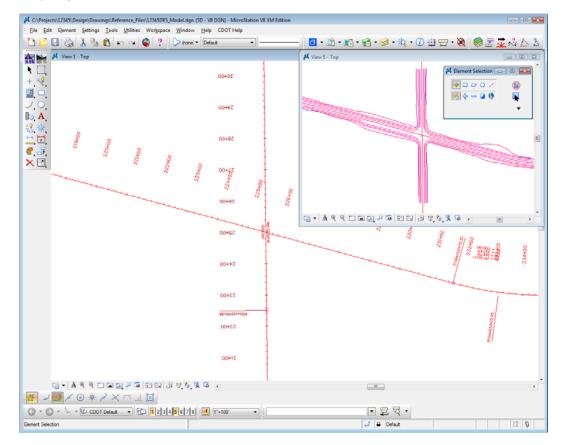
The intersection text is now off in View 5 but on in View 1.

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

ſ	🖊 Level Display
	1 2 3 4 5 6 7 8 View Display -
	🔃 🍃 (none) 🔻 Levels 🔹 📈 🔻

【 Level Display 1 2 3 4 5 6 7 8 View Display ▼ 1 2 5 6 7 8 View Display ▼ 1 2 5 6 7 8 View Display ▼	Ŧ				×
- 12345DES_Model.dgn					
└ <u>v</u> 12345SURV_Topo100.dgn					
Name	Number	File	Logical	Used 🔻	-
ALG_COGO_Points	19001	12345DES_Model.dgn		•	=
ALG_PROPOSED_Hor-Alignment					
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta					
ALG_PROPOSED_Hor-Alignment-Text					
ALG_PROPOSED_Hor-Cardinals					
ALG_SECONDARY_Hor-Alignment-Sta	19043	12345DES_Model.dgn			
ALG_SECONDARY_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_SECONDARY_Hor-Cardinals					
Default	0	12345DES_Model.dgn		•	
DES_ROADWAY_Curb-Top	14041	12345DES_Model.dgn		•	
DES_ROADWAY_Edge-Of-Road-Oil	14016	12345DES_Model.dgn		•	
DES_ROADWAY_Lane-Line	14044	12345DES_Model.dgn		•	
DES_ROADWAY_Misc	14045	12345DES_Model.dgn		•	
DES_ROADWAY_Point-of-Slope-Selec	14046	12345DES_Model.dgn		•	
DES_ROADWAY_Shoulder	14047	12345DES_Model.dgn		•	
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn		•	
DES_ROADWAY_Top-of-Cut	14052	12345DES_Model.dgn		•	
DRAFT LC-Center WT-3		12345DES_Model.dgn			
ALG_EVENT_Points					

8. Hold down the data button and drag across all **DES**_ levels to turn them *off* in View 1.



Only alignment levels are now on in View 1.

- 📕 Level Display - • 🔀 2 3 4 5 6 7 8 View Display -📢 📴 խ (none) 🔻 Levels 💌 🖂 🕶 E-Model.dgn - 12345SURV_Topo100.dgn Name Number File Used Logical . 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn ALG_PROPOSED_Hor-Alignment-Sta-19030 ٠ ALG_PROPOSED_Hor-Alignment-Sta-.. 19031 12345DES_Model.dgn ALG_PROPOSED_Hor-Alignment-Text 19032 12345DES_Model.dgn ٠ 19033 19043 19044 1904 12345DES_Model.dgr 12345DES_Model.dgr ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta. ALG_SECONDARY_Hor-Alignment-Sta. ALG_SECONDARY_Hor-Cardinals 12345DES_Model.dgn Default 0 • DES_ROADWAY_Curb-Top 12345DES Model.dgn 14041 12345DES_Model.dgn DES_ROADWAY_Edge-Of-Road-Oil 14016 • DES_ROADWAY_Lane-Line 14044 12345DES_Model.dgn • DES_ROADWAY_Misc 14045 12345DES_Model.dgn DES_ROADWAY_Point-of-Slope-Selec... 14046 12345DES_Model.dgn DES_ROADWAY_Shoulder 14047 12345DES_Model.dgn DES_ROADWAY_Toe-of-Fill 14051 12345DES_Model.dgn DES_ROADWAY_Toe-of-C4 14052 12345DES_Model.dgn 14051 12345DES_Model.dgn 14052 12345DES_Model.dgn DES_ROADWAY_Top-of-Cut 12345DES_Model.dgn DRAFT_LC-Center_WT-3
- 9. Turn *off* the levels ALG_PROPOSED_Hor-Alignment-Text_and ALG_PROPOSED_Hor-Alignment-Sta-Major_in View 1.

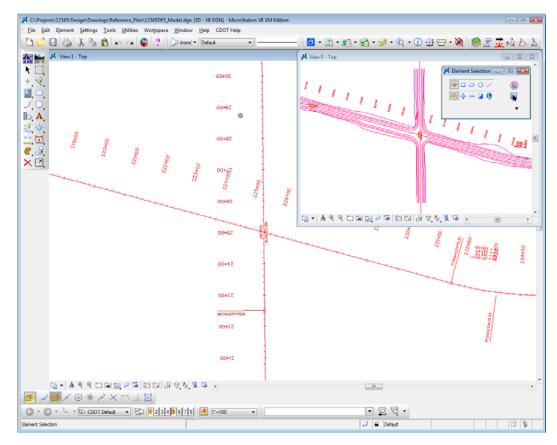
 ✓ Level Display 2 3 4 5 6 7 8 View Display ✓ Levels 				
1 2 3 4 5 6 7 8 View Display				
1 2 3 4 5 6 7 8 View Display				
🌾 📴 🏳 (none) 🔻 Levels 🔹 🎑				
	-			
E-12345DES_Model.dgn				
40 12345DES_Model.dgn				
-wo 12345SURV_TopoTUU.dgn				
Name	Number	File	Logical	Used 🔻
ALG_COGO_Points	19001	12345DES_Model.dgn		•
ALG_PROPOSED_Hor-Alignment	19029	12345DES_Model.dgn		•
ALG PROPOSED Hor-Alignment-Sta	19030	12345DES_Model.dgn		•
ALG_PROPOSED_Hor-Alignment-Sta	19031	12345DES_Model.dgn		
	40000			
ALG_PROPOSED_Hor-Alignment-Text	19032	12345DES_Model.dgn		•
	19032 19033	12345DES_Model.dgn 12345DES_Model.dgn		-
ALG_PROPOSED_Hor-Cardinals	19033			-
ALG_PROPOSED_Hor-Cardinals	19033 . 19043	12345DES_Model.dgn		-
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta	19033 . 19043	12345DES_Model.dgn 12345DES_Model.dgn		-
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta. ALG_SECONDARY_Hor-Alignment-Sta. ALG_SECONDARY_Hor-Cardinals	19033 . 19043 . 19044	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		-
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta. ALG_SECONDARY_Hor-Alignment-Sta. ALG_SECONDARY_Hor-Cardinals Default	19033 . 19043 . 19044 19046	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		•
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta. ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top	19033 . 19043 . 19044 19046 0	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		• • • • • •
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top DES_ROADWAY_Edge-Of-Road-Oil	19033 . 19043 . 19044 19046 0 14041	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		• • • • • •
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Lane-Line	19033 19043 19044 19046 0 14041 14016	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		• • • • • •
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Lane-Line DES_ROADWAY_Misc DES_ROADWAY_Point-of-Slope-Selec	19033 19043 19044 19046 0 14041 14016 14044 14045 14046	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		• • • • • •
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Lane-Line DES_ROADWAY_Lane-Line DES_ROADWAY_Misc DES_ROADWAY_Shoulder	19033 19043 19044 19046 0 14041 14016 14044 14045 14046 14047	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		• • • • • •
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Lane-Line DES_ROADWAY_Misc DES_ROADWAY_Misc DES_ROADWAY_Point-of-Slope-Selec DES_ROADWAY_Toe-of-Fill	19033 19043 19044 19046 0 14041 14016 14044 14045 14046 14047 14051	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		• • • • • •
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Lane-Line DES_ROADWAY_Misc DES_ROADWAY_Misc DES_ROADWAY_Point-of-Slope-Selec DES_ROADWAY_Shoulder DES_ROADWAY_Top-of-Fill DES_ROADWAY_Top-of-Cut	19033 19043 19044 19046 0 14041 14016 14044 14045 14045 14045 14045 14045 14047 14051	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		• • • • • •
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Lane-Line DES_ROADWAY_Lane-Line DES_ROADWAY_Misc DES_ROADWAY_Point-of-Slope-Selec DES_ROADWAY_Point-of-Fill DES_ROADWAY_Top-of-Cut DRAFT_LC-Center_WT-3	19033 19043 19044 19046 0 14041 14016 14044 14045 14045 14047 14051 14052 22018	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		• • • • • •
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Lane-Line DES_ROADWAY_Lane-Line DES_ROADWAY_Lane-Selec DES_ROADWAY_Lane-Selec DES_ROADWAY_Shoulder DES_ROADWAY_Shoulder DES_ROADWAY_Toe-of-Fill DES_ROADWAY_Toe-of-Fill DES_ROADWAY_Top-of-Cut DRAFT_LC-Center_WT-3 ALG_EVENT_Points	19033 19043 19044 19046 0 14041 14016 14044 14045 14046 14047 14051 22018 19002	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		• • • • • •
ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Lane-Line DES_ROADWAY_Misc DES_ROADWAY_Misc DES_ROADWAY_Shoulder DES_ROADWAY_Top-of-Fill DES_ROADWAY_Top-of-Cut DRAFT_LC-Center_WT-3	19033 19043 19044 19046 0 14041 14016 14044 14045 14045 14047 14051 14052 22018	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		• • • • • •

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

Some levels are now shown with a medium-gray background. When multiple view indexes are on, a medium-gray background means that the level is on in at least one of the views, but not in all selected views. A light-gray background means the levels are on in all selected views, and a white background means the levels are off in all selected views.

📕 Level Display					x
1 2 3 4 5 6 7 8 View Display -					
🔛 🏳 (none) 🔻 Levels 🔻 🖉	•				
E-12345DES_Model.dgn					
12345SURV Topo100.dan					
Name	Number	File	Logical	Used 🔻	•
ALG COGO Points	19001	12345DES Model.dgn		•	Ξ
ALG_PROPOSED_Hor-Alignment	19029	12345DES_Model.dgn		•	ι.
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta	19031	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Alignment-Text	19032	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Cardinals	19033	12345DES_Model.dgn		•	
ALG_SECONDARY_Hor-Alignment-Sta	19043	12345DES_Model.dgn			
ALG_SECONDARY_Hor-Alignment-Sta	19044	12345DES_Model.dgn			
ALG_SECONDARY_Hor-Cardinals	19046	12345DES_Model.dgn			
Default	0	12345DES_Model.dgn		•	
DES_ROADWAY_Curb-Top	14041	12345DES_Model.dgn			
DES_ROADWAY_Edge-Of-Road-Oil	14016	12345DES_Model.dgn			
DES_ROADWAY_Lane-Line	14044	12345DES_Model.dgn			
DES_ROADWAY_Misc	14045	12345DES_Model.dgn			
DES_ROADWAY_Point-of-Slope-Selec	. 14046	12345DES_Model.dgn			
DES_ROADWAY_Shoulder	14047	12345DES_Model.dgn			
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn			
DES_ROADWAY_Top-of-Cut	14052	12345DES_Model.dgn		•	
DRAFT LC-Center WT-3					

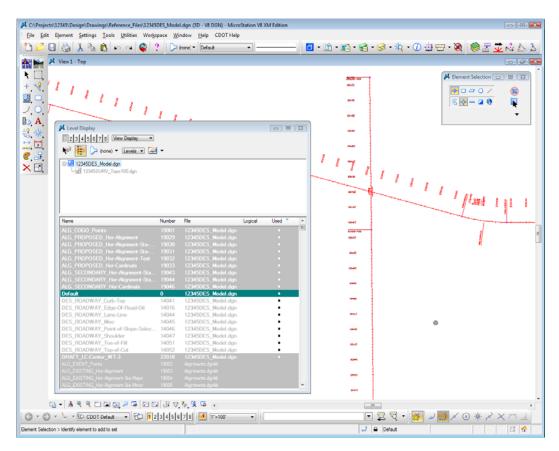
11. Turn on the levels ALG_PROPOSED_Hor-Alignment-Text and ALG_PROPOSED_Hor-Alignment-Sta-Major.



Note that the levels are turned on in both views 1 and 5.

12. Turn *off* View Index 5.

13. Close View 5.

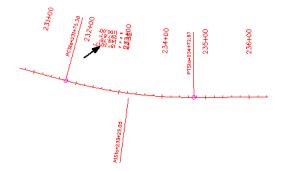


Turn levels on/off By Element

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

↓ Level Display 2 3 4 5 6 7 8 View Display ▼ ✓ > (none) ✓ Levels ✓ ✓ > (none) ✓ Levels ✓ ✓ > Nodel.dgn ✓ 123455URV_Topo 100.dgn	•				
Name	Number	File	Logical	Used 🔻	
ALG COGO Points	19001	12345DES Model.dan		•	
ALG_PROPOSED_Hor-Alignment		12345DES_Model.dgn	Set Active	.	
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn -	oct <u>n</u> eure		
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn	All O <u>n</u>		
ALG_PROPOSED_Hor-Alignment-Text		12345DES_Model.dgn	All Off		
ALG_PROPOSED_Hor-Cardinals		12345DES_Model.dgn	Invert On	/Off	
ALG_SECONDARY_Hor-Alignment-Sta	19043	12345DES_Model.dgn_	interton	/011	
ALG_SECONDARY_Hor-Alignment-Sta		12345DES_Model.dgn	Off By Ele	ement	
ALG_SECONDARY_Hor-Cardinals		12345DES_Model.dgn	All Except	Element	
Default	0	12345DES_Model.dgn			
DES_ROADWAY_Curb-Top	14041	12345DES_Model.dgn	Save Filte	r	
DES_ROADWAY_Edge-Of-Road-Oil	14016	12345DES_Model.dgn	Level Mar		
DES_ROADWAY_Lane-Line	14044	12345DES_Model.dgn	Level <u>ivi</u> ai	lager	
DES_ROADWAY_Misc	14045	12345DES_Model.dgn		•	
DES_ROADWAY_Point-of-Slope-Selec	14046	12345DES_Model.dgn		•	
DES_ROADWAY_Shoulder	14047	12345DES_Model.dgn		•	
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn		•	
DES_ROADWAY_Top-of-Cut	14052	12345DES_Model.dgn		•	
DRAFT_LC-Center_WT-3		12345DES_Model.dgn			

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



View1 - Top		(none) 🕶 Default	•						• 🗶 😸 🖉 🚽
A Level Display						_	_		
						weather the second			
1.1	l_{1}				_				
🖊 Level Display									
2 3 4 5 6 7 8 Mew Display									
(none) - Levels -						-			
					- / .				
12345DES_Model.dgn					1 1 1	17			
- <u>M8</u> 12345SURV_Topo100.dgn						1 1	11.		1111
							114	11.	
								111	
									1 111
1									1
Name	Number	File	Logical	Used *			_		
ALG_COGO_Points				•	9	- end			
ALG_PROPOSED_Hor-Alignment ALG_PROPOSED_Hor-Alignment-Sta	19029	12345DES_Model.dgn 12345DES_Model.dgn							
ALG_PROPOSED_Hor-Alignment-Sta	19030 19031	123450ES_Model.dgn 123450ES_Model.dgn							
	19032	12345DES Model.don		•					
ALG_PROPOSED_Hor-Alignment-Text									
ALG_PROPOSED_Hor-Cardinals						-			
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta		12345DES_Model.dgn				***			
ALG_PROPOSED_Her-Cardinals ALG_SECONDARY_Her-Alignment-Sta ALG_SECONDARY_Her-Alignment-Sta	. 19043	12345DES_Model.dgn 12345DES_Model.dgn		•		-			
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals	. 19043 . 19044 . 19046	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		•		-			
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Nigrament-Sta ALG_SECONDARY_Hor-Nigrament-Sta ALG_SECONDARY_Hor-Cardinals Default	. 19043	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn				-	-		
ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals	. 19043 . 19044 19046 0	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		•		1	-		
ALG_PROPOSED_Here-Circlinole ALG_SECONDARY_Hor-Alignment-Sta. ALG_SECONDARY_Hor-Alignment-Sta. ALG_SECONDARY_Low-Cardinole Default Default DES_RDADWAY_Low-Top DES_RDADWAY_Low-Line	19043 19044 19046 0 14041 14016 14044	123450ES_Model.dgn 123450ES_Model.dgn 123450ES_Model.dgn 123450ES_Model.dgn 123450ES_Model.dgn 123450ES_Model.dgn 123450ES_Model.dgn		•					
ALG PROPOSED Her-Cardnole ALG SECONDARY (Jon-Normert-Sta- ALG SECONDARY) (Jon-Normert-Sta- ALG SECONDARY) (Jon-Cardnole Defail Diss, RADWAY, Jone Cardnole DES, RADWAY, Jone C DES, RADWAY, Jone C	19043 19044 19046 0 14041 14016 14044 14045	123450ES_Model.dom 123450ES_Model.dom 123450ES_Model.dom 123450ES_Model.dom 123450ES_Model.dom 123450ES_Model.dom 123450ES_Model.dom 123450ES_Model.dom		•					
ALG PROPOSED Her-Gerdnole ALG SECONDARY Hor-Alignment Sta. ALG SECONDARY Hor-Alignment Sta. ALG SECONDARY Hor-Alignment Sta. ALG SECONDARY, Dec-Gardnole Des PROADWAY, Carbo-Top DES, PROADWAY, Gard-OR-Road-OIL DES, PROADWAY, Jame-Line DES, PROADWAY, Jame-Line DES, PROADWAY, Jame-Silee-Sil	 19043 19044 19046 0 14041 14046 14044 14045 14046 	12245DES_Model.dgn 12245DES_Model.dgn 12245DES_Model.dgn 12245DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		•		1 1 1 1			
ALG PROPOSED Her-Circlinole ALG SECONDARY Hor-Normert-Sta ALG SECONDARY Hor-Normert-Sta ALG SECONDARY Jave Casthols Dest Biss, RANDWAY, Lobe-Crebod Diss, RANDWAY, Lobe-Crebod Diss, RANDWAY, Lobe-Crebod Diss, RANDWAY, Java Diss, RANDWAY, Java Diss, RANDWAY, Javated-Sope-Selec.	. 19048 19044 19046 0 14041 14046 14044 14045 . 14046 14047	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		•					
ALG PROPOSED Her-Gerdnole ALG SECONDARY Hor-Alignment Sta. ALG SECONDARY Hor-Alignment Sta. ALG SECONDARY Hor-Alignment Sta. ALG SECONDARY, Dec-Gardnole Des PROADWAY, Carbo-Top DES, PROADWAY, Gard-OR-Road-OIL DES, PROADWAY, Jame-Line DES, PROADWAY, Jame-Line DES, PROADWAY, Jame-Silee-Sil	 19043 19044 19046 0 14041 14046 14044 14045 14046 	12245DES_Model.dgn 12245DES_Model.dgn 12245DES_Model.dgn 12245DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		•			M Change Leve		3
ALG PROPOSED Her-Gerdnole ALG SECONDARY (I-Ko-Waynerd Sta. ALG SECONDARY (I-Ko-Waynerd Sta. ALG SECONDARY (I-Ko-Waynerd Sta. ALG SECONDARY (I-Ko-Waynerd Sta DES, PROJWAY, Carb-Tep DES, PROJWAY, Carb-Tep DES, PROJWAY, Carb-Tep DES, PROJWAY, Sego-Ch-Road-Cal DES, PROJWAY, Marco DES, PROJWAY, Marco DES, PROJWAY, Sego-Ch-Rait DES, PROJWAY, Second-Fall	. 19048 19044 19046 0 14041 14046 14044 14045 . 14046 14047 14051	123450155 Medel dgn 123450155 Medel dgn		•					3
ALG PROPOSED Her-Cardinale ALG SECONDARY Hor-Normert-Sta ALG SECONDARY Inter-Normert-Sta ALG SECONDARY Inter-Cardinale Des RECONDARY Inter-Cardinale DES RECONDARY Inter-Card DES RECONDARY Inter-Card DES RECONDARY Inter-Line DES RECONDARY Inter-Line DES RECONDARY Inter-Line DES RECONDARY Inter-Card DES RECONDARY INTER-CA	 19043 19044 19046 0 14041 14046 14046 14047 14051 14052 	12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn 12345DES_Model.dgn		•			Level	Display Off 💌	Z
ALG PROPOSED Her-Gridnole ALG SECONDARY Hor-Alignment-Sta ALG SECONDARY Hor-Alignment-Sta ALG SECONDARY Hor-Alignment-Sta ALG SECONDARY Line-Alignment DES, PROJWAY, Line-Chemodol DES, PROJWAY, Line-Chemodol DES, PROJWAY, Line-Chemodol DES, PROJWAY, Line-Chemodol DES, PROJWAY, Standor DES, PROJWAY, Standor D	. 19043 . 19044 19045 0 14016 14016 14044 14045 14046 14045 14045 14045 14045 14051 14051 14052 22018 15002 19002	123450153 Model day 123450153 Model day 123450153 Model day 123450153 Model day 123450153 Model day 123450153 Model day 123450153 Model day 123450155 Model day 123450155 Model day 123450155 Model day 123450153 Model day 123450153 Model day		•				Display Off 💌	3
ALG PROPOSED Her-Gridnole ALG SECONDARY Hor-Alignment-Sta ALG SECONDARY Hor-Alignment-Sta ALG SECONDARY Hor-Alignment-Sta ALG SECONDARY Line-Alignment DES, PROJWAY, Line-Chemodol DES, PROJWAY, Line-Chemodol DES, PROJWAY, Line-Chemodol DES, PROJWAY, Line-Chemodol DES, PROJWAY, Standor DES, PROJWAY, Standor D	 19043 19044 19046 0 14041 14046 14046 14047 14051 14052 	123450153 Model dan 123450153 Model dan		•			Level	Display Off 💌	3
ALG PROPOSED Her-Cardinale ALG SECONDARY Hor-Normert-Sta ALG SECONDARY Inter-Normert-Sta ALG SECONDARY Inter-Cardinale Des RECONDARY Inter-Cardinale DES RECONDARY Inter-Card DES RECONDARY Inter-Card DES RECONDARY Inter-Line DES RECONDARY Inter-Line DES RECONDARY Inter-Line DES RECONDARY Inter-Card DES RECONDARY INTER-CA	. 19043 . 19044 19045 0 14016 14016 14044 14045 14046 14045 14045 14045 14045 14051 14051 14052 22018 15002 19002	123450153 Model dan 123450153 Model dan		•	-1		Level	Display Off 💌	2
ALG PROPOSED Her-Gridnole ALG SECONDARY Hor-Alignment-Sta ALG SECONDARY Hor-Alignment-Sta ALG SECONDARY Hor-Alignment-Sta ALG SECONDARY Line-Alignment DES, PROJWAY, Line-Chemodol DES, PROJWAY, Line-Chemodol DES, PROJWAY, Line-Chemodol DES, PROJWAY, Line-Chemodol DES, PROJWAY, Standor DES, PROJWAY, Standor D	. 19043 19046 0 14041 14016 14044 14045 14046 14047 14051 14052 22018 15002 19003 15004 15005	122450153 Model day 12245055 Model day Maynesti daytis Agroneti daytis		•	-	مع مع مع مع مع مع مع مع مع مع	Level	Display Off 💌	2

The level ALG_PROPOSED_Hor-Alignment-Text_is turned off by graphically picking an element on that level.

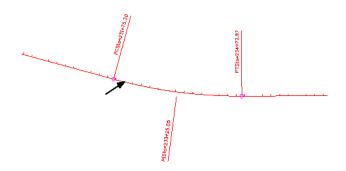
3.	Turn off the Level DRAF	[_LC-Center_WT-3.
----	--------------------------------	-------------------

✓ Level Display □ 2 3 4 5 6 7 8 View Display ▼ ● <t< th=""><th>•</th><th></th><th></th><th></th><th></th></t<>	•				
Name	Number	File	Logical	Used 🔻	
ALG COGO Points	19001	12345DES Model.dgn			- 3
ALG_PROPOSED_Hor-Alignment		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Text	19032	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Cardinals	19033	12345DES_Model.dgn		٠	
ALG_SECONDARY_Hor-Alignment-Sta	19043	12345DES_Model.dgn			
ALG SECONDARY Hor-Alignment-Sta	19044	12345DES_Model.dgn		•	
ALG_SECONDARY_Hor-Cardinals	19046	12345DES_Model.dgn		•	
Default	0	12345DES_Model.dgn		•	
DES_ROADWAY_Curb-Top	14041	12345DES_Model.dgn		•	
DES_ROADWAY_Edge-Of-Road-Oil	14016	12345DES_Model.dgn		•	
DES_ROADWAY_Lane-Line	14044	12345DES_Model.dgn		•	
DES_ROADWAY_Misc	14045	12345DES_Model.dgn		•	
DES_ROADWAY_Point-of-Slope-Selec	14046	12345DES_Model.dgn		•	
DES_ROADWAY_Shoulder	14047	12345DES_Model.dgn		•	
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn		•	
DES_ROADWAY_Top-of-Cut	14052	12345DES_Model.dgn		•	
DRAFT_LC-Center_WT-3	22018	12345DES_Model.dgn		•	
ALG_EVENT_Points	19002	Alignments.dgnlib			

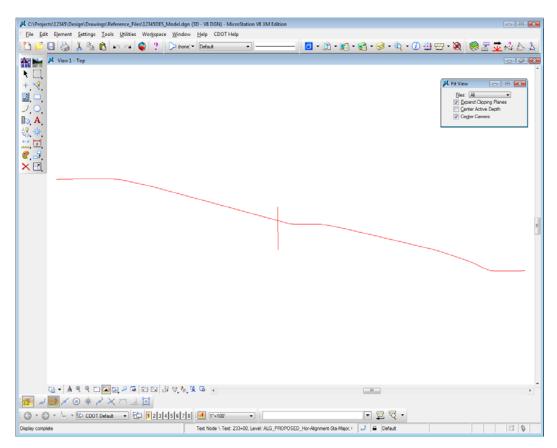
Level Display		
1 2 3 4 5 6 7 8 View Display -		
📔 📴 🍃 (none) 🔻 Levels 🔻 🎑	-	
	·	
- 12345DES_Model.dgn		
42345SURV_Topo100.dgn		
N	Number	File Logical Used 🔻
Name		
ALG_COGO_Points		12345DES_Model.dgn •
ALG_PROPOSED_Hor-Alignment	19029	12345DES_Model.dgn •
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn •
ALG_PROPOSED_Hor-Alignment-Sta	19031	12345DES_Model.dgn •
ALG_PROPOSED_Hor-Alignment-Text	19032	12345DES_Model.dgn
ALG_PROPOSED_Hor-Cardinals		12345DES_Model.d Set <u>A</u> ctive
ALG_SECONDARY_Hor-Alignment-Sta	19043	12345DES_Model.d
ALG_SECONDARY_Hor-Alignment-Sta		TZ343DE3_MODELU
ALG_SECONDARY_Hor-Cardinals	19046	12345DES_Model.d All Off
Default	0	12345DES_Model.d Invert On/Off
DES_ROADWAY_Curb-Top	14041	12345DES_Model.d
DES_ROADWAY_Edge-Of-Road-Oil	14016	12345DES_Model.d Off By Element
DES_ROADWAY_Lane-Line	14044	12345DES_Model.d All Except Element
DES_ROADWAY_Misc	14045	12345DES_Model.d
DES_ROADWAY_Point-of-Slope-Selec	14046	12345DES_Model.d Save Filter
DES_ROADWAY_Shoulder	14047	12345DES_Model.d Level Manager
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dg
DES_ROADWAY_Top-of-Cut	14052	12345DES_Model.dgn •
DRAFT_LC-Center_WT-3	22018	12345DES_Model.dgn
		Alignments.dgnlib
		Alignments.dgnlib
		/ wgrinierita.ugrilib
		Alignments.dgnlib

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

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



6. **Fit** View 1.



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

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



Level Display 1 2 3 6 7 8 Wew Display Image: State Stat	•				
Name	Number	File	Logical	Used 🔻 [
ALG_COGO_Points	19001	12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Text		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Cardinals		12345DES_Model.dgn			
ALG_SECONDARY_Hor-Alignment-Sta	19043	12345DES_Model.dgn			
ALG_SECONDARY_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_SECONDARY_Hor-Cardinals	19046	12345DES_Model.dgn			
Default	0	12345DES_Model.dgn		•	
DES_ROADWAY_Curb-Top	14041	12345DES_Model.dgn		•	
DES_ROADWAY_Edge-Of-Road-Oil	14016	12345DES_Model.dgn		•	
DES_ROADWAY_Lane-Line	14044	12345DES_Model.dgn		•	
DES_ROADWAY_Misc	14045	12345DES_Model.dgn		•	
DES_ROADWAY_Point-of-Slope-Selec	14046	12345DES_Model.dgn		•	
DES_ROADWAY_Shoulder	14047	12345DES_Model.dgn		•	
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn		•	
DES_ROADWAY_Top-of-Cut	14052	12345DES_Model.dgn		•	
DRAFT_LC-Center_WT-3	22018	12345DES_Model.dgn		•	
ALG_EVENT_Points	19002				
					+

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

- K C:\Projects\12345\Design\Drawings\Reference_Files\12345DES_Model.dgn (3D V8 DGN) MicroStation V8 XM Edition File Edit Element Settings Tools Utilities Workspace Window Help CDOT Help 🗅 📂 🗔 🍓 👗 🐁 🖍 🖛 🛥 🚳 ? 🕞 hone:~ Defaut 🧧 - 🗈 - 🖬 - 😭 - 🥩 - 🛝 - 🕧 🏥 😁 - 🥘 View1 - Top K [] ge Level 🕞 🗉 🔜 Level: Display Off
 Use Ence: Inside +, J O ⊫o A 2 * * ■ * * * 1000 00+G 00+95 228400 00447 00+63 HIRAD G-14660002600580%&G -_ 🐹 L T X 🖌 🛠 💿 X T L 🔟 ③ - ⑤ - 🦢 - 础 CDOT Defaut - 🔂 12345678 🔜 1**100 •] 🖃 🛱 🥰 • Text Node \ Text: 233+00, Level: ALG_PROPOSED_Hor-Alignment-Sta-Major, I 🥥 🔒 Default Change Level > Identify element 2 9
- 7. **Window** in to the intersection as shown.

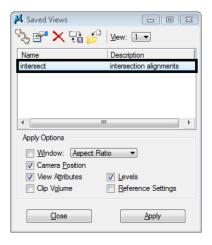
Save a view

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

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

3. **<D>** in View 1 to select it as the view to save.

4. Verify you saved the view. Select **Utilities > Saved Views.**



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

You may recall this saved view in upcoming labs.

Turn all levels on/off

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

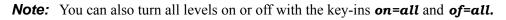
📕 Level Display					×
1 2 3 4 5 6 7 8 View Display -					
(none) 🔻 Levels 🔻 🛹	•				
E-12345DES_Model.dgn					
12345SURV_Topo100.dgn					
					_
Name	Number	File	Logical	Used	-
ALG_COGO_Points	19001	12345DES_Model.dgn			E
ALG_PROPOSED_Hor-Alignment		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta		123 Set Active			
ALG_PROPOSED_Hor-Alignment-Sta		123			
ALG_PROPOSED_Hor-Alignment-Text		12: All O <u>n</u>			
ALG_PROPOSED_Hor-Cardinals		123 All Off			
ALG_SECONDARY_Hor-Alignment-Sta		¹²³ Invert On/Off			
ALG_SECONDARY_Hor-Alignment-Sta		123	-		
ALG_SECONDARY_Hor-Cardinals	19046	123 Off By Element		•	
Default	0	123 All Except Elemen	t	•	- 11
DES_ROADWAY_Curb-Top	14041	123 123 Save Filter		•	
DES_ROADWAY_Edge-Of-Road-Oil	14016			•	
DES_ROADWAY_Lane-Line	14044	123 Level <u>M</u> anager		•	
DES_ROADWAY_Misc DES_ROADWAY_Point-of-Slope-Selec	14045	123 12345DES Model.dgn			
DES_ROADWAT_Point-or-slope-selec DES_ROADWAY_Shoulder					
DES_ROADWAT_Shoulder DES_ROADWAY_Toe-of-Fill	14047 14051	12345DES_Model.dgn 12345DES_Model.dgn			
DES_ROADWAT_Top-of-Cut	14051	12345DES_Model.dgn			
DRAFT LC-Center WT-3	22018	12345DES_Model.dgn 12345DES_Model.dgn			
ALG EVENT Points	19002	Alignments.dgnlib		-	- 11
					-
	13003	Paigrimentstagrillo			

All levels are turned on in View 1.

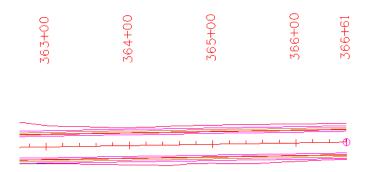
2. **Fit** View 1.

Level Display				
1 2 3 4 5 6 7 8 View Display -				
🔃 🏳 (none) 🔻 Levels 🔻 📨	•			
E-12345DES_Model.dgn				
12345SURV_Topo100.dgn				
Name	Number	File	Logical	Used 🔪 🦯
ALG_COGO_Points	19001	12345DES_Model.dgn		
ALG_PROPOSED_Hor-Alignment				
ALG_PROPOSED_Hor-Alignment-Sta		123 Set Active		
ALG_PROPOSED_Hor-Alignment-Sta		123		
ALG_PROPOSED_Hor-Alignment-Text		123 All O <u>n</u>		
ALG_PROPOSED_Hor-Cardinals		123 All Off		
ALG_SECONDARY_Hor-Alignment-Sta		123 Invert On/Off	_	
ALG_SECONDARY_Hor-Alignment-Sta		123	_	
ALG_SECONDARY_Hor-Cardinals	19046	123 Off By Element		•
Default	0	123 All Except Elemen	nt	•
DES_ROADWAY_Curb-Top		123		
DES_ROADWAY_Edge-Of-Road-Oil		123 Save Filter		
DES_ROADWAY_Lane-Line		123		
DES_ROADWAY_Misc		123 Level Manager		
DES_ROADWAY_Point-of-Slope-Selec				
DES_ROADWAY_Shoulder	14047			
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn		
DES_ROADWAY_Top-of-Cut	14052			
DRAFT_LC-Center_WT-3				

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



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

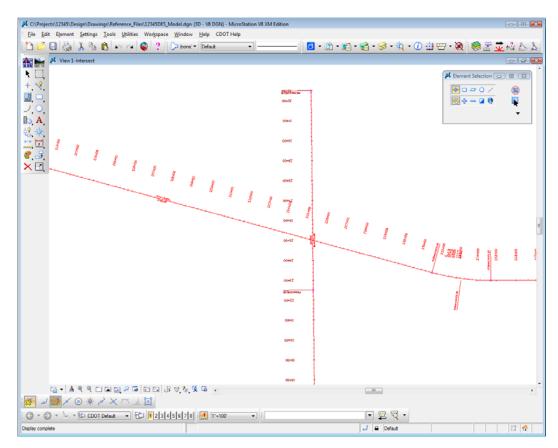


Recall the saved view

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

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

2. **<D>** in View 1.

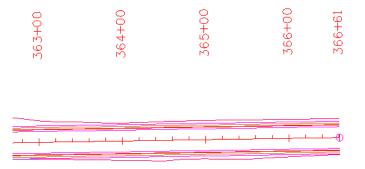


The saved view of the alignment and stationing is recalled in View 1. The appropriate levels from the saved view are turned on/off.

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



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



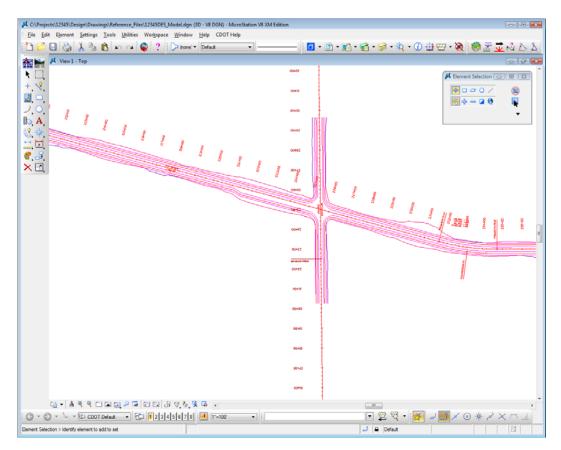
4. Select View Next.



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

Use key-ins to turn level on/off

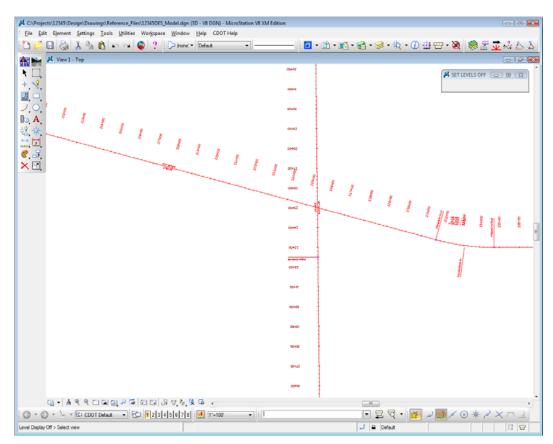
- 1. Key in **on=all**, then **<Tab>** or **<Enter>**.
- 2. **<D>** in View 1 to turn all level back on in this view.



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

3. Key in of=des*.

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



All **DES_** levels are turned off in view 1. You can use wildcards with keyins to turn a group of levels on or off.

Set the active level

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

Level Display					
2 3 4 5 6 7 8 (View Display +					
🖗 📴 🏳 (none) 🔻 Levels 💌 🖂	•				
					_
12345DES_Model.dgn					
└─ <u>₩</u> 12345SURV_Topo100.dgn					
					_
lame	Number	File	Logical	Used	
LG_COGO_Points	19001	12345DES_Model.dgn			
LG_PROPOSED_Hor-Alignment	19029	12345DES_Model.dgn		•	
LG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta					
ALG_PROPOSED_Hor-Alignment-Text					
ALG_PROPOSED_Hor-Cardinals					
ALG_SECONDARY_Hor-Alignment-Sta					
ALG_SECONDARY_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_SECONDARY_Hor-Cardinals					
DES_ROADWAY_Curb-Top	14041	12345DES_Model.dgn		•	
DES_ROADWAY_Edge-Of-Road-Oil	14016	12345DES_Model.dgn		•	
DES_ROADWAY_Lane-Line	14044	12345DES_Model.dgn		•	
DES_ROADWAY_Misc	14045	12345DES_Model.dgn		•	
DES_ROADWAY_Point-of-Slope-Selec	14046	12345DES_Model.dgn		•	
DES_ROADWAY_Shoulder	14047	12345DES_Model.dgn		•	
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn		•	
DES_ROADWAY_Top-of-Cut	14052	12345DES_Model.dgn		•	
DRAFT_LC-Center_WT-3	22018	12345DES_Model.dgn		•	

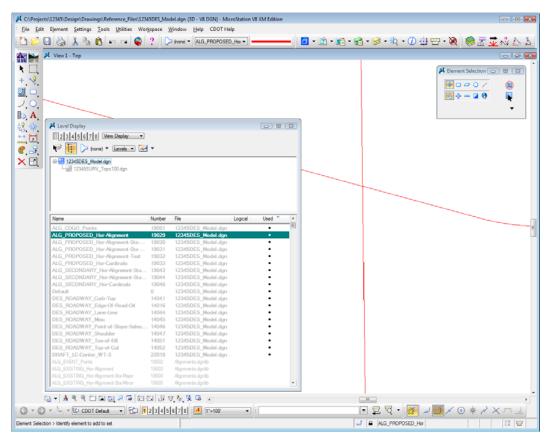
The background color changes to green.

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

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

Attributes	×
	_

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



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

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

- K:\Projects\12345\Design\Drawings\Reference_Files\12345DES_Model.dgn (3D V8 DGN) MicroStation V8 XM Edit X File Edit Element Settings Tools Utilities Workspace Window Help CDOT Help 🛅 📂 🗔 🍓 👗 🐁 🖍 🖛 🥥 🤤 ? 🛛 🗁 (none 🗸 (DES_ROADWAY_Toe 🔹 -----🧧 • 🗈 • 🛐 • 🥞 • 🥪 • 🖄 • 🕖 🖶 😁 • 🥘 View1 - Top 💽 🗆 🔿 🗸 2 🕅 🔶 🗕 🖬 \varTheta ÷ **A**, 📕 Level Dis - • • 2 3 4 5 6 7 8 View Display • 🔃 🎾 (none) 🕶 Levels 💌 🕶 8 3 × E 12345DES_Model.dgn ₲ • | ▲ ९ ९ ा ш छ| २ 届 | ⊡ ⊡ | 5 ए,१,६ ₲ ऱ (③ ▼ ⑤ ▼ 👆 ▼ 🔂 CDOT Defaut - 🔂 12345678 🛃 1-10 * 💿 🗡 🔜 لم 🐹 • 💱 😰 厄 2× J B DES_ROADWAY_Toe Element Selection > Identify element to add to set
- 3. Key in *lv=14051*, to change the active level to the **Toe-of-Fill** level.

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

4. Close the Level Display box.

Lab 2.3 - Working with the Level Manager

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

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



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

🖊 Level Manager								×
Levels <u>Filter</u> Edit								
🧐 🔀 📲 Symbolog	gy: ByLevel 💌 🏳 (none) 🔻 🖂	•						
- Model.dg	Name	Number	Description 📃	=	=	۲	Used 🔻	1
12345SURV_Tor	DRAFT_LC-Center_WT-3	22018	1	4	<u> </u>	~	•	1
- All Levels	DES_ROADWAY_Top-of-Cut	14052	13	DES_Top	<u> </u>	~	•	
🗄 🖒 Filters	DES_ROADWAY_Toe-of-Fill	14051	10	DES_Toe	<u> </u>	~	•	
	DES_ROADWAY_Shoulder	14047	5	0	<u> </u>	~	•	
	DES_ROADWAY_Point-of-Slope	14046	5	0	<u> </u>	~	•	
	DES_ROADWAY_Misc	14045	6	O	<u> </u>	~	•	
	DES_ROADWAY_Lane-Line	14044	4	DES_LA	<u> </u>	~	•	
	DES_ROADWAY_Edge-Of-Road-Oil	14016	3	O	<u> </u>	~	•	
	DES_ROADWAY_Curb-Top	14041	3	O	<u> </u>	~	•	
<►	Default	0		<u> </u>	<u> </u>	1	•	1
Active Level: DES ROADWA	Y Toe-of-Fill 1231 o	of 1231 displ	ayed; 1 selected;					

Level Libraries

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

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

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

1. Scroll through the list of levels.

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

2. Right click in the column headings and toggle Library on.

Levels <u>Filter</u> <u>E</u> dit			_						_
🖉 🔀 📲 Symbolog	ay: ByLevel 🔻 🏳 (none) 🔻 🖂	-							
- Model.dg	Name	P		Modified	iption	-		=	
42345SURV_Top	DRAFT_LC-Center_WT-3	Standard_Level	~	Name		1	4	<u> </u>	
- All Levels	DES_ROADWAY_Top-of-Cut	Roadway_Desig	•	Library		13	DES_Top	<u> </u>	
🗄 🕞 Filters	DES_ROADWAY_Toe-of-Fill	Roadway_Desig		Number	1	10	DES_Toe	3	
	DES_ROADWAY_Shoulder	Roadway_Desig		Description		5	0	2	
	DES_ROADWAY_Point-of-Slope DES_ROADWAY_Misc	Roadway_Desig Roadway Desig		File		5	0	2	
	DES_ROADWAT_MISC DES_ROADWAY_Lane-Line	Roadway Desig		Logical		4	DES LA	1	
	DES_ROADWAY_Edge-Of-Road-Oil					3	0	3	
	DES ROADWAY Curb-Top	Roadway Desig	~	COIOI		3	0	3	
• III •	•	1	~	Style					۱.
Active Level: DES_ROADWA	Y_Toe-of-Fill 1231 a	f 1231 displayed; 1 s	~	Weight					
				Material					
			~	Global Display					
				Global Freeze					
				Lock					
				Plot					
			~	Used	1				
				Elements					
				Elements Transparency					
					-				

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

Name		Number D	escription	-
DRAFT_LC-Center_WT-3	Standard_Levels	22018		1
DES_ROADWAY_Top-of-Cut	Roadway_Design	14052		13
DES_ROADWAY_Toe-of-Fill	Roadway_Design	14051		10
DES_ROADWAY_Shoulder	Roadway_Design	14047		5
DES_ROADWAY_Point-of-Slope	Roadway_Design	14046		5
DES_ROADWAY_Misc	Roadway_Design	14045		6
DES_ROADWAY_Lane-Line	Roadway_Design	14044		4
DES_ROADWAY_Edge-Of-Road-Oil	Roadway_Design	14016		3
DES ROADWAY Curb-Top	Roadway Design	14041		3

Change the look of the Level Manager box

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

Show/Hide Tools		
Click to Show or Hide Tools Description Number Description File Logical	E	QK Cancel
 ☑ Color ☑ Style ☑ Weight 	-	

The Level Manager box updates to reflect the changes.

Level Manager						, e 🛃
<u>L</u> evels <u>F</u> ilter <u>E</u> dit						
🖉 🔀 🛛 🚉 🖉 Symbolog	gy: ByLevel 🔻 🏳 (none) 🔻 🖂	•				
12345DES_Model.dg	Name			=	Used 🔻	
12345SURV_Tor	DRAFT_LC-Center_WT-3	1	-·-· 4		•	
- All Levels	DES_ROADWAY_Top-of-Cut	13	DES_Top	<u> </u>	•	
E Filters	DES_ROADWAY_Toe-of-Fill	10	DES_Toe	<u> </u>	•	
	DES_ROADWAY_Shoulder	5	O	<u> </u>	•	
	DES_ROADWAY_Point-of-Slope	5	O	<u> </u>	•	
	DES_ROADWAY_Misc	6	0	<u> </u>	•	
	DES_ROADWAY_Lane-Line	4	DES_LA	<u> </u>	•	
	DES_ROADWAY_Edge-Of-Road-Oil		0	<u> </u>	•	
	DES_ROADWAY_Curb-Top	3	0	<u> </u>	•	
4	Default	0	<u> </u>	<u> </u>	•	

3. Close the Level Manager box.

ByLevel Symbology

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

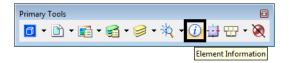
Note: When placing graphics using the CDOT Group Menus, the correct level, along with it's **ByLevel** symbology is automatically set for you.

Analyze an element

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

📕 Key-in	
vi=intersect	• 🛱 🛱 •

2. From the Primary toolbar, select Element Information.



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

🔑 Element Info	
Selection>	A
Line	
Line	
Arc	
Arc	-
General	(a)
Description	Line
Level	ALG_PROPOSED_Hor-Alignment
Color	ByLevel (3)
Line Style	ByLevel (0)
Weight	ByLevel (4)
Class	Primary
Template	None
Transparency	0
Geometry	¥
Groups	S)
Extended	8
Raw Data	() ()

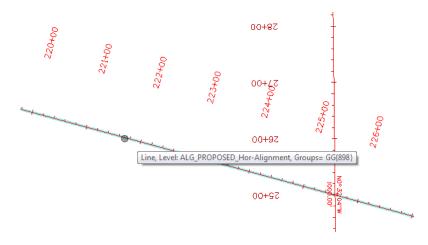
Element Information shows that the alignment was placed on **ALG_PROPOSED_Hor_Alignment** level and placed with **ByLevel** Symbology.

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

📕 Level Manager						• 🗙
Levels <u>Filter</u> Edit						
🥯 🔀 📲 Symbolog	gy: ByLevel 🔹 🍃 (none) 🕶	-				
- Model.dg	Name	=		=	Used 🔻	^
-12345SURV_Top	Default	0	0	0	•	
- All Levels	ALG_SECONDARY_Hor-Cardi	nals 35	0	<u> </u>	•	
🗄 🖒 Filters	ALG_SECONDARY_Hor-Align	ment-Sta-M 📕 35	0	<u> </u>	•	
	ALG_SECONDARY_Hor-Align	ment-Sta 📕 35	O	<u> </u>	•	
	ALG_PROPOSED_Hor-Cardin	als 🗧 3	0	<u> </u>	•	
	ALG_PROPOSED_Hor-Alignm	ent-Text 3	0	<u> </u>	•	
	ALG_PROPOSED_Hor-Alignm	ent-Sta-Minor 📕 3	O	<u> </u>	•	
	ALG_PROPOSED_Hor-Alignm	ent-Sta-Major 📕 3	O	<u> </u>	•	_
	ALG_PROPOSED_Hor-Alignm	ent 3	O	4	•	
<►	ALG COGO Points	5	0	<u> </u>	•	-
Active Level: DES ROADWA	Y Toe-of-Fill	1231 of 1231 displayed; 1	selected:			

Review Pop-up information

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



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

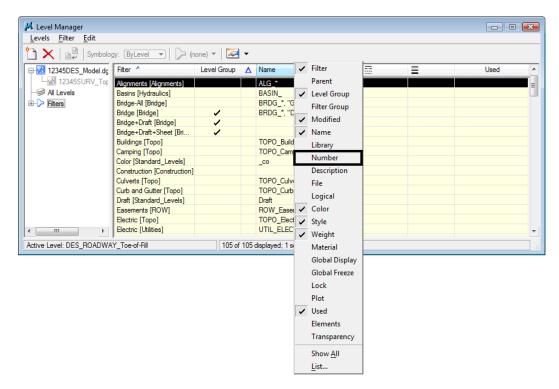
Level Filters

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

Review the filters

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

<u>L</u> evels <u>F</u> ilter <u>E</u> dit									
🗋 🗙 🚉 Symbolog	gy: ByLevel 💌 🛛 🏳 (no	one) 🔻 🛛 🚾	•						
12345DES_Model.dg	Filter ^	Level Group	Δ	Name	-	==	=	Used	
- <u>₩</u> 8 12345SURV_Top	Alignments [Alignments]			ALG_*					
- 🥪 All Levels	Basins [Hydraulics]			BASIN_					
+ 🔁 Filters	Bridge-All [Bridge]			BRDG_*, "GEO					
	Bridge [Bridge]	~		BRDG_*, "Default"					
	Bridge+Draft [Bridge]	~							
	Bridge+Draft+Sheet [Bri	~							
	Buildings [Topo]			TOPO_Building_*					
	Camping [Topo]			TOPO_Camping_*					
	Color [Standard_Levels]			_co					
	Construction [Construction]								
	Culverts [Topo]			TOPO_Culvert_*					
	Curb and Gutter [Topo]			TOPO_CurbGutr_*					
	Draft [Standard_Levels]			Draft					
	Easements [ROW]			ROW_Easement_*					
	Electric [Topo]			TOPO_Electric_*					
	Electric [Utilities]			UTIL_ELECTR					



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

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

🎾 (none) 👻 🖾 🕶								
▲ Filter ▲	Level Group	Δ	Name	Number	=	=	Ξ	ľ
Alignments [Alignments]			ALG *	19000-1				Í :
Basins [Hydraulics]			BASIN_	11000-1				Ľ
Bridge-All [Bridge]			BRDG_*, "GEO					
Bridge [Bridge]	~		BRDG_*, "Default"					
E Bridge+Draft [Bridge]	~							
Bridge+Draft+Sheet [Bri	~							
Buildings [Topo]			TOPO_Building_*	1-9999				
			TOPO_Camping_*					
			_co					
- Electric [Topo]			TOPO_Electric_*	1-9999				
	Alicoments (Alicoments) Basins [Hydraulics] Bridge-All [Bridge] Bridge [Bridge] Bridge+Draft [Bridge] Bridge+Draft -Sheet [Bri Buildings [Topo] Camping [Topo] Color [Standard_Levels]	 ▶ Filter ▲ Level Group ▶ Alforments (Alforments) Basins (Hydraulics) Bridge (Bridge) Bridge (Bridge) ▶ Bridge (Bridge) ▶ Bridge (Draft (Bridge) ▶ Bridge (D	A Fiter Level Group A Alignments Basins [Hydraulics] Bridge-All [Bridge] Bridge-All [Bridge] Bridge-Draft [Bridge] Alidge+Draft [Bridge] Camping [Topo] Calor [Standard_Levels] Construction [Construction] Culvents [Topo] Cub and Gutter [Topo] Draft [Standard_Levels] Easements [ROW] A Alignments Alignments Alignments A Alignments Alignments Alignments Alignments Alignments Alignments Alignments Alignments Bridge-Ridge] A Bridge-Ridge-Nation A Bridge-Ridge-Nation A Bridge-Ridge-Nation A Bridge-Ridge-Nation A Bridge-Nation A Bridge-Ridge-Nation A Bridge-Ridge-Nation A Bridge-Nation A Bridge-Ridge-Nation A Bridge-Ridge-Nation A Bridge-Nation A Bridge-Nation Bridge-Nation A Bridge-Nation Bridge-Nation A Bridge-Nation A Bridge-Nation Bridge-Nation Bridge-Nation A Bridge-Nation A Bridge-Nation A Bridge-Nation A Bridge-Nation A Bridge-Nation Bridge-Nation Bridge-Nation Bridge-Nation Bridge-Nation Bridge-Nation Bridge-Nation Bridge-Nation	► Level Group ▲ Name Alignments (Alignments) ALG • Basins [Hydraulics] BASIN_ Bridge-All [Bridge] BRDG_*, "GEO Bridge+Draft [Bridge] ✓ Buildings [Topo] TOPO_Building_* Color Standard Levels] _co Construction [Construction] TOPO_Culvert_* Cub and Gutter [Topo] TOPO_Cubert_* Draft [Standard_Levels] _cof Cub math Gutter [Topo] TOPO_Cubert_* Cub and Gutter [Topo] TOPO_Cubert_* Cub math Gutter [Topo] TOPO_Cubert_* Cub math Gutter [Topo] TOPO_Cubert_* Cub math Gutter [Topo] TOPO_Eurifer_* Draft Easements [ROW] ROW_Easement_*	► Filter ▲ Level Group ▲ Name Number All_priments [All_priments] ALG • 19000-1 Basins [Hydraulics] BASIN	Filter Level Group ∧ Name Number Allorments (Alignments) ALG * 190001 Basins [Hydraulics] BASIN	Filter Level Group △ Name Number □ All_criments [All_criments] ALG * 19000-1 □ Basins [Hydraulics] BASIN_ 11000-1 □ Bridge-All [Bridge] BRDG_*. "GEO □ □ Bridge+Draft [Bridge] ✓ BRDG_*. "Default" □ Buildings [Topo] TOPO_Building_* 1-9999 □ Comping [Topo] TOPO_Camping_* 1-9999 □ Color [Standard Levels] _co 21000-2 □ Culverts [Topo] TOPO_CurbGutr_* 1-9999 □ Cuters [Topo] TOPO_CurbGutr_* 1-9999 □	Filter Level Group ∆ Name Number Image: Construction C

- **Note:** Level filters are stored in level libraries (note the library name in brackets beside the filter).
- 4. In the left pane of the Level Manager, Click the + symbol next to the Filters to expand the list.

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

Levels <u>Filter</u> <u>E</u> dit										
🎦 🗙 🚉 Symbology: ByLevel 💌		🏳 (none) 🔻 🛛 🚾 🔻								
-> Bridge-All [Bridge]	*	Filter ^	Level Group	Δ	Name	Number	-	==	Ξ	4
— Construction [Construction]		Alignments [Alignments]			ALG_*	19000-1				í a
🗄 🏳 GIS [GIS]		Basins [Hydraulics]			BASIN_	11000-1				L
Hydraulics [Hydraulics]		Bridge-All [Bridge]			BRDG_*, "GEO					
+	c	Bridge [Bridge]	~		BRDG_*, "Default"					
Haterials and Geotechnical [Materials		Bridge+Draft [Bridge]	~							
		Bridge+Draft+Sheet [Bri	~							
		Buildings [Topo]			TOPO_Building_*					
	=	Camping [Topo]			TOPO_Camping_*					
		Color [Standard_Levels]			_co	22000-2				
		Construction [Construction]			T000 01 1	21000-2				
-> Roadway		Culverts [Topo]			TOPO_Culvert_*					
Surface		Curb and Gutter [Topo]			TOPO_CurbGutr_* Draft	22000-2				
⊕-> ROW [ROW]		Draft [Standard_Levels] Easements [ROW]			ROW_Easement_*					
⊕-> Standard Levels [Standard_Levels]		Electric [Topo]			TOPO Electric *					
Survey IROW1	Ŧ	Electric [Topo]			TOPO_Electric_	1-3333		_		1

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

Levels <u>Fi</u> lter <u>E</u> dit					
🖉 🔀 🛛 📲 🖉 Symbology: ByLevel 💌	(none) 🔻 🛛 🔁 👻				
-> Bridge-All [Bridge]	△ Name		=	Used	
-> Construction [Construction]	DES_Roadway_*				
🕀 🕞 GIS [GIS]	DES_ROADWAY	4 DES_LA		•	
Hydraulics [Hydraulics]	DES_ROADWAY	5 0	<u> </u>	•	
+ Landscape and Environmental [Landsc	DES_ROADWAY	5 0	<u> </u>	•	
⊕ → Materials and Geotechnical [Materials_	DES_ROADWAY	3 0	<u> </u>	•	
中 🗁 Roadway Design [Roadway_Design]	DES_ROADWAY	6 0	<u> </u>	•	
-> Fences	DES_ROADWAY		<u> </u>	•	
	DES_ROADWAY		3	•	
-> Phasing	DES_ROADWAY	_	3	•	
-> Roadway	DES_ROADWAY_App		<u> </u>		
→> Surface	DES_ROADWAY_Cont		1		
⊕-> ROW [ROW]		3 0			
+-> Standard Levels [Standard_Levels]	DES_ROADWAY_Curb	70	1		
-> Survey [ROW]		3 0	3		
4 111	DES_ROADWAY_Edg	40	2		

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

- 📕 Level Managei - • 💌 Levels <u>Filter</u> Edit 🥯 💓 📄 Symbology: ByLevel 🔹 🕞 (none) 🔻 🔜 🔻 Bridge-All [Bridge] Name Used Δ Construction [Construction] DES Guardrail 🗄 🕞 GIS [GIS] DES_GUARDRAIL_Cable GUARDRAI Hydraulics [Hydraulics] DES_GUARDRAIL_En... 5 GUARDRAI. ⊕-> Landscape and Environmental [Landsc DES_GUARDRAIL_Im... 5 0 GUARDRAI. H> Materials and Geotechnical [Materials_ DES GUARDRAIL Tr... 5 DES_GUARDRAIL_Ty ... 5 Roadway Design [Roadway_Design] GUARDRAL DES_GUARDRAIL_Ty... GUARDRAI. 5 Fences DES_GUARDRAIL_Symb 5 DES_GUARDRAIL_Ty... 5 0 Guardrai GUARDRAI. Phasing DES_GUARDRAIL_Ty ... 5 GUARDRAI.. 2 Roadway DES_GUARDRAIL_Ty... GUARDRAI... 5 Surface ROW [ROW] Standard Levels [Standard_Levels] Survey (ROW) Active Level: DES_ROADWAY_Toe-of-Fill 10 of 1231 displayed; 1 selected
- 7. Click on **Guardrail** to review all design levels with Guardrail in the name.

- **Note:** This filter does not have any used levels in the active design file. All levels are from the library.
- 8. Right-click in any column heading and turn on the Number column.
- 9. Click on the upper level **Roadway Design** filter and review levels.

evels <u>F</u> ilter <u>E</u> dit									
🗟 🔀 🚉 Symbology: ByLevel 🔻 🕞	(nor	ne) 🔻 🔀 🕶							
-> Bridge+Draft+Sheet [Bridge]	Δ	Name	Number			Ξ	=	Used	
-> Bridge-All [Bridge]			14000-14999						
-> Construction [Construction]		DES_ROADWAY	14044		4	DES_LA		•	
🕀 🔁 GIS [GIS]		DES_ROADWAY	14047		5	O	<u> </u>	•	
Hydraulics [Hydraulics]		DES_ROADWAY	14046		5	<u> </u>	<u> </u>	•	
Eandscape and Environmental [Landsc		DES_ROADWAY			•	0	<u> </u>	•	
Materials and Geotechnical [Materials]		DES_ROADWAY			-	0	2	•	
🖃 🔁 Roadway Design [Roadway_Design]		DES_ROADWAY			-	0	<u> </u>	•	
-> Fences		DES_ROADWAY				DES_Top		•	
- 🕞 Guardrail		DES_ROADWAY				DES_Toe		•	
-> Phasing		DES_BIKEPATH	14000	-	-	•	3		
-> Roadway		DES_GUARDRAIL_Cable			-	GUARDRAI	-		
-> Surface		DES_FENCE_Plastic DES_PHASING	14002	H		FENCE_Plastic			
🕀 🕞 ROW [ROW]		DES_FENCE_Barrier		H	•	FENCE Barr	1		
🗄 🕞 Standard Levels [Standard Levels] 💌		DES_FENCE_bainer		Н		FENCE_bair			
H H			14005	H	7	FENCE_CIId			

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

Use level filters to turn levels on/off

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

1. Close the Level Manager.

2. Open the Level Display box from the Primary toolbar.

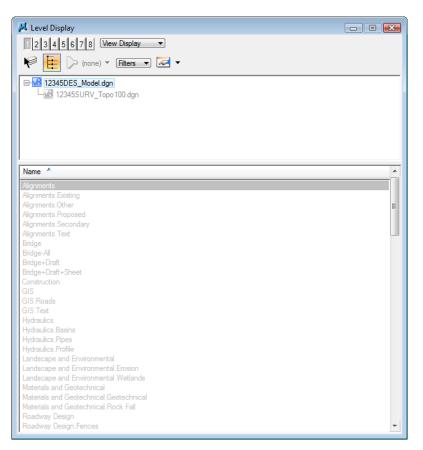


- 3. Set the active level to **Default** by **double-clicking** it in the **Level Display** box.
- 4. Turn *off* all levels.
- 5. Change the **Show** option from **Levels** to **Filters.**

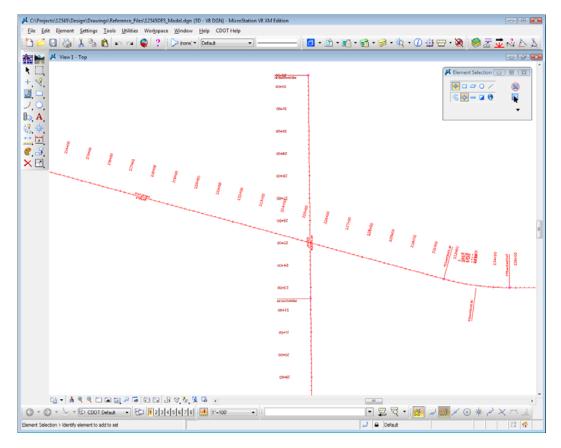
✓ Level Display	•				
Name	Number	File	Logical	Used 🔻	•
ALG_COGO_Points	19001	12345DES_Model.dgn		•	=
ALG PROPOSED Hor-Alignment	19029	12345DES Model.dgn		•	
ALG_PROPOSED_Hor-Alignment-Sta	19030	12345DES Model.dgn		•	
ALG_PROPOSED_Hor-Alignment-Sta	19031	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Alignment-Text	19032	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Cardinals	19033	12345DES_Model.dgn		•	
ALG_SECONDARY_Hor-Alignment-Sta	19043	12345DES Model.dgn		•	
ALG_SECONDARY_Hor-Alignment-Sta	19044	12345DES_Model.dgn		•	
ALG_SECONDARY_Hor-Cardinals	19046	12345DES_Model.dgn		•	
Default	0	12345DES_Model.dgn		•	
DES_ROADWAY_Curb-Top	14041	12345DES_Model.dgn		•	
DES_ROADWAY_Edge-Of-Road-Oil	14016	12345DES_Model.dgn		•	
DES_ROADWAY_Lane-Line	14044	12345DES_Model.dgn		•	
DES_ROADWAY_Misc	14045	12345DES_Model.dgn		•	
DES_ROADWAY_Point-of-Slope-Selec	14046	12345DES_Model.dgn		•	
DES_ROADWAY_Shoulder	14047	12345DES_Model.dgn		•	
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn		•	
DES_ROADWAY_Top-of-Cut	14052	12345DES_Model.dgn		•	
DRAFT_LC-Center_WT-3	22018	12345DES_Model.dgn		•	
ALG_EVENT_Points	19002	Alignments.dgnlib			
ALG_EXISTING_Hor-Alignment	19003	Alignments.dgnlib			
ALG_EXISTING_Hor-Alignment-Sta-Major	19004	Alianments.danlib			
Aca_cAlo Hina_hor Alghmonic old Major					

6. Sort the Level filters alphabetically in ascending order.

7. Toggle *on* the Alignments filter.



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



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

Use level filters to select a group of levels

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



📕 Level Display					×
1 2 3 4 5 6 7 8 View Display					
🖗 📴 🔽 (none) 🔻 Levels 🔻	•				
□-₩ 12345 ↓ 12 Untitled					
Alignments Existing Other Proposed Secondary Text					
All Levels Name	Number	File	Logical	Used 🔻	*
ALG COGO Bridge+Draft	19001	12345DES Model.dgn			Ξ
ALG_PROP Bridge+Draft+Sheet	19029				
ALG_PROP Bridge-All	19030	12345DES_Model.dgn			
ALG_PROP GIS	19031				
ALG_PROP Roads	19032				
ALG_PROP Text +	19033				
ALG_SECONDARY_Hor-Augnment-Sta	² 19043				
ALG_SECONDARY_Hor-Alignment-Sta	19044	12345DES_Model.dgn			
ALG_SECONDARY_Hor-Cardinals	19046	12345DES_Model.dgn		•	
Default	0	12345DES_Model.dgn		•	
DES_ROADWAY_Curb-Top	14041	12345DES_Model.dgn		•	
DES_ROADWAY_Edge-Of-Road-Oil	14016	12345DES_Model.dgn		•	
DES_ROADWAY_Lane-Line	14044	12345DES_Model.dgn		•	
DES_ROADWAY_Misc	14045	12345DES_Model.dgn		•	
DES_ROADWAY_Point-of-Slope-Selec		12345DES_Model.dgn		•	
DES_ROADWAY_Shoulder	14047	12345DES_Model.dgn		•	
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn		•	
DES_ROADWAY_Top-of-Cut	14052	12345DES_Model.dgn		•	
DRAFT_LC-Center_WT-3	22018	12345DES_Model.dgn		•	- 11
ALG_EVENT_Points					
ALG_EXISTING_Hor-Alignment					
ALG_EXISTING_Hor-Alignment-Sta-Major					
ALG_EXISTING_Hor-Alignment-Sta-Minor	19005	Alignments.dgnlib			

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

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

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

🗸 Level Display				
1 2 3 4 5 6 7 8 View Display -				
Norme 🕶 Levels 🔹 🖉	•			
E-12345DES_Model.dgn				
12345SURV_Topo100.dgn				
Name	Number	File	Logical	Used 🔻
ALG_Proposed_*	19000-199			
ALG_PROPOSED_Hor-Alignment				
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn		
ALG_PROPOSED_Hor-Alignment-Sta	19031	12345DES_Model.dgn		•
ALG_PROPOSED_Hor-Alignment-Text	19032	12345DES_Model.dgn		•
ALG_PROPOSED_Hor-Cardinals	19033	12345DES_Model.dgn		•

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

- 📕 Level Display - • • 2 3 4 5 6 7 8 View Display - 📴 🕞 Alignme 🕶 Levels 💌 🐱 🔻 - 12345 (none) -<u>v8</u> 12 Alignments Existing Other Proposed Secondary Text All Levels Name Number File Logical Used 3 Bridge 19000-1999 ALG_Propose Bridge+Draft Bridge+Draft+Sheet 19029 19030 19031 Bridge-All Construction 12345DES_Model GIS ALG PROP 19032 12345DES_Model.dgn ٠ Roads 19033 12345DES Model.dgn ALG PROP • Text
- 4. Set the List Filter back to (none) to show all levels in the Level Display list.

- 5. Close the Level Display box.
- 6. **Fit** View 1.
- 7. Save your settings (File > Save Settings).
- 8. Exit MicroStation.

LAB 3 - 3D View Control

Chapter Objectives:

After completing this exercise you will know how to:

- Check the elevation of an element
- Rotate a view using the *rv* = keyin
- Rotate a view using the 3-point method
- Rotate a view by element
- Rotate to a standard view (Top, Front, etc.)
- Check and set the Active Depth
- Check and set the **Display Depth**

Lab 3.1 - Starting MicroStation

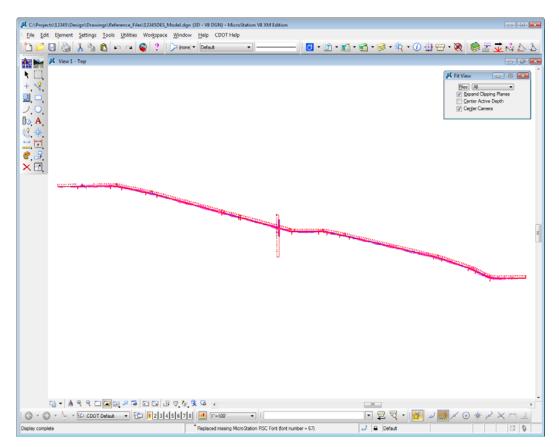
1. Start MicroStation and open the design file **12345DES_Model.dgn**from the **C:\Projects\12345\ Design\Drawings\Reference_Files** folder.

You will use this CDOT project, which has proposed graphics placed at the correct elevations, to practice with the concept of 3D view controls.

2. Look in the top title bar of the MicroStation window and note that this is a 3D file.

И с	:\Projects\12345\De	esign\Drawings\Re	ference_Files\12345DE	S_Model.dgn (3D -)	V8 DGN) - MicroStation V8 XM Edition	
: <u>F</u> il	e <u>E</u> dit E <u>l</u> ement	<u>S</u> ettings <u>T</u> ools	; <u>U</u> tilities Wor <u>k</u> spa	ce <u>W</u> indow <u>H</u> e	lp CDOT Help	
: 1	📂 县 🍓	λ 🔓 🔒	n a 🚳 ?	i 🏳 (none) 🕶 De	efault 🔹	-

3. **Fit View** 1



The design file shows only the proposed alignments because only the ALG levels were turned on when settings were last saved.

Lab 3.2 - Checking element elevations

You can quickly check the coordinates of any point (including the Z coordinate in a 3D file) by placing a tentative point.

1. Key in *vi=intersect* to recall the alignment saved view.

Note: Always press **<Enter>** or **<Tab>** after keyins.

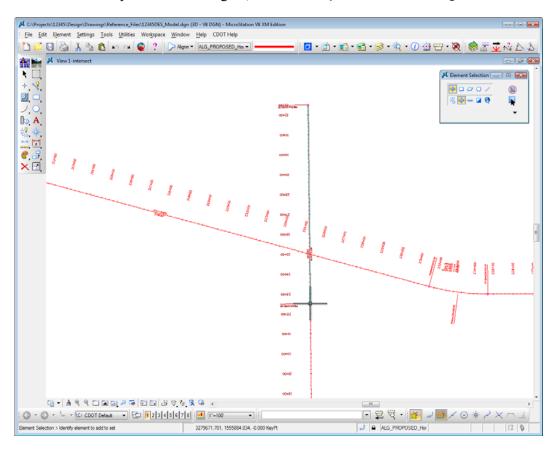
- K C:\Projects\12345\D rence_Files\12345DES_Model.dgn (3D - V8 DGN) - MicroSt <u>File Edit Element Settings Tools Utilities Workspace Window Help</u> CDOT Help 🛅 📂 🗔 🍓 👗 🐁 🛍 🗠 🛥 🚳 ? 🕞 hone:* Defaut 🧧 • 🗈 • 🖬 • 😭 • 🥩 • 🖎 • 🕧 🖶 • 🥘 View1-inters K CL �, +, Eles: Al . + ₩ / ₽ 8 E Expand Clipping Plane
 Center Active Depth
 Center Camera -200 000E2 00+G 1000 00+95 1 00443 00462 -----00+22 0044 G • A 9 9 C C R 7 5 C C B 7 7 8 6 7 • 🗉 🛱 📆 • 🗸 💿 🔆 XX J 🔒 Default 2 🖪 Display complete Replaced missing MicroStation RSC Font font number = 67)
- 2. **<D>** anywhere in View 1 to recall the saved view.

The design file has some graphics, like the horizontal alignment, placed at elevation 0. Other graphics, like contours generated by InRoads, are placed at an elevation range of approximately 6600 ft.

3. On the Attributes toolbar, set the filter to Alignments-Proposed and then set the active level to ALG_PPROPOSED_Hor-Alignment.

Attributes		
<mark>├── (none: ▼</mark> Default ▼	Attributes	
(none)	Alignr Default	
Alignments	Filter: Alignments.Proposed	
Existing Other	Default	🗸 o [
Proposed Secondary	ALG_PROPOSED_Hor-Alignment	✓ °
Text	ALG_PROPOSED_Hor-Alignment-Sta-Major	✓ ○
All Levels	ALG_PROPOSED_Hor-Alignment-Sta-Minor	✓ ○
Bridge	ALG_PROPOSED_Hor-Alignment-Text	✓ ○
	ALG_PROPOSED_Hor-Cardinals	🗸 o
Bridge+Draft	ALG_PROPOSED_Hor-Keypoints	🗸 o 🖌
Bridge+Draft+Sheet	ALG_PROPOSED_Hor-Tangent-Lines	🗸 o
Bridge-All	ALG_PROPOSED_Hor-Tangent-Text	🗸 o 🖌
Construction	ALG_PROPOSED_Ver-Alignment	🗸 o 🖌
GIS	ALG_PROPOSED_Ver-Alignment-Text	🗸 o 📘
Roads	ALG_PROPOSED_Ver-Keypoints	🖌 o
Text	ALG PROPOSED Ver-Tangent-Lines	🖌 o 🖌
Hydraulics 👻	ALG PROPOSED Ver-Tangent-Text	` ~ ~

- 4. Place a **Tentative** point **<T>** on the North-South crossroad alignment just south of the intersection.
 - **Note:** The **Tentative** button in the CDOT workspace is set to the *middle* button on the mouse. If you want to change it, select **Workspace > Button Assignments**.



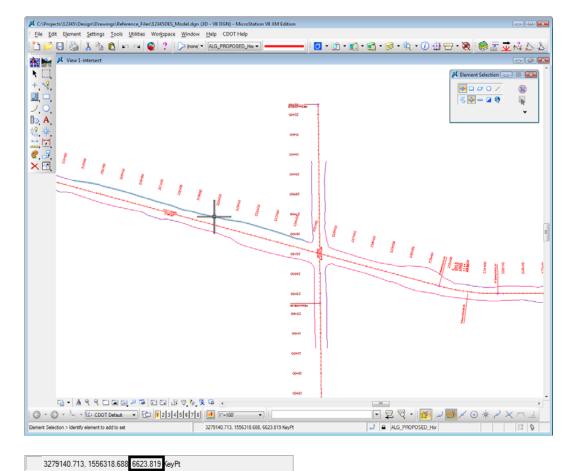
The tentative point jumps to the closest keypoint on the element. You will see a large crosshair at the keypoint. You'll learn more about keypoint and other snap modes in other chapters.

A tentative point is a temporary location that displays the coordinates for the point in the *Message Field* (bottom of screen).

3279671.701, 1555884.034, 0.000 KeyPt

Note that the centerline alignment graphic in the top view (plan view) has a Z value of $\mathbf{0}$. Therefore it has an elevation of $\mathbf{0}$. 5. Open Level Display and set the level Filter to None to show all levels. Sort by Name and then Used levels. Turn on the levels DES_ROADWAY_Toe-of-Fill and DES_ROADWY_Top-of-Cut.

🗸 Level Display					2
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					_
- 12345DES_Model.dgn					
└─ <u>v</u> & 12345SURV_Topo100.dgn					
		-			_
Name	Number	File	Logical	Used 🔻	_
ALG_COGO_Points	19001	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Alignment	19029	12345DES_Model.dgn		•	
ALG_PROPOSED_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_PROPOSED_Hor-Alignment-Sta					
ALG_PROPOSED_Hor-Alignment-Text					
ALG_PROPOSED_Hor-Cardinals					
ALG_SECONDARY_Hor-Alignment-Sta	19043	12345DES_Model.dgn			
ALG_SECONDARY_Hor-Alignment-Sta		12345DES_Model.dgn			
ALG_SECONDARY_Hor-Cardinals	19046	12345DES_Model.dgn			
		12345DES_Model.dgn			
DES_ROADWAY_Curb-Top	14041	12345DES_Model.dgn		•	
DES ROADWAY Edge-Of-Road-Oil	14016	12345DES Model.dgn		•	
DES ROADWAY Lane-Line	14044	12345DES Model.dgn		•	
DES ROADWAY Misc	14045	12345DES Model.dgn		•	
DES ROADWAY Point-of-Slope-Selec	14046	12345DES Model.dgn		•	
DES ROADWAY Shoulder	14047	12345DES Model.dgn		•	
DES_ROADWAY_Toe-of-Fill	14051	12345DES_Model.dgn		•	1
DES_ROADWAY_Top-of-Cut		12345DES_Model.dgn			
DRAFT LC-Center WT-3	22018	12345DES_Model.dgn		•	1
	19002	Alignments.dgnlib			E.
ALG_EVENT_Points					

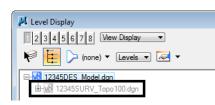


6. **<T>** on one of the cut or fill lines and note its elevation (Z coordinate).

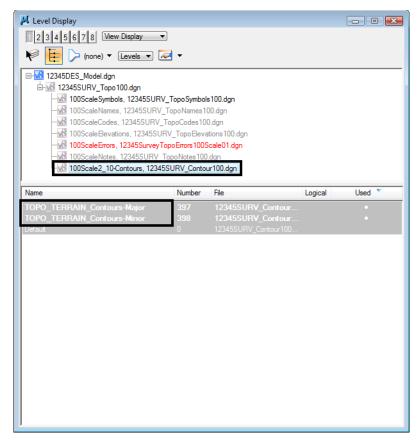
7. **<T>** on a few other top or toe lines and note the elevations.

The graphics should be placed at a depth of approximately 6620 ft. or within a close range.

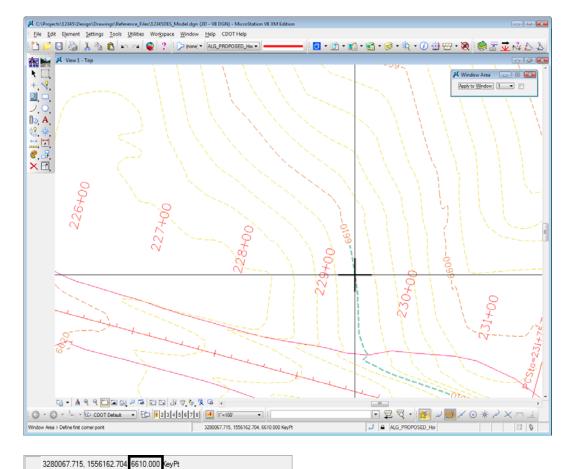
8. In **Level Display**, click on the + symbol next to the file **12345SurveyTopo100Scale.dgn** to expand the list of reference files.



9. Highlight the reference_100Scale2_10,12345SURV_Contour100.dgn and turn on levels TOPO_TERRAIN_Contours-Major and TOPO_TERRAIN_Contours-Minor.

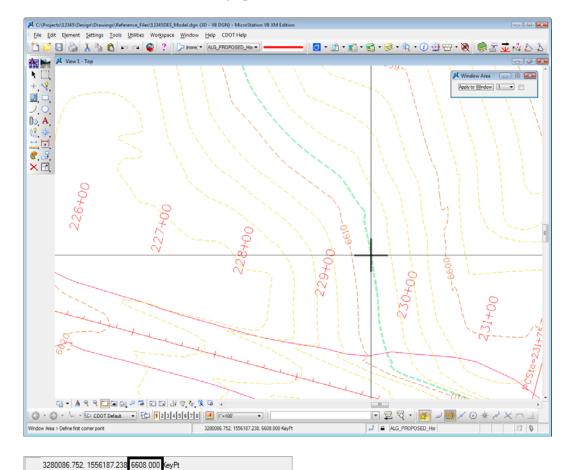


- **Note:** The contour file is a reference to the design model file. You'll learn more about references in the *Create the Project and Design Model* lab.
- 10. Window in on some of the contours to the right of the intersection so that you can easily read the labels.



11. **<T>** on some of the major contour graphics and note the elevations.

The major contours are placed at 10 ft. intervals.



12. **<T>** on some of the minor contour graphics and note the elevations.

The minor contours are placed at 2 ft. intervals.

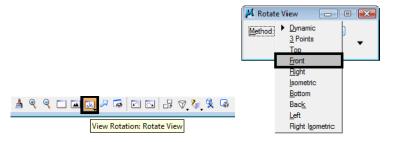
- 📕 Level Display - • • 2 3 4 5 6 7 8 View Display - 🔛 🏳 (none) 🔻 Levels 🔹 🕶 E-Model.dgn ⊨-w 12345SURV_Topo100.dgn - 100ScaleSymbols, 12345SURV_TopoSymbols100.dgn 100ScaleNames, 12345SURV_TopoNames100.dgn -w 100ScaleCodes, 12345SURV_TopoCodes100.dgn -weight 100ScaleElevations, 12345SURV_TopoElevations100.dgn 100ScaleErrors, 12345SurveyTopoErrors100Scale01.dgn 100ScaleNotes, 12345SURV TopoNotes100.dgn 100Scale2_10-Contours, 12345SURV_Contour100.dgn Name Number File Logical Used 397 12345SURV_Contour.. TOPO_TERRAIN_Contours-Major ٠ TOPO_TERRAIN_Contours-Minor 398 12345SURV_Contour.. •
- 13. In Level Display, turn off the existing major and minor contour levels as shown.

14. In Level Display, highlight the **12345DES_Model.dgn** file to work with the master file levels again and turn all levels on.

🗸 Level Display						×
1 2 3 4 5 6 7 8 View Display -						
K Levels V 🖉	- •					
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E-w 12345SURV_Topo100.dgn						
100ScaleSymbols, 12345SURV_						
-100ScaleNames, 12345SURV_1						
- 100ScaleCodes, 12345SURV_T		-				
-₩ 100ScaleElevations, 12345SUR ₩ 100ScaleErrors, 12345SurveyTo						
- 100ScaleEnors, 12345SURVey To - 100ScaleNotes, 12345SURV To		-				
100Scale2 10-Contours, 123455		-				
		arroo.agri				
Name	Number	File		Logical	Used 🔻	-
ALG_COGO_Points			S_Model.dgn			=
ALG_PROPOSED_Hor-Alignment	19029		S_Model.dgn		•	
ALG_PROPOSED_Hor-Alignment-Sta						
ALG_PROPOSED_Hor-Alignment-Sta	19031	12345DE				
ALG_PROPOSED_Hor-Alignment-Text			S_Model.dgn			
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ALG_PROPOSED_Hor-Alignment-Text ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Lane-Line DES_ROADWAY_Lane-Line DES_ROADWAY_Misc DES_ROADWAY_Misc DES_ROADWAY_Shoulder DES_ROADWAY_Toe-of-Fill DES_ROADWAY_Top-of-Cut	19032 Set <u>Act</u> All O <u>n</u> All O <u>ff</u> <u>I</u> nvert C Off By I All Exce <u>S</u> ave Fil Level <u>M</u> 14052	12345DE3 12245DE3 200/Off Element ept Element Iter <u>1</u> 2345DE3	Model dgn Model dgn			
ALG_PROPOSED_Hor-Alignment-Text ALG_PROPOSED_Hor-Cardinals ALG_SECONDARY_Hor-Alignment-Sta ALG_SECONDARY_Hor-Cardinals Default DES_ROADWAY_Curb-Top DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Edge-Of-Road-Oil DES_ROADWAY_Lane-Line DES_ROADWAY_Lane-Line DES_ROADWAY_Misc DES_ROADWAY_Shoulder DES_ROADWAY_Shoulder DES_ROADWAY_Toe-of-Fill	19032 Set <u>A</u> cti All O <u>n</u> All O <u>ff</u> <u>I</u> nvert C Off By I All Exce <u>S</u> ave Fil Level <u>M</u>	12345DE3 12245DE3 200/Off Element ept Element Iter <u>1</u> 2345DE3	S_Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn _Model.dgn			

Lab 3.3 - Rotating a 3D Standard View

1. From the View Control toolbar, select Rotate View.



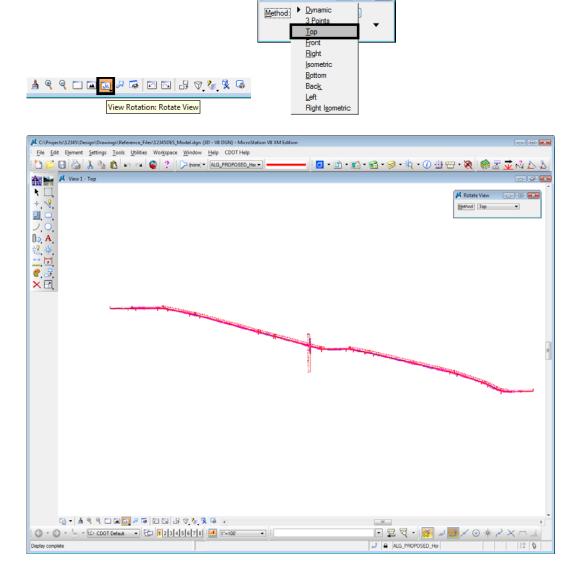
2. In the Tool Settings box, set Method to Front.

3. **Fit** View 1.

A C:\Projects\12345\Design\Drawings\Reference_Files\12345DES_Model.dgn (3D - V8 DGN) - MicroStation V8 XM Edition	n
File Edit Element Settings Tools Utilities Workspace Window Help CDOT Help	
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View1-Front	
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+ 😵	[ies:] (All [/ Epoand Cloping Planes
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G • O •	
Display complete	J ALG_PROPOSED_Hor 2 S

The view is rotated from Top (plan view) to Front (elevation view). Note that some graphics, (like the red horizontal alignments you checked earlier), are displayed at elevation 0 below the proposed graphics (edges of oil, cut/fill lines, etc.), which are displayed at the correct elevation (6620 ft. range).

Note: Rotating to the Front view is a handy way to visually check your file for erroneous information or bad elevations which "spike" down to 0.



📕 Rotate View

- • •

4. Select the **Rotate View** command again and set the **Method** to **Top**.

This returns the view to a plan view and its original un-rotated settings.

5. Key in *vi=front*.

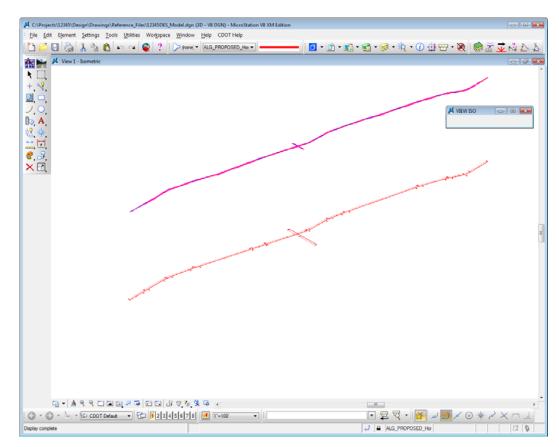
6. **<D>** to select the view.

C:\Projects\12345\Design\Drawings\Reference_Files\12345DES_Model		
File Edit Element Settings Tools Utilities Workspace Win		
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View 1 - Front		
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Display complete		J 🔒 ALG_PROPOSED_Hor 😂 🖏

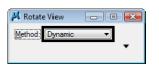
The view is rotated back to an elevation view. You can use the **vi**= keyin to rotate to standard views (top, front, isometric, etc.) as well as to recall saved views.

- 7. Key in *vi=iso*.
- 8. **<D>** to select the view.

9. **Fit** the view.

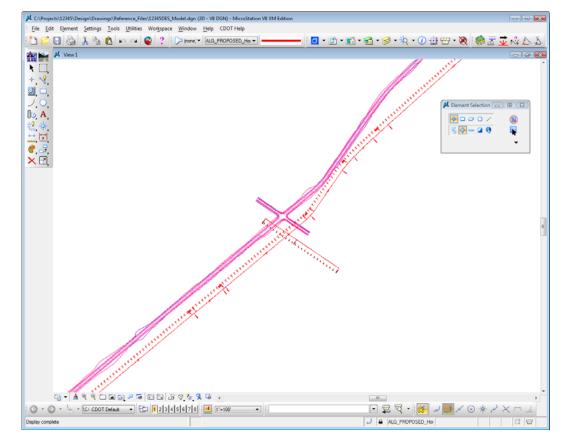


- 10. This gives another 3D perspective of the design file graphics.
- 11. Select the Rotate View command again and set the Method to Dynamic.



12. **<D>** near the intersection in the view to identify it for rotation, then move your cursor in a counter-clockwise motion.

As you move your cursor the view dynamically rotates.



13. **Zoom in** on the intersection and continue experimenting with the **Dynamic** rotation option until you're comfortable with the tool.

Note: If you **<T>** on a location (like the intersection center) after selecting the **Dynamic** method, you will rotate about the tentative point.

Lab 3.4 - Check the Active Display Settings

Check the Current Active Depth

- 1. Rotate the view back to Top.
- 2. **Fit** the view.
- 3. In the MicroStation **Key-in** box, key in *az=\$* to check the active depth.
 - **Note:** The dollar symbol (\$) is used to request current settings. You can also use a question mark (?).

MicroStation prompts: Select View.

- 4. **<D>** anywhere in View 1 (top view).
 - **Note:** Active and Display depths are view dependent (i.e. you set these in each view). Therefore, you have to tell MicroStation which view you want to check the **Active Depth** in by data pointing in the view.

5. Check the **Message** field.

View 1: Active Depth=-8847.120

MicroStation returns the current active depth setting. Yours may be different than shown. This means if any graphics are placed in the design file's top view without giving them an elevation, they will go in at this elevation or depth.

Since the depth axis of the top view (plan view in a 3D file) is the Z axis, this means graphics will be placed at this elevation.

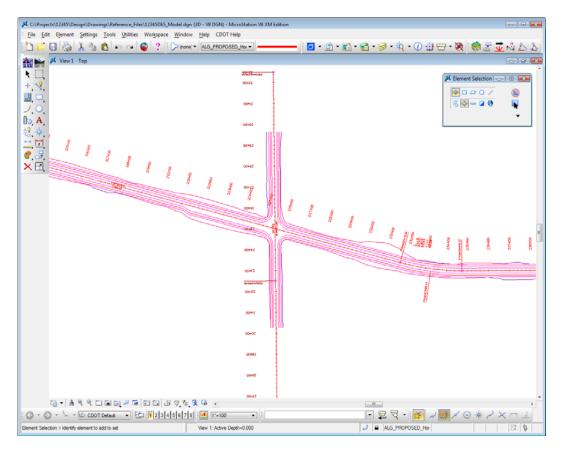
- 6. Key in *az=0*.
- 7. **<D>** to select the view.
- 8. Key in **az=\$**.
- 9. **<D>** to select the view.

View 1: Active Depth=0.000

You have now set the active depth to 0. Any new graphics placed in the file will be placed at an elevation of 0, unless you snap to an element at another elevation.

Check Current Display Depth Settings

1. **Window** in around the intersection.



- 2. Key in *dp=\$*, then press <Enter>.
- 3. **<D>** in View 1.
- 4. Check the **Message** for the current display depth settings.

View 1: Display Depth=-10490.498,17125.695

The current display depth in the top view is set very large. Yours may vary from that shown. Therefore, you are able to see all the graphics in the top view since they fall in the depth (elevation) range.

5. Key in **dp=6000,7000**.

- C:\Projects\12345\Des ign\Draw ngs\Reference_Files\12345DES_ModeLdgn (3D - V8 DGN) - MicroStation V8 XM Edit File Edit Element Settings Tools Utilities Workspace Window Help CDOT Help 🛅 📁 🗔 🍓 👗 🐁 🛍 🗠 🛥 🚭 ? 🕞 (none) = 🛛 ALG_PROPOSED_Hore 🧧 • 🗈 • 📬 • 🧃 • 🥩 • 🖄 • 🕖 🖶 • 🥘 View1 - Top K CL 📕 SET DDEPTH ABSOLUTE 👝 🕮 😫 G • A 9 9 C B B 2 5 0 B 3 7 4 9 6 7 • | | 💽 🛱 👻 😿 🖉 🔜 × 💿 🔆 XX ALG_PROPOSED_Hor 8 8 Display complete Vew 1: Display Depth=6000.000.7000.000
- 6. **<D>** anywhere in View 1 and look at your graphics.

The graphics placed at this elevation range (shoulder, edge-of-oil, cut/fill lines, etc.) now appear in the view. All of the graphics placed at elevation 0, like the red proposed horizontal alignment, stationing and alignment text, are not displayed.

7. Key in *dp*= -10,100.

- C:\Pro s\Reference_Files\12345DES_Model.dgn (3D - V8 DGN) - MicroStation V8 XM Edit • File Edit Element Settings Tools Utilities Workspace Window Help CDOT Help 🛅 📂 🗔 🍓 👗 🐁 🛍 🗠 🛥 😵 ? 🕞 (nore) = 📶 ALG_PROPOSED_Ha = 🧧 • 🗈 • 📬 • 🧃 • 🥩 • 🖄 • 🕖 🖶 • 🥘 View1 - Top 📕 SET DDEPTH ABSOLUTE 👝 🛞 🖾 25+00 2, (b A 1111111 1 22,000 00+42 1 100 00+94 10 37400 8 G - A 9 9 C B B 2 5 C B B 7 9 9 9 6 7 ③ - ⑤ - 🦢 - 🔂 CDOT Defaut - 🔂 月 2 3 4 5 6 7 8 🛃 11-100 • : [💽 😰 🟹 + 😿 < 💿 🔆 ALG_PROPOSED_Ho Display complete Vew 1: Display Depth=-10.000,100.000
- 8. **<D>** anywhere in View 1 and look at your graphics.

Only the elements placed in this elevation range (e.g. the proposed horizontal alignment and text placed at 0) appear in the view. All other graphics are outside of this elevation range and are not displayed.

9. **Fit** View 1.

All of the graphics appear in the view.

- 10. Key in **dp=\$**.
- 11. **<D>** anywhere in View 1 and check the **Message** field.

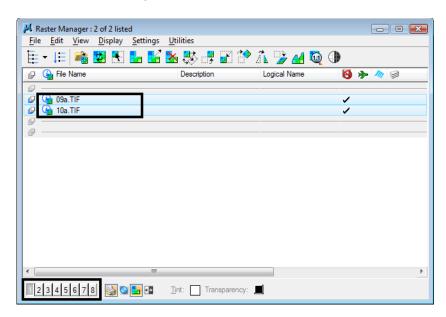
View 1: Display Depth=-10490.498,17125.695

The display depth range is automatically expanded after using the **Fit** command to show all of the elements in the view.

Lab 3.5 - Turn On Raster Images

1. Select File > Raster Manager.

2. Select both raster images using the **Shift** or **CTRL** buttons and toggle on View 1 from the lower left of the dialog box.



- 3. Close the Raster Manager box.
- 4. Fit View 1.

The raster images are now on for a future lab.

- 5. Select File > Save Settings.
- 6. This saves all settings changes, including open views, levels turned on/off, active and display depth settings, etc. The next time you enter this design file, it will appear just as you left it.
- 7. Exit MicroStation.

LAB 4 - Creating the Project and Design Model

In this lab, you'll create a new **12345** project using the **Create Project Directory Structure** program. Then, you'll create a new Roadway Design model from an auto-populated file (generated by the Create Project Directory Structure program) and by creating one from a CDOT 3D seed file. Once created, you'll reference other discipline's work in order to start the design.

In subsequent labs, you'll use a similar process to create other discipline model files (Bridge, Landscape & Environmental, Traffic, etc.).

Chapter Objectives:

After completing this exercise you will know how to:

- Create a new project and project configuration file (PCF) using the **Create Project Directory Structure** program.
- Re-assign a project number via the PCF.
- Create a new design model using a CDOT seed file.
- Create a new design model using an auto-populated model file.
- Attach a reference.
- Turn reference displays on/off.
- Turn reference levels on/off.

Lab 4.1 - Create a Sample 99999 project

In this example, you are starting your project before a project number has been assigned. You will temporarily assign the project number 99999. Later in this lab, you will learn how to change this project number by updating MicroStation's project configuration file.

- From the Windows Start Menu, select Start > All Programs > _CDOT_CADD_Information > V08.09.xx-XM > Create XM Project Directory Structure.
- Verify that the *Project Template* location is set to C:\Workspace > Workspace-CDOT_XM > Project Template.
- 3. Set *Destination* to C:\Projects.
- 4. Key in **99999** for the **Project Code**.

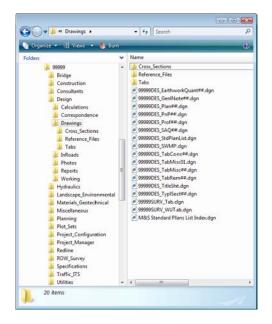
Project Template: Workspace/Workspace-CDOT_XM		
Project Template: Workspace\Workspace-CDOT_XM	I\\Project Template Apply	
Destination: C:\Projects	Close	
Job Project Code (JPC): 99999	Close	
Create Project Configuration File	About	

The project number must be a 5-digit numeric code.

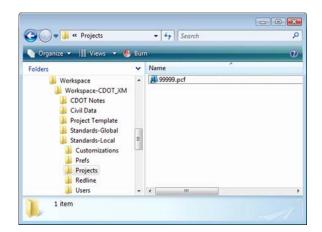
- 5. Toggle on Create Project Configuration File.
- 6. Select Apply.

The project directory structure is created in the **C:\Projects** folder and the Project Configuration File (PCF) file is created.

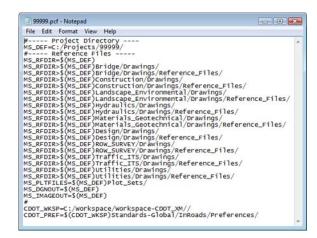
- 7. Close the CDOT Project Creation Utility.
- Use *My Computer* or *Windows Explorer* to navigate to the C:\Projects\99999 folder to review your project directory structure. Note that several generic CDOT files (e.g. 99999Des_Model.dgn) have automatically been created.



9. Use *My Computer* or *Windows Explorer* to navigate to C:\Workspace > Workspace - CDOT_XM > Standards-Local > Projects.



10. Double-click on the **99999.pcf** file to open it in **Notepad**.



The PCF defines a specific directory that MicroStation defaults to when opening up a DGN file or referencing model files. It makes setting paths much easier in MicroStation.

If your project was installed on a project manager's machine, you could edit this file to specify the location. See the **CDOT PCF Management** workflow for more information.

- 11. Close the *Notepad* file. If prompted to save changes, select No.
- 12. Close My Computer or Windows Explorer.

You will later edit the 99999 project and update it with an actual project number. For now, you will continue working in the example 12345 project.

Lab 4.2 - Select Group Environment

Run the **Select Group Environment Utility** to determine which CDOT level libraries will be attached and available for use.

 From your desktop's Start Menu, choose Start > All Programs > _CDOT_CADD_Information > 08.09.xx-XM > Select Group Environment. In the Select Group Environment box, select xxMulti-Discipline, and then select OK.

CDOT Select Group Environment	- • •
Bridae xxMulti-Discipline	ОК
	Cancel
	About

Any MicroStation design file that is now opened will have all level libraries (general and all disciplines) automatically attached.

Note: You only have to run this program once. The only time you have to re-run it is if you wish to switch groups on the same machine.

Lab 4.3 - Start MicroStation

 Start MicroStation by double-clicking the desktop shortcut or by selecting Start > All Programs > Bentley > MicroStation V8 XM > MicroStation V8 XM Edition.

Set the Workspace components

- 1. In the lower portion on the dialog box, set:
 - User: CDOT User

This sets user preferences and users customized options like custom toolbars.

- Project: **12345**
- *Note:* Be sure to re-set this option because it will default to you upper level project directory.

This Project component of the workspace should already be set by the PCF file created by running the *CDOT Project Creation Utility*. It sets the proper path for opening, saving and attaching files.

• Interface: CDOT

This loads custom menus and tools at the organizational level. The CDOT interface will load, among other things, the **CDOT Groups Menu**.

Look in:	12345	-	🌀 🏂 📂 🗔 🔹	Ö 🚰 🖻	
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	✓	111	- (Open	User: CDOT User
		Station DGN Files (*.dgn)			roject: 12345
	C	en as read-only		Options Inte	arface: CDOT

Lab 4.4 - Create a new Design Model File

There are two ways you can create a new file: Using a seed file or from a CDOT autopopulated model file. You'll practice both in this session.

Creating a new design file using a CDOT seed file

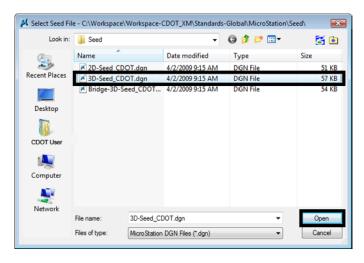
Look in:	12345	•	🕝 🤌 📂 🛄 🔻	<u>") 🔁 🖻</u>		
(Pa)	Name	Date modified	Туре	New file		_
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lecent Places	Construction	6/10/2009 1:33 PM	File Folder			
	Consultants	11/21/2007 3:38 PM	File Folder			
·	🌗 Design	6/10/2009 1:33 PM	File Folder			
Desktop	Hydraulics	6/10/2009 1:33 PM	File Folder			
100	landscape_Environme	6/10/2009 1:33 PM	File Folder			
	Materials_Geotechnical	6/10/2009 1:33 PM	File Folder			
CDOT User	Miscellaneous	6/10/2009 1:33 PM	File Folder			
	🍌 Planning	6/10/2009 1:33 PM	File Folder		1	
	Plot_Sets	6/10/2009 1:33 PM	File Folder			
Computer	Project_Configuration	6/10/2009 1:33 PM	File Folder			
	🍌 Project_Manager	6/10/2009 1:33 PM	File Folder			
	🍌 Redline	6/10/2009 1:33 PM	File Folder			
Network	ROW_Survey	6/10/2009 1:33 PM	File Folder			
	Specifications	11/21/2007 3:38 PM	File Folder			
	Traffic_ITS	6/10/2009 1:33 PM	File Folder			
	🍌 Utilities	6/10/2009 1:33 PM	File Folder			
	•	111		•		
	File name:		•	Open	User: CDOT User	-
						-
	Files of type: Micro Static	n DGN Files (*.dgn)	•	Cancel	Project: 12345	
	Open as	read-only		Options	Interface: CDOT	

1. From the MicroStation Manager dialog box, select the **New File** icon.

2. In the **Seed File** section, choose the **Browse** button.

Save in:	12345		G 🦸 🗈 🛙	UT 🚰	۲	
e.	Name		Date modified	Туре	Size	
24	🔒 Bridge		6/10/2009 1:33 PM	File Folder		
Recent Places	Construction	i	6/10/2009 1:33 PM	File Folder		
1000	Consultants		11/21/2007 3:38 PM	File Folder		
	🔒 Design		6/10/2009 1:33 PM	File Folder		
Desktop	Hydraulics		6/10/2009 1:33 PM	File Folder		Ŧ
	Landscape_E	nvironme	6/10/2009 1:33 PM	File Folder		
N	Materials_Ge	otechnical	6/10/2009 1:33 PM	File Folder		
CDOT User	퉬 Miscellaneo u	ıs	6/10/2009 1:33 PM	File Folder		
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Computer	Project_Conf	figuration	6/10/2009 1:33 PM	File Folder		
	Project_Man	ager	6/10/2009 1:33 PM	File Folder		
	🍌 Redline		6/10/2009 1:33 PM	File Folder		
Network	ROW Survey		6/10/2009 1-33 PM	File Folder		
	File name:			•	Save	е
	Save as type:	Micro Station	DGN Files (*.dgn)	•	Canc	el

3. Highlight the seed file **3D-Seed_CDOT.dgn** and choose **Open**.



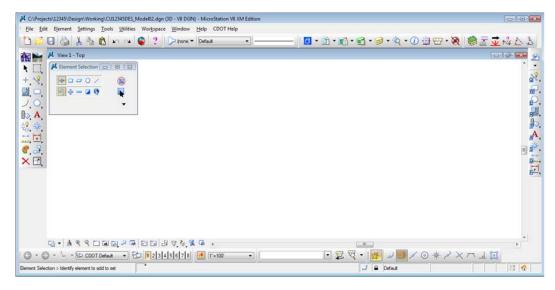
- **Note:** The seed file will copy over all of CDOT's default MicroStation settings when creating the new file.
- 4. Set the **Directory** to **\Design\Working**.
- 5. Set Save as Type: to MicroStation DGN Files (*.dgn).
- 6. Key in the name CU12345DES_Model02.dgn.
- 7. Select Save to create the file.

Save in:	Working	🕌 Working 🗸 🗸					P 📖	•	3
æ.	Name	Date modif	Туре	Size					
Desktop			This fol	der is em	pty.				
Computer									
Computer Exercised Computer	File name:	CU12345DE	S_Model02	dgn			•		Save

The file is created from the seed file and placed in the **Working** folder. When creating a new working model file, you'll prefix it with your initials (you'll use CU for CDOT USER for this class).

The working folder is for files that you are using for your design process prior to the design being finished. Once complete, you will move the files to the **Reference_Files** folder and take the CU off of the file name.

- 8. In the MicroStation Manager box, choose Open.
- 9. The blank file opens with all of the standard settings from the CDOT seed file.



Check settings

1. Select **Settings > Design File > Working Units**. These are the CDOT standard units copied from the seed file.

DGN File Settings	
Category Active Angle Active Scale Axis Color Element Attributes Fence	Modify Working Unit Settings Linear Units Format: MU Master Unit: Survey Fee ▼ Label: * Sub Unit: Survey Inc ▼ Accuracy (0.123)
Grid Isometric Locks Rendering Snaos	Advanced Settings Resolution: 12000 per Distance Survey Foot Working Area: 1.42159E+008 Miles Solids Area: 157.829 Miles Solids Accuracy: 8.33338-006 Survey Feet
Stream Viewe Working Units	Angles Format: DD MM SS • Mode: Bearing • Accuracy: 0.12 • Focus Item Description Select category to view.

- 2. **Cancel** the dialog box.
- 3. Choose File > Close to return to the MicroStation Manager.

4. From the **MicroStation Manager** select the file and press the **Delete** key on your keyboard and choose **Yes** from teh **Delete File** box to delete the file you just created.

Look in:	🎍 Working	•	G 🗊 🖻 🗔 -	ື 🚰 🛈		3D - V8 DGN
(Ea	Name	Date modified	Туре	Size		
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L. Johnson		Type: Di Size: 57.	SDES_Model02.dgn GN File 0 KB odified: 8/10/2009 12:18	S PM		
		10	Yes	No		
		45DES_Model02.dgn	- 1	Open	User:	CDOT User
	and the second second	and the second second second			Project:	-
	Files of type: CAD I	ies (".dgn;".dwg;".dd)	-	Cancel		

Lab 4.5 - Create a New File by copying an auto-populated model file

- 1. In the MicroStation Manager, navigate to the \Design\Drawings\Reference_Files folder.
- 2. Select 12345DES_Model##.dgn and choose Open.

Look in:	Reference_	Files	-	0 🦸	• 🛄 💙	ື່ 🖸 🚰	۲	3D - V8 DGN	
(Alia	Name	<u>^</u>	Date modifie	d	Туре	Size			
2	# 12345DES_	Align.dgn	8/11/2009 12	:03 PM	DGN File	35 KB			
Recent Places	A 12345DES_	Interchange.dgn	8/11/2009 12	:03 PM	DGN File	34 KB			
1000	A 12345DES_	Intersec100SH86.dgn	8/11/2009 12	:03 PM	DGN File	28 KB			
_	× 12345DES_	Model.dgn	8/11/2009 12	:03 PM	DGN File	360 KB			
Desktop	12345DES_	Model55.dgn	8/11/2009 12	:03 PM	DGN File	505 KB			
577	× 12345DES	Model65.dgn	8/11/2009 12	:03 PM	DGN File	35 KB			
	# 12345DES_	Model##.dgn	8/11/2009 12	:03 PM	DGN File	35 KB			
CDOT User	12345DES_	Phasing.dgn	8/11/2009 12	:03 PM	DGN File	35 KB			
	× 12345DES_	Prof.dgn	8/11/2009 12	:03 PM	DGN File	149 KB	1		
	A 12345DES_	Prof03.dgn	8/11/2009 12	:03 PM	DGN File	35 KB			
Computer	🛃 Elbert.dgn		8/11/2009 12	:03 PM	DGN File	1,326 KB			
Network	File name:	12345DES_Madel##	#.dgn			Open	User	CDOT User	
	Files of type:	CAD Files (*.dgn;*.dv	vg:*.dvf)		•	Cancel	Project	12345	,
		Open as read-only				Options	Interface	CDOT	

3. After opening the file, select File > Save As, navigate to the \Design\Working folder key in the name CU12345DES_Model02.dgn and select Save.

📈 C:\Proje	cts\12345\Design\D	rawings\Reference	e_Files\12345DES_I	Model##.dgn (30	D - V8	DGN) - Micro	Station V8 XM	Edition
: <u>F</u> ile <u>E</u> dit	Element Settin	gs <u>T</u> ools <u>U</u> tili	ties Wor <u>k</u> space	Window Hel	p C	DOT Help		
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₹, ₽,	CDOT User							
× 🖾,								J
	Computer							
	N							
	Network							
		File name:	CU12345DES_M	odel02.dgn		Ŧ	Save	
ļ		Save as type:	Micro Station V8 E	GN Files (*.dgn)		•	Cancel	
							Options	.4

The file is copied to the new name into the working folder.

Check settings

1. Select **Settings > Design File > Working Units**. These are the CDOT standard units, which are the same as the seed file units.

DGN File Settings	
Category Active Angle Active Scale Axis Color Element Attributes Fence Gind Isometric Locks Rendering Snaps	Modify Working Unit Settings Linear Units Format: MU ▼ Qustom QK Master Unit: Survey Fet ▼ Label: * Sub Unit: Survey Inc ▼ Label: * Accuracy 0.123 ▼ Advanced Settings Resolution: 12000 per Distance Survey Foot Working Area: 14.2159E+008 Miles Solids Area: 157.829 Miles Solids Accuracy: 8.33333E-006 Survey Feet Edit
Stream Viewe Working Units	Angles Format: DD MM SS Mode: Bearing Accuracy: 0.12 Focus Item Description Select category to view.

- 2. **Cancel** the dialog box.
 - **Note:** The auto-populated file provides the same settings as a seed file. You can create a new file either way with the same results. However, by copying a CDOT auto-populated file, the name is automatically set to the CDOT standard, you only have to change the counter.

Lab 4.6 - Attach the Survey/Topo reference

After creating your initial design model, you can attach other groups' work that you'll need to start your design. In this case, attach the existing survey and topographic information.

1. Select File > Reference.

Note: You can also choose **References** from the **Primary** toolbar.



- 2. On the **References** dialog, select **Tools > Attach**.
- 3. Your current Directory should be C:\Projects\12345 (obtained from your PCF file).
- 4. Navagate to \ROW_Survey \Drawings \Reference_Files
- 5. Select 12345SURV_Topo100.dgn from teh list of files.

Look in:	Reference_	Files	•	G 🤌 📂		S 🖻	3D - V8 DGN
Recent Places Desktop CDOT User CODT User Computer	I2345SUR\ III IIII IIIIIIIIIIIIIIIIIIIIIIII	_Contour100.dgn	8/11/2 8/11/2 8/11/2 8/11/2 8/11/2 8/11/2 8/11/2 8/11/2 8/11/2 8/11/2 8/11/2 8/11/2 8/11/2	nodified 009 12:03 PM 009 12:03 PM	Type DGN File DGN File		Attachment Method Interactive
	 ✓ File name: Files of type: ✓ 	III 12345SURV_Topo 100.dg MicroStation DGN Files (* Save Relative Path		•		Open Cancel Dptions	I

6. Set Attachment Method to Interactive and select OK.

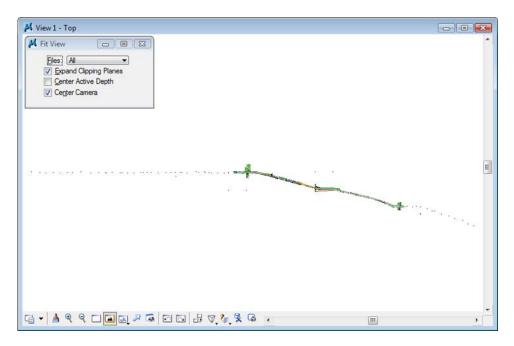
The Interactive method allows you to supply additional reference settings in the next dialog box.

- 7. In the **Reference Attachment** settings box, key in a **Logical Name** of *Survey/ Topo* and set:
 - Orientation to Coincident World (to align Master file and Reference file global origins)

- **Scale** to **1:1** (to bring in graphics full scale)
- Nested Attachments to No Nesting
- Display Raster Reference on
- Global Linestyle Scale None
- 8. Select **OK**.

File Name: 12	2345S:URV Topo 100.dan
-	\Drawings\Reference_Files\12345SURV_Topo100.dgr
_	OT Default
Logical Name: Su	Terra
-	obal Origin aligned with Master File
Description. Gi	obal Origin algred with Master File
ientation:	
View	Description
Coincident	Aligned with Master File
Coincident - Wor	d Global Origin aligned with Master File
Named Fences (none)
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Toggl	es: ■ I · · · · · · · · · · · · · · · · · ·
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9. **Fit** the view.



The Survey/Topo reference is attached to the design model master file. The graphics come in at their true coordinates (Coincident-World) and the actual size (1:1 scale).

📕 View 1 - Top	
Poply to Window:	

10. Window in on the Survey graphics at the beginning of the project.

11. In the **Reference** dialog, make sure **Show Hierarchy** is turned on and highlight the Survey/Topo reference on the right-side.

📕 References (1 of 1 unique, 1 dis	📕 References (1 of 1 unique, 1 displayed)											
Tools Settings												
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Hierarchy	Slot	P	File Name			Model	Description	Logical	Presentation	•	2	۹ 🔒
CU12345DES_Model02.dgn	1		12345SUR	V_Topo 100.dg	n	CDOT Default	Global Origin aligne	Survey/Topo	Wireframe	\checkmark	1.	1

12. Toggle the **Display** option off.

Tools Settings								
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Hierarchy	Slot 🏱 File Name	Mo	odel Desc	ription Logical	Presentation	•	2	· 6
E CU12345DES_Model02.dgn	1 12345SUR\	/_Topo100.dgn C[DOT Default Globa	al Origin aligne Survey/Topo	Wireframe		v •	·
	Scale 1.000000	: 1.000000	Orientation	Top <u>R</u> otation 0°0	'0''			

13. **Fit** the view.

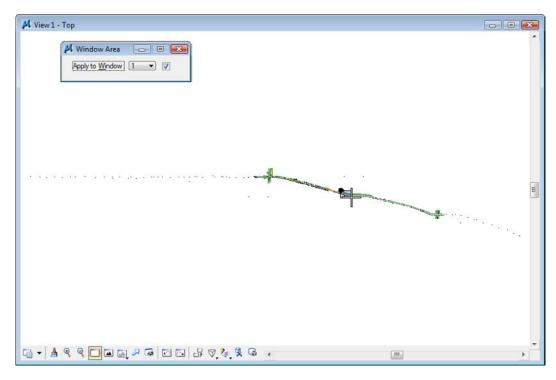
With the reference display turned off, there are no graphics to display, since the design model is currently empty.

- 14. Toggle the **Display** option back *on*.
- 15. **Fit** the view.

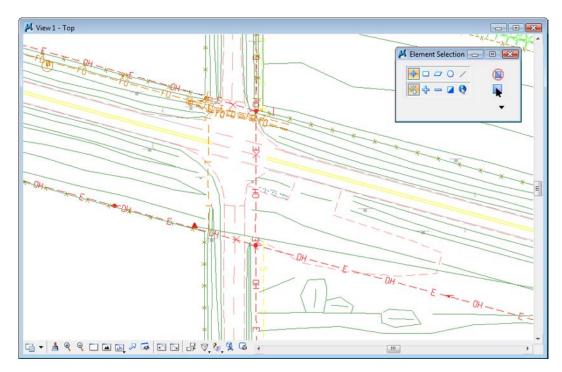
The design file is now ready to placed proposed graphics with survey and topo graphics referenced for information purposes.

Turn survey levels on/off

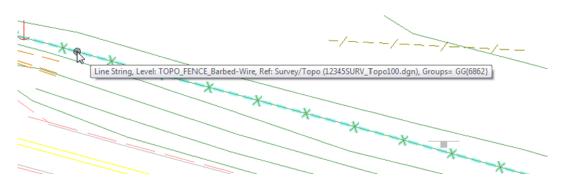
1. Window around the intersection near the center of the project.



2. **Zoom** in as shown.



3. Hover over one of the barbed wire fence lines.



Basic element information "pops up" at your cursor location. MicroStation tells you that the element is on level **TOPO_FENCE_Barbed-Wire** and located in the **Survey/Topo** reference.

- 4. Open Level Display from the Primary toolbar.
- 5. Highlight the master file CU12345DesignModel02.dgn.
- 6. Sort on **Used** levels.

↓ Level Display 2 3 4 5 6 7 8 View Display ▼ ↓ 1 5 6 7 8 View Display ▼ ↓ ↓ 1 5 6 7 8 View Display ▼ ↓ ↓ 1 5 6 7 8 View Display ▼ ↓				<u>x</u>
Name	Number	File	Used 🔻	
ALG_COGO_Points	19001	Alignments.dgnlib		E

- **Note:** That there are no used levels in the master file since there are no graphics in the design model file.
- 7. Highlight the **Survey/Topo** reference underneath the master file

8. Sort on **Name**, then sort on **Used**.

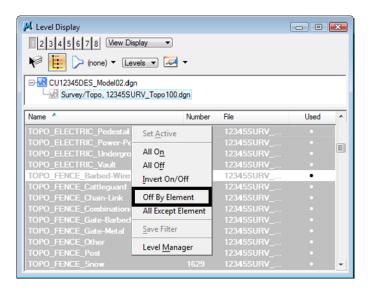
2 3 4 5 6 7 8 View Display			
🌾 📴 🏳 (none) 🔻 Levels 💌 🖉	•		
⊡-105 CU12345DES_Model02.dgn			
Survey/Topo, 12345SURV_Topo 10).dan		
Name	Number	File	Used 🔪
Default	0	12345SURV	•
TOPO_BUILDING_Concrete-Pad		12345SURV	
TOPO_BUILDING_Deck-W-Roof	4130	12345SURV	
TOPO_BUILDING_Frame-House			
TOPO_BUILDING_Office-Business			
TOPO_BUILDING_Pump-Island			
TOPO_BUILDING_Pump-Island-Canopy			
TOPO_BUILDING_Sheds-Barns			
TOPO CULVERT Corr-Steel-Pipe	267		
TOPO_CULVERT_Corr-Steel-Pipe-Other			

Note: That the reference has several used levels.

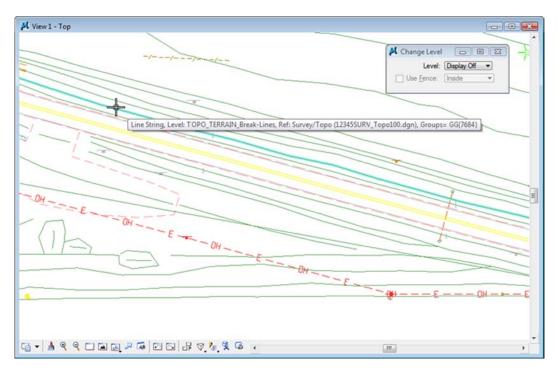
9. Turn off the level TOPO_FENCE_Barbed-Wire.

Level Display 2 3 4 5 6 7 8 View Display ✓ Conne) Cut2345DES_Model02.dgn Survey/Topo, 12345SURV_Topo 10				×
Name ^	Number	File	Used	
TOPO_ELECTRIC_Pedestal	4373	12345SURV	•	
TOPO_ELECTRIC_Power-Pole	4375	12345SURV		
TOPO_ELECTRIC_Underground-Line	4310	12345SURV		Ε
TOPO_ELECTRIC_Vault	4380			
TOPO_FENCE_Barbed-Wire	1610	12345SURV	•	
TOPO_FENCE_Cattleguard				
TOPO_FENCE_Chain-Link	1639			
TOPO_FENCE_Combination-Wire				
TOPO_FENCE_Gate-Barbed-Wire	1630			
TOPO_FENCE_Gate-Metal	1632			
TOPO_FENCE_Other				
TOPO_FENCE_Post				
TOPO_FENCE_Snow	1629	12345SURV		

10. Right click in the list of levels and select Off By Element.

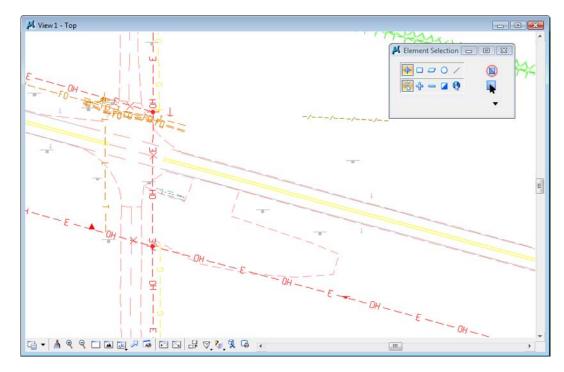


11. **<D>** on one of the green breaklines to turn off the level **TOPO_TERRAIN_Break-Lines.**



12. **Update** the view.

```
G ▼ ≜ ° ° ⊂ ■ œ 2 ≈ ⊡ ⊂ 8 7 % % %
```



13. Turn other Survey levels on/off as desired.

Note: You have control over all reference levels just like levels in the master file.

- 14. Turn all Survey levels back *on*.
- 15. From the MicroStation Main toolbar, select Delete Element.

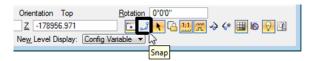


16. **<D>** on the barbed wire fence.



The command is now not available because the barbed wire fence is in the reference file, not the active file. You can not delete or modify reference graphics.

17. In the Reference dialog, turn off **Snap** for the **Survey/Topo** reference.



18. Try to tentative snap on some of the Survey graphics.

With **Snap** turned off, you can't tentative to the graphics in the reference file.

19. In the Reference dialog, and turn off Locate for the SurveyTopo reference.

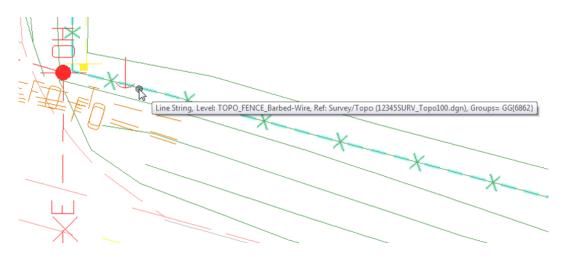
Orientation Top	Rotation	0°0'0"	
Z -178956.971		1, 4 11 2	-> <* 🏢 🗟 😡 🖸
New Level Display: Config	Variable 💌	5	
		Locate	

20. On the Main toolbar, choose the **Element Selection** tool and hold your cursor over some of the survey graphics.



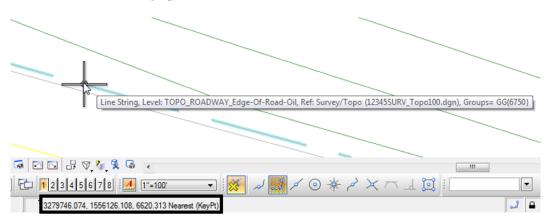
With **Locate** off, you can't located reference elements for information, measuring, copying, etc.

- 21. In the **References** dialog, turn **Snap** and **Locate** back *on* for the Survey/Topo reference.
- 22. Hold your cursor over some of the reference graphics.



You can now locate the graphics.

23. <T> on some reference graphics.

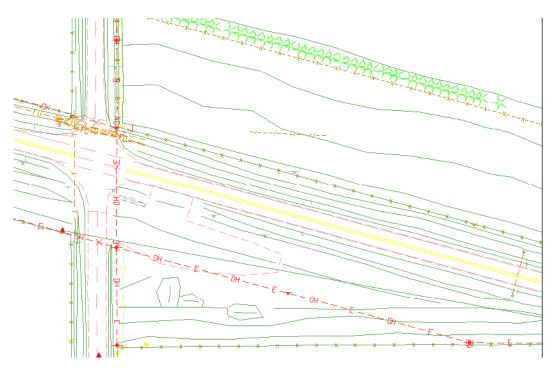


You can now snap to the reference graphics for coordinate information.

Note: It's often helpful to turn **Snap** off in a reference in dense areas where you don't want to snap to reference graphics. It's useful to turn **Locate** off for a reference if you're copying master file graphics and you don't want to accidentally copy the reference graphics.

Live Nesting

1. Window around the intersection as shown.

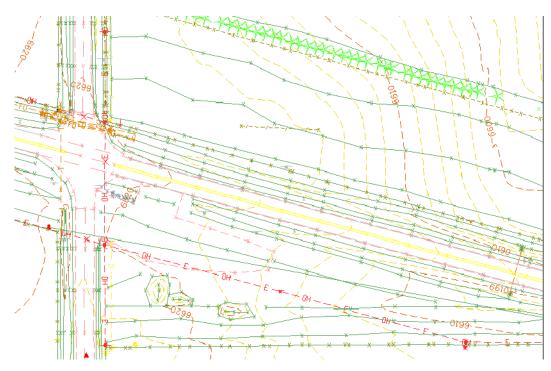


2. In the Reference dialog, change **No Nesting** to **Live Nesting** and set the **Depth** to **1**. Expand the **Hierarchy** list to show all nested references.

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lierarchy	Slot	P File Name	Model	Description	Logical	Presentation	•	2	۲	G
CU12345DES_Model02.dgn Survey/Topo, 12345SURV_Topo1 		12345SURV_Topo100.dgn	CDOT Default	Global Origin aligne	Survey/Topo	Wireframe	~	~	~	
- 100ScaleElevations, 12345SUF - 100ScaleErrors, 12345SurveyTr										

The Survey fieldbook data files, which are referenced to the Survey/Topo model, are now displayed in the file.

3. Review the graphics.

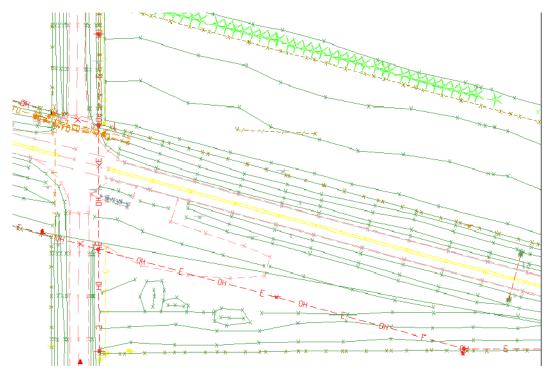


The Nested graphics, including the existing contours are now shown in the file.

4. On the left side of the **Reference** dialog, highlight the **Survey/Topo** reference. On the right-hand side of the **References** box, highlight the **Contour (Surface data)** nested reference and toggle **off** the **Display**.

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Hierarchy		File Name	Model	Description	Logical	Presentation	•	2	*
CU112345DES Model02 doo	1 2 3 4	12345SURV_TopoSymbols100.dgn 12345SURV_TopoNames100.dgn 12345SURV_TopoCodes100.dgn 12345SURV_TopoElevations100.dgn 12345SURV_TopoElevations100.dgn	CDOT Default	Fieldbook Data Fieldbook Data Fieldbook Data Fieldbook Data Fieldbook Data	100ScaleSy 100ScaleN 100ScaleCodes 100ScaleEle 100ScaleNotes	Wireframe	~	>>>>>	****
	7 Sgale	12345SURV_Contour100.dgn	CDOT Default	Surface Data	Botation 0°0'0	Wireframe		~	

The display of just the nested contour graphics is turned off.



5. Turn the **Contour** reference **Display** back on.

6. On the left side of the **Reference** dialog, highlight the **Design Model** master file. On the right-hand side of the **References** box, highlight the **Survey/Topo** reference and toggle **off** the **Display**.

Tools Settings								
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lierarchy	Slot	P File Name	Model	Description	Logical	Presentation	• "ª	1 CA
CU12345DES_Model02.dgn Engr Survey/Topo, 123455URV_Topo1 100ScaleSymbola, 123455URV_ W100ScaleRomes, 12345SURV_ W100ScaleCodes, 12345SURV_ W100ScaleCodes, 12345SURV_	1	12345SURV_Topo 100 dgn	CDOT Default	Global Origin aligne	Survey/Topo	Wireframe	4	1
100ScaleElevations, 12345SUF 100ScaleNotes, 12345SURV_1 100Scale2_10-Contours, 12345 100Scale2_10-Contours, 12345	1.00	1.000000 : 1.00000 ; -178956.971 ¥ -1789 esting ▼ Allow Overrides ▼	56.971 Z	tation Top -178956.971 Level Display: Config.V		0" 	> <• 🏢	16 😥

All graphics in the file are turned off.

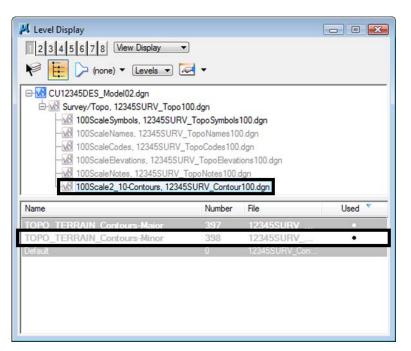
- **Note:** With a nested reference, when you turn off the display of the upper level reference, all nested references are turned off too.
- 7. Turn the **Survey/Topo** reference display back **on**.

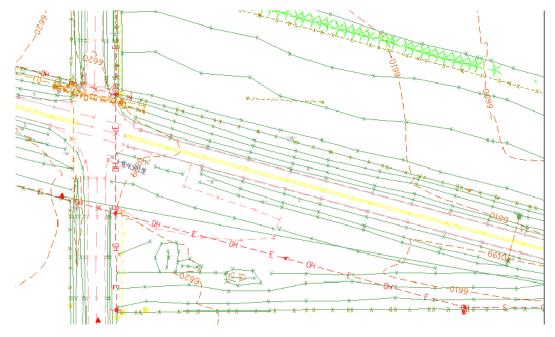
Scale 1.000000	:	1.000000	Orientation Top	Rotation		
Offset X -178956.971		<u>Y</u> -178956.971	Z -178956.971	•	N CA 111 m	-> <* 🏢 🗟 😡 🗹
Live Nesting	llow Over	mides 🔻 Depth: 1	New Level Display: Confi			

8. Open the Level Display box and expand the Target Tree list.

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Show Target Tree	100 dan			
	100 dan			
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-weight 100ScaleNames, 12345SURV	_TopoNames10	0.dgn		
-wo 100ScaleCodes, 12345SURV_	TopoCodes100	.dgn		
-web 100ScaleElevations, 12345SU	RV TopoElevat	ions100.dan		
- 100ScaleNotes, 12345SURV				
100Scale2 10-Contours, 1234		and the second se		
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Name 🔺	Number	File	Used	^
Name A	Number 19001	File Alignments dgnlib	Used	
			Used	
ALG_COGO_Points	19001	Alignments.dgnlib	Used	
ALG_COGO_Points ALG_EVENT_Points	19001 19002	Aignments.dgnlib Aignments.dgnlib	Used	
ALG_COGO_Points ALG_EVENT_Points ALG_EXISTING_Hor-Alignment	19001 19002 19003	Alignments.dgnlib Alignments.dgnlib Alignments.dgnlib	Used	
ALG_COGO_Points ALG_EVENT_Points ALG_EXISTING_Hor-Alignment ALG_EXISTING_Hor-Alignment-Sta-Major	19001 19002 19003 19004	Alignments.dgnlib Alignments.dgnlib Alignments.dgnlib Alignments.dgnlib	Used	
ALG_COGO_Points ALG_EVENT_Points ALG_EXISTING_Hor-Alignment ALG_EXISTING_Hor-Alignment-Sta-Major ALG_EXISTING_Hor-Alignment-Sta-Minor	19001 19002 19003 19004 19005	Alignments dgnlib Alignments dgnlib Alignments dgnlib Alignments dgnlib Alignments dgnlib	Used	
ALG_COGO_Points ALG_EVENT_Points ALG_EXISTING_Hor-Alignment ALG_EXISTING_Hor-Alignment-Sta-Major ALG_EXISTING_Hor-Alignment-Sta-Minor ALG_EXISTING_Hor-Alignment-Text	19001 19002 19003 19004 19005 19005	Alignments dgnlib Alignments dgnlib Alignments dgnlib Alignments dgnlib Alignments dgnlib Alignments dgnlib	Used	-

9. Select the Contour nested reference and toggle off the minor contour level.





You have control over all nested reference levels via Level Display.

10. Turn the minor contours back *on* and **Close** the **Level Display** box.

You will work more with nested references and the Copy Attachment options in later labs.

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Gi.	Name	*	Date modified	Туре	Size			
ecent Places	K CU12345D	ES_Model02.dgn	8/11/2009 10:5	DGN File	60 KB			
Desktop								
CDOT User								
1								
Computer								
Network	File name:	CU12345DES_M	Aodel02.dgn	•	Open	User:	CDOT User	
Network	Files of type:	CAD Files (* dgn		-	Cancel	Project:	12345	
		Open as read-	only		Options	Interface:	CDOT	

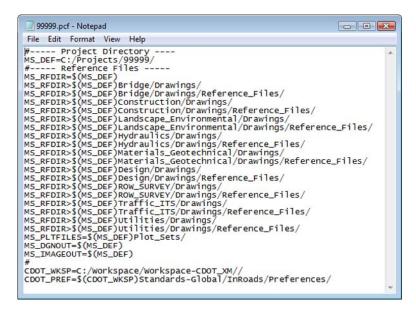
11. Choose File > Close to return to the MicroStation Manager.

- 12. From the **MicroStation Manager** select the file **CU12345DES_Model02.dgn** and press the **Delete** key on your keyboard and choose **Yes** from teh **Delete** *File* box to delete the file.
 - *Note:* In this class, you'll work with the previously created Design Model file **12345DES_Model.dgn** in the Reference Files folder.
- 13. Cancel the **MicroStation Manager** box.

Lab 4.7 - Update Project 99999

You have now been assigned a project code of **54321** for the previously created 99999 project. Update the PCF to reflect this change.

1. Using My Computer or Windows Explorer, navigate to the CDOT workspace (C:\Workspace\Workspace-CDOT_XM\Standards-Local\Projects). 2. Double-click on **99999.pcf** to open it with **Notepad**.

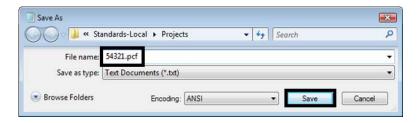


3. On the second line under **Project Directory**, edit it as follows:

MS_DEF=C:/Projects/54321/

99	9999.pc	f - Notep	ad	
		Format		
# MS_0	DEF=C	roject :/Proje	Dire ects/	<u>54321/</u>
	к	=\$(MS_I		les

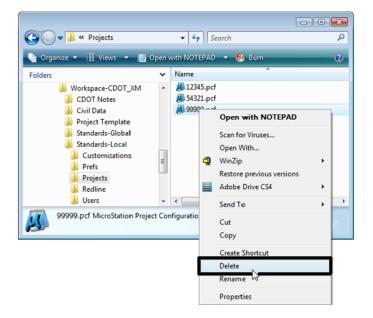
4. Select **File > Save As**, name the file **54321.pcf**. and select **Save**.



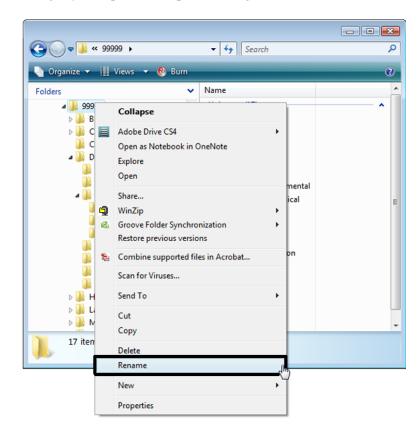
Note: By updating the MS DEF path, all reference paths are updated as well.

5. Close the **54321.pcf** file in **Notepad**.

6. Delete the **99999.pcf** file from the **C:\Workspace\Workspace CDOT_XM\Standards-Local\Projects** folder.



7. Using My Computer or Explorer, navigate to the C:\Projects\99999 folder.



8. Rename the folder C:\Projects\54321.

		- + Search P
🌗 Organize 👻 🏢 Views 💌		0
Folders	*	Name
54321 Bridge Construction Consultants Design Calculations Correspondence Drawings Cross_Sections Reference_Files InRoads Photos Reports Working Landscape_Environmental Materials_Geotechnical	* E	Bridge Construction Consultants Design Hydraulics Landscape_Environmental Materials_Geotechnical Miscellaneous Planning Plot_Sets Project_Configuration Project_Manager Redline ROW_Survey Specifications Traffic_ITS Utilities
	•	

9. Start MicroStation and select the Project drop-down

Look in:	3 Working		- () 🗊 📁 🛄	່ 🗋 🔁	۲	3D - V8 DGN	
œ.	Name	^	Date modified	Туре	Size			_
ecent Places	CU12345D	ES_Model02.dgn	8/11/2009 10:5	DGN File	60 KB			
Desktop								
CDOT User								
Computer						1		
2	File name:	CU12345DES_M	Nodel02.dgn	•	Open	User	CDOT User	•
Network	Files of type:	CAD Files (*.dgn	:".dwg;".dxf)	•	Cancel		12345 No Project	•

Note that 99999 is no longer available and has been replaced by 54321.

10. Set **Project** to **54321**.

Look in:	34321		•	G 🤌 📂		- 	1		
	Name Bridge	Date modified	Туре	Size		<u>^</u>			-
ecent Places	Constructi					-			
Desktop	Hydraulics	5				-			
		e_Environmental Geotechnical							
CDOT User	Miscellane								
	Planning Plot_Sets								
Computer	Project_Co	onfiguration							
2	File name:			-	ſ	Open	User:	CDOT User	
Network	Files of type:	CAD Files (*.dgn	;*.dwg;*.dxf)	•		Cancel	Project:	54321	
		Open as read	-only		Ē	Options	Interface:	CDOT	

The project directory structure is selected.

- **Note:** All files prefixed with 99999, would need to be renamed with the prefix 54321 on the hard drive.
- 11. Cancel the MicroStation Manager.

LAB 5 - Drawing Basics using the CDOT Menu

In this lab you will learn how to access the CDOT Menu and become familiar with its different components and operation. You will use the CDOT Menu to set standards (level, color, line style, line weight), automatically select drawing tools, and then place basic elements (lines, circles, arcs, etc.).

Chapter Objectives:

After completing this exercise you will know how to:

- Access the CDOT Menu
- Access the CDOT Bridge Menu
- Use the CDOT Menu to set element attributes
- Use the CDOT Menu to place basic elements (lines, arcs, circles, shapes, etc.)
- Use the **Delete** command
- Use the **Undo** and **Redo** functions
- Change the element highlight color

Lab 5.1 - Create a Miscellaneous Details file

Create this file to practice placing graphics using the CDOT Menu, as well as to draw a few miscellaneous details that later can be placed on a sheet.

- 1. Start MicroStation from your desktop shortcut or from the Start Menu.
- 2. From MicroStation Manager, select the New File icon.



- 3. Verify the Seed File is set to 3D-Seed_CDOT.dgn.
- 4. Set the **Directory** to $\$ **Design** $\$ **Working**.
- 5. Key in a file name CU12345DES_MiscDetails01.dgn.

Note: CU stands for "CDOT User" the initials you'll use for training purposes.

6. Select Save.

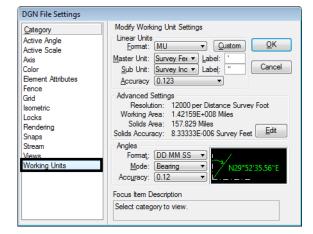
📕 New - C:\Proje	ects\12345\Design	n\Working\				X
Save in:	퉬 Working	•	G 🦻 📂	.		S 🗈
Ca.	Name	*		Date modified	Туре	
Recent Places			This folder i	s empty.		
Desktop						
CDOT User						
Computer						
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Network	•		III			,
	File name:	CU12345DES_MiscDetails01.dgn Save				
	Save as type:	MicroStation DGN Files (*.dgn)			•	Cancel
	Seed:	C:\Workspace\Workspace-CDOT	_XM\Standards-G	lobal\MicroStation\seed\	3D-Seed_CDOT.dgn	Browse

7. With the CU12345DES_MiscDetails01.dgn file highlighted in the MicroStation Manager, select Open to open it.

📕 MicroStation I	Manager - C:\Proj	ects\12345\Design\Working\				•••
Look in:	📗 Working		- 0	🤌 📂 🎹	r 👘 🔁 🗈	3D - V8 DGN
Recent Places Desktop CDOT User		Date modif Type MiscDetails01.dgn	Size			
Computer						
Network	File name: Files of type:	CU12345DES_MiscDetails01.0 (MicroStation DGN Files (*.dgn)	-	•	Open Cancel Options	User: CDOT User Project: 12345 Interface: CDOT

Check Seed File Settings

1. Select **Settings > Design File...** then select **Working Units** and review the CDOT defaults.



- 2. **Cancel** the dialog box.
- 3. Key in **dp=\$** to check the display depth.
- 4. **<D>** anywhere in the view to select it.
- 5. Review the CDOT defaults in the message field.

View 1: Display Depth=-1000.000,15000.000

- 6. Key in **az=\$** to check the active depth.
- 7. **<D>** anywhere in the view to select it.
- 8. Review the CDOT defaults in the message field.

View 1: Active Depth=0.000

Open the CDOT Menu

1. The CDOT Menu opens automatically when MicroStation is started. If it has been closed and needs to be re-opened, select the CDOT icon CDOT Main toolbar.



2. The CDOT Menu opens. The CDOT menu is broken up into several main parts, as shown below.

CDOT Menu		_ 0 🔀
CDOT Groups CDOT Tools	Options Help	Pull-Down Menus
Drafting Bridge Construction Design Geometry Hydraulics Landscape Environmental	Status Existing Drafting	Proposed Protect Filters A A A
Materials Geotechnical ROW Survey Traffic ITS Utilities Explorer Window Composition of the second seco	Border RE Dimensions Linework Patterning Symbols Text Categories	Cip Boundary Match Line Utility Revision Cloud Border (Plan 11"x17") Border (Plan 11"x17") Border (Plan 15.5") Potriait Border (Pnn 11"x17") Border (Pnofile 11"x17") Border (Typical Section 11"x Border (Typical Section 11"x CDOT Logo North Arrow Skier North Arrow Skier North Arrow Skindard

3. Selecting Settings allows the user to apply an *Active Scale* and *Active Angle* to elements being placed.

Active Settings	
100.00	Apply
0.00	Close

<u>•</u>	DOT Menu					×
CDO	OT Groups CDOT Tools	Options	Help			
\checkmark	Drafting		-			
\checkmark	Bridge		isting	Proposed		?
\checkmark	Construction					
✓	Design				AIL 1	
✓	Geometry				All	
\checkmark	Hydraulics		der	Clip Boundary		
\checkmark	Landscape Environmenta	l.		Match Line		
$\overline{\mathbf{v}}$, Materials Geotechnical		er RE	C Utility Revision C		
			isions	* Border (Plan 11')		
✓	ROW Survey		ISIONS	* Border (Plan 11')		
✓	Traffic ITS		vork	☆ Border (Plan 8.5") ☆ Border (PnP 11")x		Ξ
\checkmark	Utilities		mina	☆ Border (Profile 1)		
	Select All		ming	* Border (Title 11"x		
	Selectria		bols	* Border (Typical S	ection 11"x	
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				* CDOT Logo		
				* North Arrow Skie	r	
L				* North Arrow Stan	dard	-
	Settings			< <u> </u>	4	

4. From the pull-down menus select **CDOT Groups > Select All.**

5. Select **Drafting** from the *Explorer Window*.

CDOT Menu			
CDOT Groups CDOT Tools	Options Help		
- Drafting - Bridge - Construction	Status Existing	Proposed	?
Design Geometry Hydraulics Landscape Environmental	Drafting		
Materials Geotechnical Geotechnical Geotechnical Traffic ITS	Border Border RF	 Clip Boundary Match Line Utility Revision Cloud 	
L Utilities	Dimensions	 ✤ Border (Plan 11"x17") ✤ Border (Plan 11"x8.5") Portra 	
4	Linework	 	s E
	Symbols	 Border (Title 11'x8.5") Portra Border (Typical Section 11'x Border Limits (11'x17") 	
	Text	☆ Call 811 Stamp (Formerly UN ☆ CDOT Logo	
Settings			

6. Review some of the categories and items available for general drafting.

7. Select **Design** from the *Explorer Window*.

CDOT Menu			
CDOT Groups CDOT Tools	Options Help		
Drafting Bridge Construction Design	Status	Proposed	?
Geometry Hydraulics Landscape Environmental	Design	<u>∖</u> A * @[All
Materials Geotechnical ROW Survey	Fence	Barbed Wire	
Utilities	Guardrail	Chain Link	
4	Profile	Gate	
	Roadway	Snow Wood	
	Structure	∛ Woven Wire Com ★ Deer Gate	bination
	Surface		
	Temporary		
Settings	Xsection		
Consign.			,

- 8. Review some of the categories and items available for the **Roadway Design Group**.
- 9. From the *Explorer Window*, open other groups of interest (Hydraulics, Traffic, Utilities, etc.) and review the available categories and items.

EDOT Menu			- • •
CDOT Groups CDOT Tools	Options Help		
Drafting Bridge Construction	Status	Proposed	?
Design Geometry <mark>Hydraulics</mark> Landscape Environmental	Hydraulics	∖A * @ [AII
Materials Geotechnical ROW Survey Traffic ITS	Conveyance Drainage Basin	Channel	vert
Utilities		linigation	
	FES (Plan)	Siphons	_
۰ III +	FES (Profile)	Subsultace blain	>
	Inlets (Plan)		
	Inlets (Profile)		
	Miscellaneous		
	Pipes (Plan)		
	Pipes (Profile)		
Settings	Structures		

Lab 5.2 - Place Graphics with the CDOT Menu Place Lines

1. In the CDOT Menu Explorer select **Drafting**, then select the **Linework** category.

🚆 CDOT Menu		
CDOT Groups CDOT Tools	Options Help	
Drafting Bridge Construction	Status Existing	Proposed
Design Geometry Hydraulics Landscape Environmental	Drafting	
Materials Geotechnical ROW Survey	Border	Center (Thick)
Utilities	Border RE	Continuous (Thick)
	Linework	Dashed (Thick)
	Patterning	Divide (Thin)
	Symbols	♪ Dotted (Thin) ↓ Hidden (Thick)
	Text	Hidden (Thin)
		Long/Short (Thin)
Settings		4

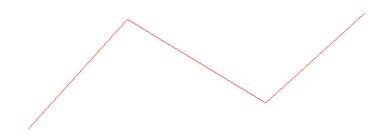
- 2. This category is used for general drafting work that is placed on standard drafting levels. The Filters are used to organize the different linework Items.
- 3. Set the Filter to **WT**, for line weight
- 4. Select the Item Weight 3.

🚆 CDOT Menu			- • •
CDOT Groups CDOT Tools O Drafting 	bptions Help Status Edisting Drafting Border Border RE Dimensions Linework Patterning Symbols Text	Proposed Weight 0 Weight 1 Weight 2 Weight 3 Weight 4 Weight 5 Weight 6 Weight 7	?

The filter determines the appropriate drafting level for the **SmartLine**. The Smartline command is the default for this menu item. All other drafting commands should be either be picked from the CDOT Main tool bar or entered as a key-in.



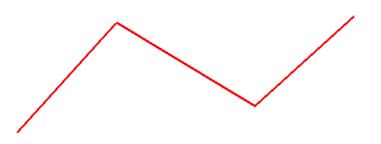
5. Data point in View 1 to enter vertices for the SmartLine.



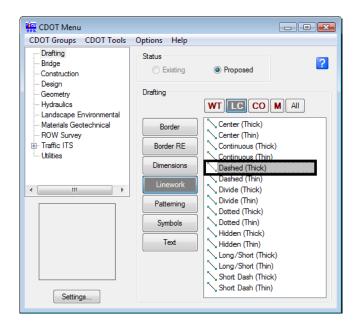
- 6. **<R>** when finished.
 - **Note:** Always **<R>** when you are finished drawing an element. The active drawing tool (in this case SmartLine) remains active so that you can place another line without having to re-select the item from the menu.
- 7. The seed file settings have line weights turned off to provide a better on screen display. To see the line weights, select the view attributes icon from the view tools at the bottom of each view window. You may also select Settings > View Attributes from the MicroStation pull-down menus. Toggle Line Weights on.

<u>Mew Number</u> <u>D</u> isplay: <u>Wirefra</u> Dista <u>n</u> ce Cueing: <u>None</u>	
ACS Triad	Fast Curves
Background	🔽 <u>Fi</u> ll
Boundary Display	Grid
Ca <u>m</u> era	Level Overrides
Clip Back	Line Styles
Clip Front	Line Weights
Clip Volume	Patterns
Constructions	Pattem/Bump Maps
Dimensions	🔽 Tags
Data Fields	V Text
Displays <u>et</u>	Text Nodes
Fast <u>C</u> ells	✓ <u>Transparency</u>
⊑ ▼ ≜ ୧ ୧ 🗆 ⊡	u 🖭 💊 🖻 🖂 🔄
View Attributes	

Note: Selecting the down arrow from the view attributes icon will open the dialog box temporarily allowing the user to toggle on line weights without bringing up the dialog box permanently. The dialog box will dissapear when the mouse if moved away.



- 8. If you have opened the View Attributes dialog box, close it and return to the CDOT menu.
- 9. Set the Filter to LC, for linestyle.
- 10. Select the Item Dashed (Thick).



11. Place another **SmartLine** and note the change in line style and the active level on which it is placed.

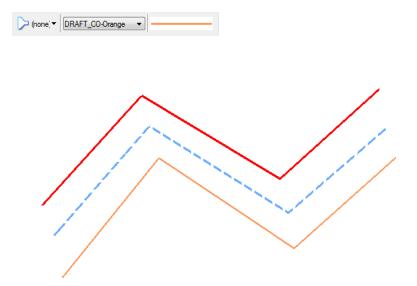
(none;

DRAFT_LC-Dashed_M

DRAFT_LC-Dashed_M

- 12. **<R>** when done.
- 13. Set the Filter to CO, for Color.
- 14. Select the Item **Plot Orange**.

15. Place another **SmartLine** and note the change in both line style and color and the active level on which it is placed.



Place Circles

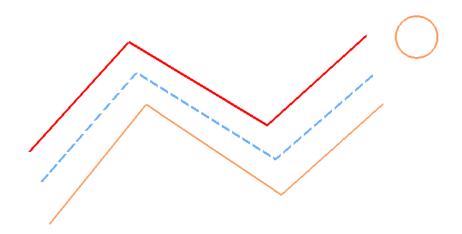
- 1. In the CDOT Menu, set the **Category**, **Filter** and **Item** to establish whatever level and symbology you like.
- 2. From the **CDOT Main** tool palette, select the **Circle** icon.



3. In the Tool Settings box, set Fill Type to None.



- 4. Follow your prompts and **<D>** to identify the center of the circle, then **<D>** to place a point on the circle.
 - **Note:** As we started a new drawing the zoom area may be larger or smaller. Your drawing may not look exactly as shown below due to this; simply place the first circle then window area around the element.

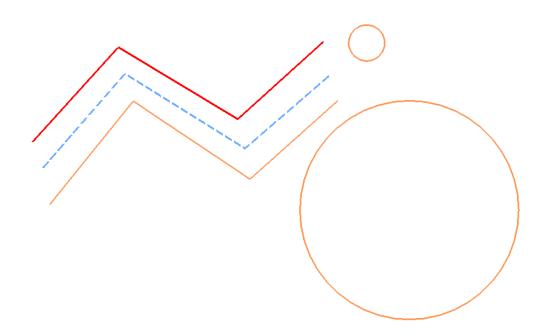


- 5. **<R>** when done.
- 6. In the **Tool Settings** box, toggle on **Diameter** and key in a value of **5**.



Note: *Important!* Don't forget to tab after keying in the value. Otherwise, your entry will not be accepted. *This is true for all fields in MicroStation dialog boxes.*

7. **<D>** to identify the center of the 5 ft. diameter circle.

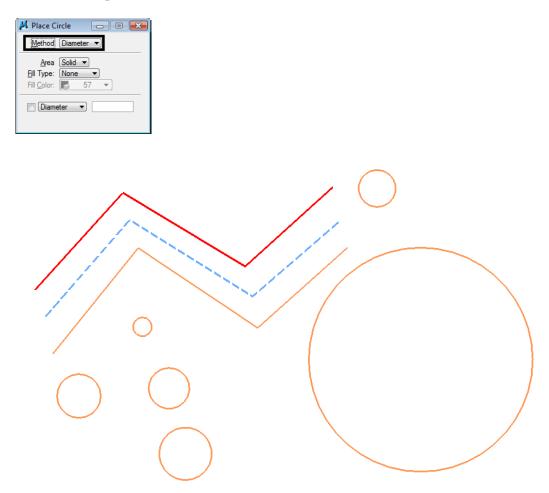


- 8. **<R>** when done.
- 9. Practice placing circles with other diameter or radius values.
- 10. In the **Tool Settings** box, set **Method** to **Edge** and toggle off the **Diameter** or **Radius** constraint.



11. Follow your prompts and **<D>** to place a circle by specifying three edge points. **<R>** when done.

12. In the **Tool Settings** box, set the **Method** to **Diameter** and follow your prompts to place a circle with two points for the diameter. **<R>** when done.



Place Arcs and Shapes

1. In the CDOT Menu, set the **Category**, **Filter** and **Item** to establish the correct level and symbology.

2. From the CDOT Main tool palette, select the Arc icon.

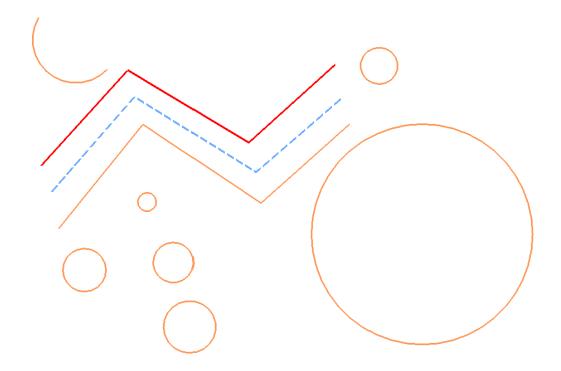


3. In the Tool Settings box, set the Method to Start, Center.

📕 Place Arc	- • •
Method Start, C	enter 🔻
Radius: Length: Start Angle: Sweep Angle: Direction:	

- 4. Follow the prompts and **<D>** anywhere to place the first arc endpoint.
- 5. **<D>** to define the arc center.

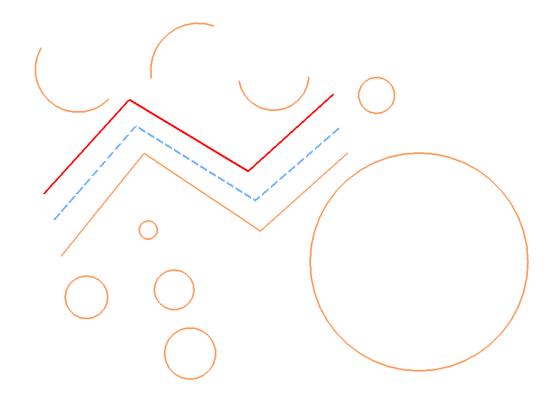
6. **<D>** to define the second endpoint.



- 7. **<R>** when done.
- 8. In the Tools Settings box, set the Method to Start, Mid, End.



9. Follow the prompts to place an arc by 3 points.



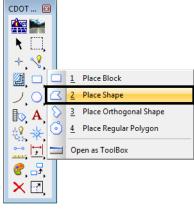
10. Repeat the above step, but place the arc in the opposite direction.

11. Using any of the available methods, constrain the radius by clicking in the check box as shown, and place another arc.

📕 Place Arc Method Start, Center 💌 **<u>R</u>adius:</u>** 1.000 Length Start Angle Sweep Angle: (CCW Direction: -

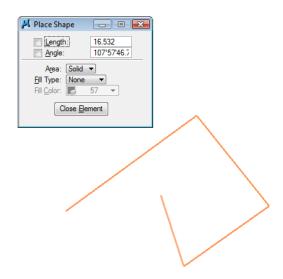
- 12. Try setting other constrains and place additional arcs.
- 13. **<R>** when done.

14. In the Main tool bar, select the **Place Shape** icon.





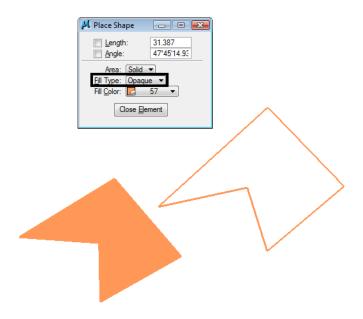
15. **<D>** to place vertices for an unconstrained shape.



16. For the last data point (to close the shape), select **Close Element**.

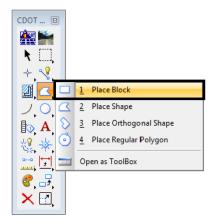
🔑 Place Shape	- • •	
Length: Angle:	22.353 146°5'55.75	
A <u>r</u> ea: Solid Fill Type: None Fill <u>C</u> olor:	▼ ▼ 57 ▼	
Close <u>E</u> ler	ment	
		\neg

17. In the Tool Settings box, set **Fill Type** to **Opaque** and place another shape.

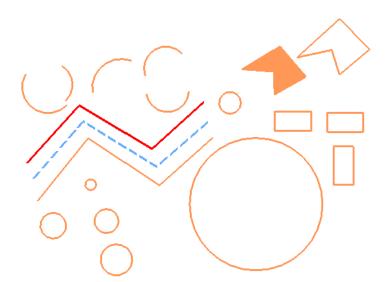


18. Set Fill Type back to **None**.

19. On the Polygons toolbar, select **Place Block**.



- 20. **<D>** for the first corner of the block.
- 21. **<D>** for the opposite corner.
- 22. Place a few more blocks until you're comfortable with the command.



Lab 5.3 - Delete and Undo

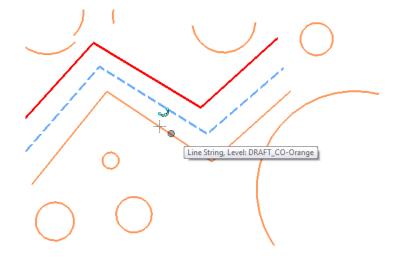
Delete an element

1. **Fit** View 1.

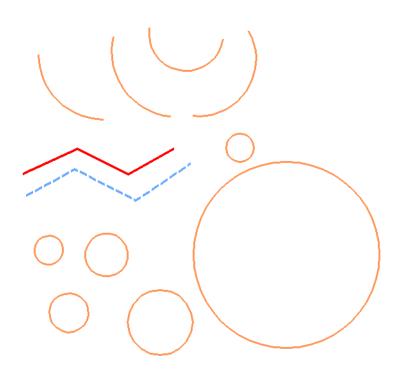
2. From the CDOT Main toolbar, select Delete Element.



3. Move your cursor over the orange line until it highlights.



4. **<D>** to delete.



Undo and Redo the deletion

1. From the **Standard** toolbar, select **Undo**.



The line reappears.

2. Select Redo.



The line is deleted again.

Note: You can also choose **Edit > Undo** to reverse the previous action and get a description of what you are undoing.

In addition to the **Delete** command, the **Undo/Redo** commands work for most MicroStation drawing tools.

If you have elements that are close to or on top of each other, **<R>** until the element you want to delete highlights, then **<D>** to delete.

Lab 5.4 - Change the Element Highlight Color

- 1. Select Settings > Design File > Color.
- 2. Set Element Highlight Color to Yellow.

DGN File Settings			
Category Active Angle Active Scale Axis Color Element Attributes Fence Grid Isometric Locks Rendering Snaps Stream Views Working Units	Modify Color Settings		QK Cancel
	Focus Item Description Set the color in which ide displayed.	ntified elemer	nts are

- 3. Select OK.
- 4. Choose Delete Element from the Main toolbar.
- 5. Move your cursor over an element until it highlights.
- 6. Notice the highlight color is now yellow.
- 7. **<D>** to delete the element.

The **Delete Element** command remains active and you can continue deleting elements.

8. Set the highlight to a color you prefer.

Lab 5.5 - Delete all

- 1. Select Edit > Select All to put all elements you've drawn in a MicroStation selection set.
- 2. Choose **Delete** from the **Main** toolbar.
- 3. All elements selected are deleted.

LAB 6 - Draw the Median Island Nose Section

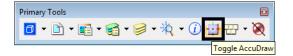
In this lab, you'll draw the nose section shown below using AccuDraw and precision keyins.



1. If AccuDraw is docked, as shown below, drag the AccuDraw Window and float it in the view.

X -7588.525	Y -1114.924	Z 0.000
: 🔨 -/388.525	T -1114.924	∠ 0.000

Note: If AccuDraw is not on, toggle it on from the Primary toolbar.

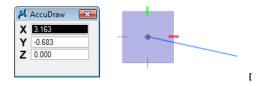


If your compass is set to **Polar** mode, below left, switch it to **Rectangular** mode, below right, by pressing **<spacebar>** on the keyboard.

📕 AccuDraw 🛛 🔀	📕 AccuDraw 🛛 🖾
0.000	X -7353.721
N 90°0′0.00″ E	Y -1128.606
Z 0.000	Z 0.000

Lab 6.1 - Draw a Concrete Gutter Pan Section

- 1. On the CDOT Menu, set the Explorer to Drafting, the Category to Linework, the Filter to WT and select Item Weight 1.
- 2. Key in *xy=1000,1000* to define the starting coordinate for drawing the section (the upper left corner).
 - **Note:** If you can't see the line's endpoint and it is "rubber banding" into the view, **Zoom Out** and then *reset once* **<R>** back into the **Place Line** command. If you zoom with your mouse wheel, you don't have to reset.
- 3. Set your cursor to slope down and to the right to establish the direction.



- Use the AccuDraw's rectangular compass to place the median's 8 ft. gutter pan at a 1:12 slope. Key in 8 for X and 8/12 for Y. (The Y value updates to -0.667). Make sure your cursor is set to slope *down* before entering the values.
 - **Note:** Remember, *do not* move your cursor into the AccuDraw window to key in your values; you may lose your positive/negative axis orientation. The focus (blinking cursor) is already set for you in the **X** field just start typing! Then, **<Tab>** or arrow down to the next field.

- 5. **<D>** to place the point.
- 6. **Zoom in**, if necessary, to see the line.



Note that the compass rotates to the segment. You actually want to place the next line from the horizontal axis, so you need to rotate the compass so that X is horizontal.

7. Press **V** on the keyboard to rotate the compass to the view. The X-axis (red tic mark) should now be horizontal.

📕 AccuDraw 🛛 🔀	
X 4.447	
Y 1.210	• •
Z 0.000	

- 8. Position your cursor up and to the right to establish the direction of the next segment.
- 9. Key in **2** for **X** and **2/12** for **Y**. (The Y value updates to 0.167 to establish the slope on the next line).



10. **<D>** to place the point.

11. Press V on the keyboard to rotate the compass to the view.



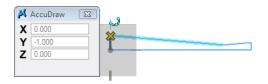
- 12. Lock your cursor on the –Y axis by moving your mouse to the left and hitting enter; then key in .5 in the Y field for the next segment. **<D>** to place the point.
 - **Note:** You don't have to key in the negative, AccuDraw knows the direction from your cursor location.

📕 AccuDraw	X	_
X 0.000 Y .5 Z 0.000		
2 0.000		

- 13. Press V on the keyboard to rotate the compass back to the view.
- 14. Lock your cursor on the -X axis and key in 10 in the X field. **<D>** to place the point.

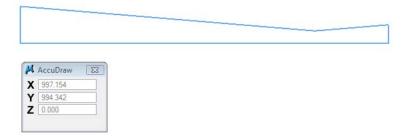
📕 AccuDraw 🛛 📧		
X -10.000		
Y 0.000 Z 0.000	 -	

15. Hover over the starting point of the median section. When you see the bold X, **<D>** to AccuSnap to the point to complete.



Draw the median cover

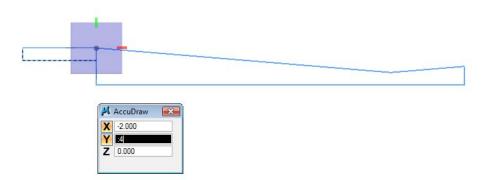
1. **Fit** the view.



- 2. Select the **Place Block** command.
- 3. AccuSnap on the upper-left corner of the median.

✓ Shape, Level: DRAFT_V	π-1	
X 1000.000 Y 1000.000 Z 0.000		

- 4. Place your cursor down and to the left to establish the direction.
- Using AccuDraw's rectangular window, place a 2 ft. X 4 in. block as shown. Key in 2 for X and :4 for Y (don't forget the colon in front of the 4 to specify inches.) <D> to place the point.
- 6. **<R>** when done.



Draw the pavement section

- 1. While still in the **Place Block** command, **AccuSnap** on the upper-right corner of the concrete section.
 - a. Using AccuDraw, place a 3.5 ft X 6" block as shown.

📕 AccuDraw 🛛 📧			
3.500			
Z 0.000			

2. In the Place Block Tool Settings, toggle Fill Type to Opaque.

a. Use AccuDraw to place two 1.5 ft X 3 in. and one 6 in. X 3 in. filled blocks to create the pattern as shown.



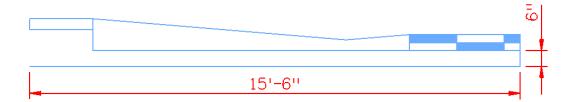
3. Set Fill Type back to None.

Draw the subgrade section

1. Select the **Place SmartLine** tool.



2. AccuSnap on the lower-right corner of the asphalt to start the subgrade.



- 3. Use the information above to place the SmartLine using AccuDraw.
- 4. To practice drawing these lines again using precision keyins, **Delete** the two lines you just placed to start over.



- 5. Re-draw the two lines using the dx= precision keyin (delta keyin).
 - AccuSnap to the starting point.
 - ♦ Key in *dx=,-:6* for the first line.

• Key in *dx=-15.5* for the second line.

Note: Don't forget the negative signs. You could also key in **.5** instead of **:6** and **15:6** instead of **15.5**.

- 6. Again, **Delete** the two lines you just place to start over.
- 7. Re-draw the two lines using the *di*= precision keyin (distance, direction keyin).
 - Select the Smartline command
 - AccuSnap to the starting point
 - Key in *di***=:6,-90** for the first line
 - ♦ Key in *di=15.5,180* for the second line
 - AccuSnap to the location shown to finish

Note: You don't need the negative signs because of the direction you move the mouse.

2				
	Shape, Level: DRAFT_WT-1]		
- L	-		 	

8. Fit the view.

You've now used MicroStation's two main techniques for precision placement – precision keyins and **AccuDraw**. By using each method, you can compare the two methods and determine which you prefer.

You'll practice more with precision keyins and AccuDraw in other labs.

- 9. Save Settings (File > Save Settings).
- 10. Exit MicroStation.

LAB 7 - Place Guardrail lines

In this exercise, you'll place guardrail lines in the design model file and then work with the custom line styles.

Chapter Objectives:

After completing this exercise you will know how to:

- Use the CDOT Menu to place custom lines styles
- Change the direction of a directional line style
- Change the elevation of an element after placement
- Change the level on which an element was placed
- Update graphics to *ByLevel Symbology*

Lab 7.1 - Open the Design Model File

1. From the MicroStation Manager, open the **12345DES_Model.dgn** file from the **\Design\Drawings\Reference_Files** folder

Note that the aerial photo raster images are attached.

2. Select the **Raster Manager Icon** from the Primary toolbar, or you may select **File > Raster Manager**.



3. Select both raster images, **09a.tif** and **10a.tif**, and turn off their display in View 1.

📕 R	laste	r Ma	nager	: 2 of	2 liste	d														x
			View													 				
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Q	4	File	Name						Description			Lo	gical N	lame		6	≽	A	9	
P																 				
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P		10a	.TIF													~				
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1 2	2 3	4 5	6 7	8	۵		+	Tin	t: Tra	nspare	ency:									

4. Select the View Attributes icon from the view toolbar and toggle Off Line Styles

	-
<u>V</u> iew Number: 1 ▼ <u>D</u> isplay: <u>Wirefra</u> Dista <u>n</u> ce Cueing: None	
ACS Triad	Fast Curves
Background	🔽 <u>Fi</u> ll
Boundary Display	🔲 <u>G</u> rid
Camera	Level Overrides
Clip Back	Line Styles
Clip Front	Line Weights
Clip Volume	✓ Patterns
Constructions	Pattem/Bump Maps
Dimensions	Tags
✓ Data Fields	V Text
Displayset	Text Nodes
Fast Cells	Transparency

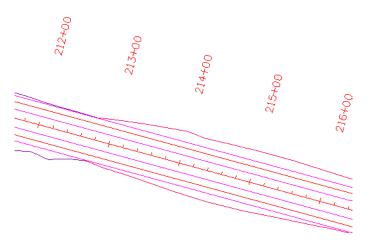
Lab 7.2 - Draw the Guardrail

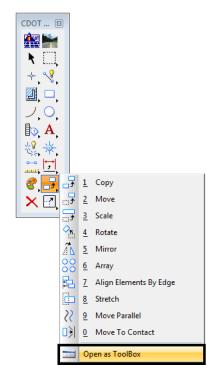
Next, you'll follow the steps below to place guardrail along the fill area approaching the intersection.

Create the guardrail trace lines

Create temporary lines using the **Move/Copy Parallel** command.

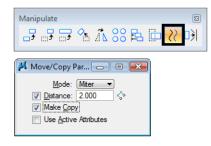
1. **Window** in to the area to the left of the intersection around station range 212+00-216+00 as shown.





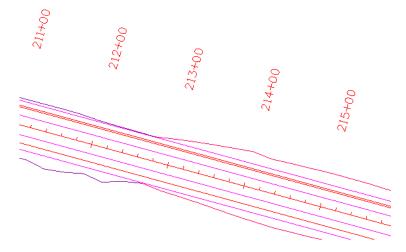
2. Pull the *Manipulate* toolbar off the *Main* toolbar.

- 3. Select the **Move Parallel** tool off the *Manipulate* toolbar.
- 4. In the *Tool Settings* box:
 - Toggle on **Distance** and key in *2*.
 - Toggle on Make Copy.

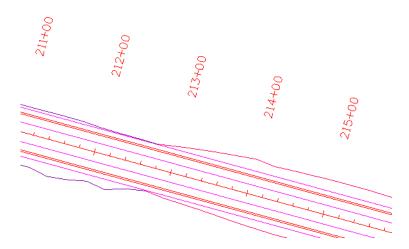


- 5. **<D>** on the red Edge of Oil line on the upper (North) side of the road.
- 6. Move your cursor up to establish the direction for the parallel copy.

7. **<D>** to copy the Edge of Oil line.



8. Repeat the above steps to create a guardrail trace line for the lower (South) side of the road. Be sure to parallel copy the Edge of Oil line.



Trim the trace line for the extent of the guardrail

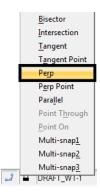
- 1. On the *CDOT Menu*, select **Drafting > Linework**.
- 2. Set the Line Weight category to 1.

Note: This should automatically select the Place SmartLine tool.

3. On the Status bar, turn **Off Depth** lock.

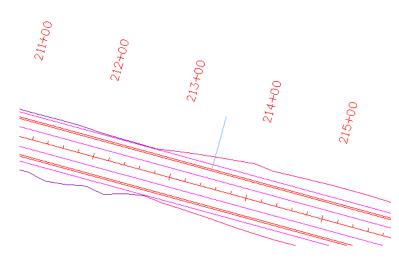
		Full	
		<u>T</u> oggles	
		Axis	
		Grid	
		<u>U</u> nit	
	~	Association	
		Level	
	~	Graphic Group	
		Text <u>N</u> ode	
		Isometric	
	~	Ann <u>o</u> tation Scale	
		ACS Plane	
		ACS Plane Snap	
		<u>D</u> epth	
- 1	DRA	F1_W1-1	

- *Note:* Make sure that **Depth** lock does *not* have a check mark beside of it to ensure that it is off.
- 4. On the Status bar, set the active snap mode to **Perp**.

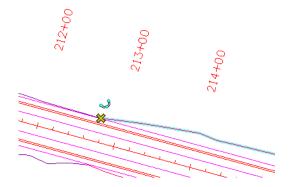


5. **<D>** on the guardrail trace line you just copied.

As you move your cursor, note how you can only place perpendicular to the trace line.

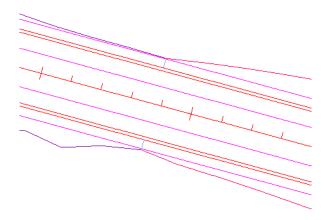


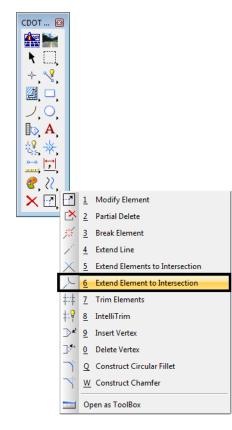
6. **AccuSnap** on the endpoint of the Toe of Fill line as shown to draw the perpendicular line.



This will serve as the cutting element for the trace line. The guardrail starts at the beginning of the toe of fill line.

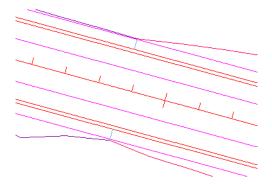
- 7. **<R>** when done.
- 8. Repeat the above steps to create a trim line for the other side of the road and be sure to **AccuSnap** to the end of the toe of fill line.

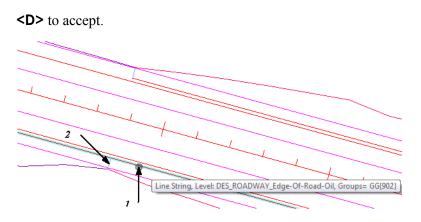




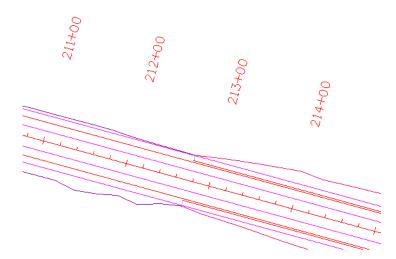
9. Select the Extend Element to Intersection command.

- 10. Follow your prompts and **<D>** on the trace line on the side of the element to keep, to the right of the perpendicular line.
- 11. **<D>** on the perpendicular line to trim the trace element to this point.





- 12. Update your view, if necessary.
- 13. Repeat to trim the lower side as shown.



14. Delete the blue perpendicular trim lines.

Check the Depth lock

1. **<T>** on the left end of the upper trace line.

3278437.039, 1556493.963 6629.277 learest (KeyPt)

Note that the trace lines were copied at the same elevation as the edge of oil lines. When you place the guardrail lines, you want to place them at an elevation of 0.

Note: If you want the guardrail lines to pick up the correct elevations of the roadway surface, you can drape them with InRoads.

- 2. Key in *az=0*
- 3. **<D>** anywhere in the view to set the active depth.

View 1: Active Depth=0.000

Note: The CDOT defualt active depth is set to 0.

- 4. Select the **Locks** button from the *Status* bar.
- 5. Turn **Depth lock On**.

	Full
	Toggles
	Toggies
	A <u>x</u> is
	Grid
	<u>U</u> nit
~	Association
	<u>L</u> evel
~	Graphic Group
	Text <u>N</u> ode
	Isometric
~	Ann <u>o</u> tation Scale
	ACS Plane
	ACS <u>P</u> lane Snap
~	Depth

With **Depth** lock turned on, you will place elements at the active depth instead of picking up the elevation of elements you snap on.

6. Toggle AccuSnap Off.



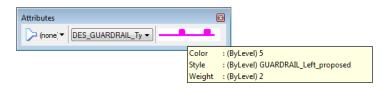
It's always a good habit to turn **AccuSnap** off when using **Depth** lock.

Place the guardrail lines

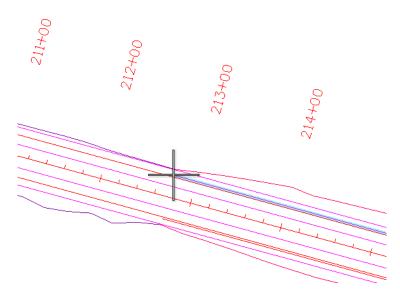
1. On the CDOT Menu, select **Design** from the *Explorer Window*.

- • 🟪 CDOT Menu CDOT Groups CDOT Tools Options Help Drafting Status ? Bridge Existing Proposed Design Design Hydraulics **\A & @** [41 Landscape Environmental Materials Geotechnical Cable Fence ROW Survey End-Anchorage i. → Traffic ITS Guardrail Transition ---- Utilities Type-3 Doub Phasing Type-3 Left , Type-3 Right Profile Type-7 Þ • * End Anchorage (Nonflared) (... Roadway * End Anchorage (Nonflared) (... End Anchorage Type 3D (El... Structure * End Anchorage Type 3B (Ele.. Surface End Anchorage Type 3B (Ru.) ☆ End Anchorage Type 3D (Pl...) Temporary * Fleat 350 (Elevation) * Fleat 350 (Plan) Xsection Settings...
- 2. Set the Category to Guardrail and select the item Type 3 left.

Note: This *automatically* sets the active level to *DES_GUARDRAIL_Type-3_Left* with all *ByLevel* settings (color, style and weight), and *automatically* selects the **Place SmartLine** command. Note that the ByLevel style is a directional custom line style called GUARDRAIL_Left_Proposed.

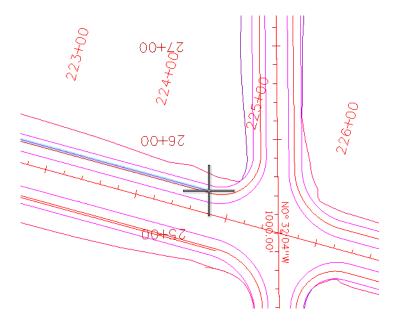


3. **<T>** on the left endpoint of the upper trace line as shown.

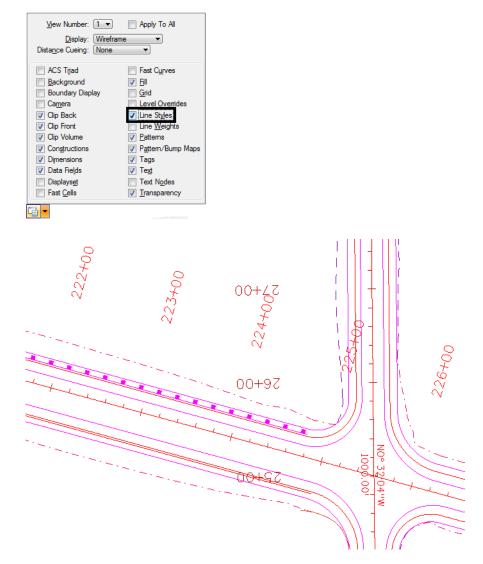


Check the message field. Note that with *Depth lock on*, you're placing the line at a Z value of 0 instead of the elevation of the line's endpoint.

- 4. **<D>** to accept.
- 5. **Pan** or **Zoom** to locate the other endpoint of the trace line near the intersection.
 - **Note:** Remember when using View Controls in the middle of a drawing command, reset **<R>** once to get back to the command.
- 6. Snap **(<T>**, then **<D>**) on the right endpoint as shown.



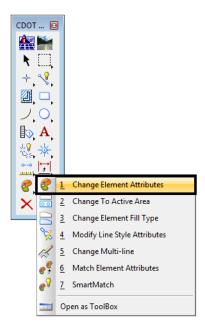
7. **<R>** when done.



8. Select **Settings > View Attributes** and toggle on **Line Styles**.

9. On the CDOT Menu select Guardrail Type-3 Right.

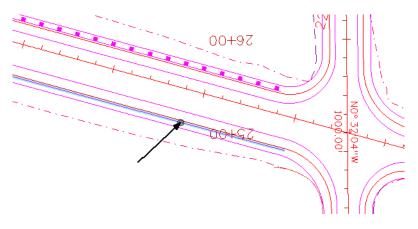
10. For the South side of the road we will use a different method. Select the **Change Element Attributes** from the Main Toolbar.



11. From the Tool Settings window toggle on Use Active Attributes, as well as Level, Color, Style, and Weight, this will use the the correct guardrail line as selected from the CDOT menu.

📕 Change Element Attribu 👝 💷 💌						
Method: Change 👻						
Use Active Attributes						
V Level:	DES_GUARDRAIL_					
Color:	🛃 (5) ByLevel 🔻					
✓ <u>Style</u> :	GUARDRAIL_Left_r 🕶					
✓ Weight:	(2) ByLer 🔻					
<u>Transparency:</u>	0 -					
Priority:	🔄 0 🔻					
Class:	Primary 💌					
✓ Use <u>Fence</u> :	Inside 💌					
Make Copy						

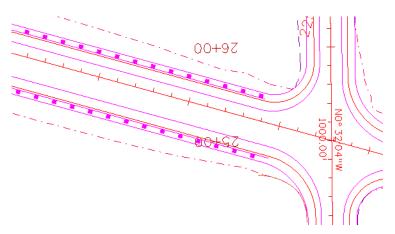
12. Select the South guardrail line.



Note: We have changed the attributes of the trace line to be the new guardrail line. Some custom line styles, like these, depend on the direction they are drawn. If the new guardrail line is placed in the wrong direction (the posts should be on the outside), select the **Change Direction** tool from the *Misc. Tools* toolbar.



- *Note:* The Misc. Tools toolbar was created for CDOT using handy tools from within MicroStation.
- 13. Select the South guardrail line.



Note: Since we simply changed the attributes of the line we offset, it remains at its original elevation. We must now change the elevation of the new element to 0.

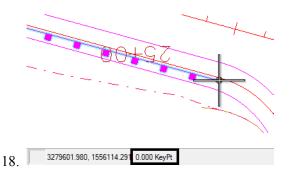
🏪 CDOT Menu		
CDOT Groups	CDOT Tools Options Help	
Drafting Bridge Construction Design Geometry	AutoTrack Breakline Cell Divide Change Text Case	Proposed
Hydraulics Landscape E Materials Geo	County Sheet Composer	
Traffic ITS Utilities	Edit Text Along gINT Translator Levels Off	ind-Anchorage Transition Type-3 Double
•	Measure XY Distance Misc. Tools	ype-3 Left ype-3 Right ype-7
Setting	ModElev Redlines Roughen SignCAD Steel Stratify Survey Text to Node Traffic Accident	nd Anchorage (Nonflared) (nd Anchorage (Nonflared) (nd Anchorage Type 3D (El nd Anchorage Type 3B (Ele nd Anchorage Type 3B (Rel nd Anchorage Type 3D (Pl eat 350 (Elevation) leat 350 (Plan)
	Traffic Stripmap Typical Section Program	

14. From the CDOT Menu, select **CDOT Tools > ModElev**.

15. From the Tool Settings window, type an elevation of **O** and select **Single**.



- 16. Select **<D>** the new guardrail line.
- 17. The elevation has been changed to 0. To check, snap **<T>** to the endpoint of the line and notice the elevation in the status bar.

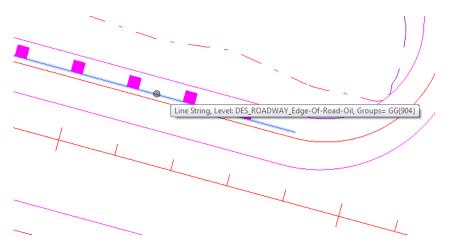


19. Turn AccuSnap back On.



Delete the North trace line

- 1. Select **Delete** from the **Main** toolbar.
- 2. Hover over on the trace line with your mouse.
 - *Note:* Watch for the trace line (not the guardrail line) to highlight. If you see the guardrail posts highlighted, **<R>** until the trace line highlights (watch for pop-up information to show the line on level *DES_ROADWAY_Edge-of-Road-Oil*).

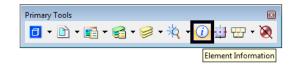


When using the **Delete** command, use the reset button to select coincident elements.

3. With the correct line highlighted, **<D>** to accept.

Lab 7.3 - Use the Element information to change levels

1. Select **Element > Information** or select this command from the *Primary* toolbar.



- 2. **<D>** on the upper *Type 3* guardrail lines you've just placed.
- 3. Read the basic element information in the *Message* field.

Line, Level: DES_GUARDRAIL_Type-3_Left

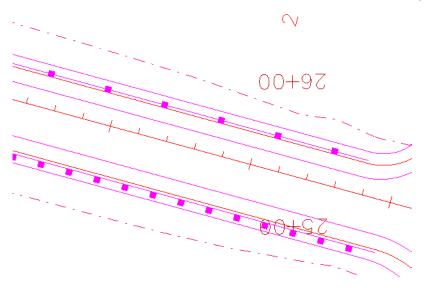
This is the same as the pop-up information provided when you "hover" over an element with your cursor.

4. In the *General* section of the *Element Information* box review the element attributes and properties.

⊡- K Selection>		
General		2
Description	Line	
Level	DES_GUARDRAIL_Type-3_Left	
Color	DES_GUARDRAIL_Type-3_Left	*
Line Style	DES GUARDRAIL Type-3 Right DES GUARDRAIL Type-7	
Weight	DES MISC	_
Class	DESPHASING	
Template	DES_PHASING-Hatch	
Transparency	DES_REMOVALS DES_ROADWAY_Approach	
Geometry	DES_ROADWAY_Control-Line	
⊞ Start	DES_ROADWAY_Curb-Back	
1 End	DES_ROADWAY_Curb-Flowline DES_ROADWAY_Curb-Top	
Length	DES ROADWAY Ditch-Bottom	
Direction	DES_ROADWAY_Ditch-Flowline	
Elevation Angle	DES_ROADWAY_Ditch-Top	
DeltaX	1154.497	
DeltaY	-314.638	
DeltaZ	-5.559	
Total Length	1196.616	
Extended		ž
Raw Data		<u>ě</u>

5. Set the Level to DES_GUARDRAIL_Type_7.

The element is moved to the *DES_GUARDRAIL_Type_7* level and the graphics update.



- **Note:** *Element Information* is one way to change element attributes or properties if the element was originally placed incorrectly.
- 6. Select the Element Information command again and change the **Level** back to **DES_GUARDRAIL_Type-3_Leff** and **Apply**.

7. Select the **Geometry** section to review the element geometry.

Start End Length Direction	3278437.042,1556493.962,-0.000 3279597.595,1556177.673,-0.000 1202.881 S74°45'18.96"E				
K Element Info □-					
General					
Description	Line				
Level	DES_GUARDRAIL_Type-3_Left				
Color	ByLevel (5) ByLevel (GUARDRAIL_Left_proposed) ByLevel (2) Primary				
Line Style					
Weight					
Class					
Template	None				
Transparency	0				
Geometry					
	3278437.042,1556493.962,-0.000				
⊞ End	3279597.595,1556177.673,-0.000				
Length	1202.881				
Direction	S74°45'18.96"E				
Elevation Angle	N90°0'0"E				
DeltaX	1160.554				
DeltaY	-316.289				
DeltaZ	0.000 1202.881				
Total Length	1202.881				
Extended					
Extended					

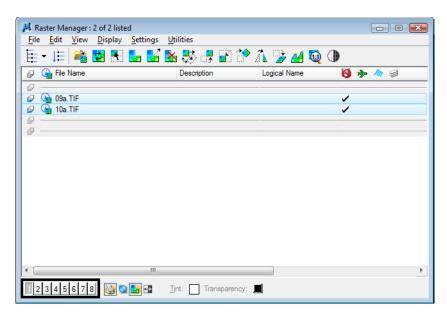
Note: The element was placed at the CDOT default active depth of 0 in the 3D file.

8. Close the Element Information dialog box when done.

Lab 7.4 - Turn Rasters Back On

1. **Fit** the view.

2. Select the **Raster Manager** icon from the *Primary Toolbar* and turn both raster files back on in View 1.



- 3. Fit your view if you don't see the raster images.
- 4. Select File > Save Settings.

LAB 8 - Create 3D Utility Graphics

In this example, you'll create a Utility model file, work with references, and then place proposed 3D utility lines using the CDOT Menu and the parallel copy tool. You'll also modify the graphics as necessary.

Chapter Objectives:

After completing this exercise you will know how to:

- Work with nested references
- Use the Copy Attachment option for references
- Use the CDOT Menu to place custom line styles (Utility lines).
- Place elements in 3D using **Depth Lock**
- Manipulate elements using the **Parallel Copy** tool
- Modify elements using the **Trim** tools

Lab 8.1 - Create the Utility model file

- 1. Open the MicroStation Manager and set the Project to 12345.
- 2. Set the directory to \Utilities\Drawings\Reference Files.

Look in:	🔰 Reference	Files	- 🕝 🥠	▼ 🔝 💙	ື້ 🔁 🖪 (*	3D - V8 DGN
A a	Name	*		Date mo	odified		
Recent Places	M12345UTIL	_Model.dgn		12/9/20	08 3:52 PM		
Desktop							
CDOT User							
						,	
Computer							
<u>.</u>	•	III			+		
Network	File name:	12345UTIL_Model.dgn		•	Open	User	CDOT User
	Files of type:	MicroStation DGN Files (*.dgn)		-	Cancel	Project	:: 12345
		Open as read-only			Options	Interface	CDOT

- 3. Open the file **12345UTIL_Model.dgn**. The blank Utility model file opens.
- 4. Select File > Save As...
- 5. Set the Directory to \Utilities\Working.

- 📕 Save As C:\Projects\12345\Utilities\Working\ × Save in: 📗 Working 🌀 🤌 📂 🛄 - * Ŧ . Name Date modified Тур 9 This folder is empty. Recent Places Desktop CDOT User Computer Network - 1 File name: CU12345UTIL_Model.dgn Save MicroStation V8 DGN Files (*.dgn) Save as type: Cancel Options
- 6. Change the file name to CU12345UTIL_Model.dgn and select Save.

The new file is created in the *Working* folder.

Lab 8.2 - Attach references

1. Select **References** from the **Primary** toolbar.

Primary Tools	I
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References	

 From the *References* dialog box, select Tools > Attach and select the 12345DES_Model.dgn file from the \Design \Drawings \Reference Files folder.

Look in:	Beference	Files		•	G 🤌	Þ		🔁 🖹	3D - V8 DGN
Recent Places		nterchange.dgi ntersec100SH86 Model.dgn Model55.dgn Model65.dgn Model##.dgn Phasing.dgn Prof.dgn	1	Size					Attachment Method Interactive
	File name: Files of type:	12345DES_ CAD Files (*)	dgn;*.dwg;*.dxf)				•	Open Cancel Options	

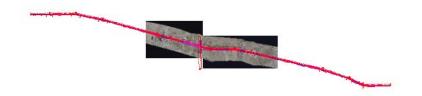
3. Verify the *Attachment Method* is set to **Interactive** and select **Open**.

 In the Attachment Settings box, keyin a Logical Name of Design and a Description of Design Model Plan. Make sure Display Raster Reference is on. Set the other options as shown and select OK.

Reference Attachment Settings for 12345DES_Model.dgn						
File Name: 12345DES_Model.dgn						
Full Path:\Dr	Full Path:\Drawings\Reference_Files\12345DES_Model.dgn					
Model: CDOT	T Default 🔹					
Logical Name: Desig	an					
Description: Desig	-					
Booonphon.	grinderhan					
Orientation:						
View	Description					
Coincident	Aligned with Master File					
Coincident - World	Global Origin aligned with Master File					
Standard Views						
Saved Views						
Named Fences (nor	ne)					
		-				
Toggles:	: 🖸 🚅 🔧 🖓 🏭 🎢 🌛 🔇 🏭 🚳 😥 🖳					
Scale (Master:Ref)	1.000000 : 1.000000 Display Raster Refer	ences				
Named Group:	T					
Revision:	· · · · · · · · · · · · · · · · · · ·					
Clip Boundary Element:	Copy To Master					
Le <u>v</u> el:	· · · · · · · · · · · · · · · · · · ·					
Nested Attachments:	No Nesting Depth: 1					
Display Overrides:	Allow					
Ne <u>w</u> Level Display:	Use MS_REF_NEWLEVELDI*					
Global LineStyle Scale:	Master					
	OK Cancel					
	Cuntor					

5. **Fit** the view.

The Design reference graphics, along with the raster photos, appear in the Utility model file.



Lab 8.3 - Raster Images

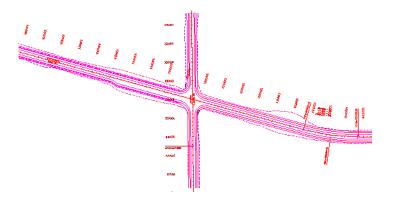
Since *Display Raster References* was turned on when attaching the reference, the aerial photos were attached with the design model file (they were turned on in the Design Model file from the last lab). You can quickly turn them off from the *Reference* dialog instead of opening the *Raster Manager*.

1. In the *References* box, highlight the **Design** reference and toggle **Display Raster** References *off.*

📕 References (1 of 1 unique,	1 displayed)				- • 💌
<u>T</u> ools <u>S</u> ettings					
🗄 • 🖄 😣 🛸	i 🖘 🌾 🛃	🔁 🔂 🎦 🕫	🛱 🚰 🔘 🕽	Hilite Mode: None	-
Slot 🏱 File Name	Model	Description	Logical	Presentation 💽 灵	1 🕇 🔓
1 12345DES_Mod	CDOT Default	Design Model Plan	Design	Wireframe 🗸 🗸	 ✓
Scale 1.000000	: 1.000000	Orientati	on Top	Rotation 0°0'0"	
Offset X -178956.971	<u>Y</u> -178956.9)71 <u>Z</u> -17	78956.971		
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		ter References			

Lab 8.4 - Work with reference files

1. **Window** in on the Intersection.



2. On the **Reference** dialog, change **No Nesting** to **Live Nesting** and set **Depth** to **1** and click on the **Show Hierarchy** icon.

📕 References (2 of 2 unique, 1 displayed)	
<u>T</u> ools <u>S</u> ettings	
📴 🔹 🕵 🚵 🌿 🏟 🌤 😂 🖓 🏠 🏠 🔂 👘 🖤 🖉 🖓	•
Show Hierarchy me Model Description Logical Presentation 💽 🖕	2 🖌 🕒
1 12345DES_Mod CDOT Default Design Model Plan Design Wireframe 🗸 🤊	/ /
Scale 1.000000 : 1.000000 Orientation Top Rotation 0*0'0''	
Offset X 178956.971 Y -178956.971 Z -178956.971	
E C C Allow Overrides V Depth: 1 N	le <u>w</u> Level Display: <u>C</u>

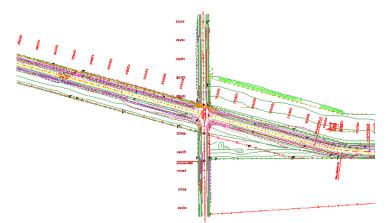
3. In the *Hierachy* pane, select the **Design** reference file as shown below. On the right, select the **Survey/Topo** nested reference and make sure that **Display is** toggled **on**.

References (2 of 2 unique, 2 displayed)	
<u>T</u> ools <u>S</u> ettings		
📴 - 🖹 💺 🗅 🌿 🇇 🗇	🖻 🖥 🏠 🛃 🐔 🛱 🚰 🚳 🔀 Hilte Mode: None	_
Hierarchy	Slot File Name Description	🖸 🎜 🦎
E-W CU12345UTIL_Model.dgn ⊕-W Design, 12345DES_Model.dgn	1 12345SURV_Topo100.dgn Global Origin aligned with M	V V V
	Scale 1.000000 : 1.000000 Orientation	n Top
	Offset X -178956.971 Y -178956.971 Z -178	956.971
	New Level Display: (Config Variable 🔻	 Allow Overrides
1	ive <u>w</u> Level Display. Coning variable	

4. Open the *Level Display* box, make sure the *Show Target Tree* button is **On**, and select the **Survey/Topo** Reference. Right click on the bottom pane and choose **All On** to turn on all reference levels.

📕 Level Display			
1 2 3 4 5 6 7 8 View Display	•		
(none) 🔻 Levels	•		
E-M CU12345UTIL_Model.dgn			
Design, 12345DES Model.d	an		
-12345SURV_Topo 100.0	lgn		
Name		Used 🔨	
TOPO_WATERWAY_Row-Line-C		•	-
TOPO_WATERWAY_Edge-Of-Wa		•	=
TOPO_WATERWAY_Ditch-Dirt-V	Vith-How	•	
TOPO_WATERWAY_Ditch-Again	Set Active	l	
TOPO WATERUTIL Spigot	_		
TOPO_WATERUTIL_Line-Marke TOPO_WATERUTIL_Fire-Hydrar	All O <u>n</u>		
TOPO_TRAFSIGN_Traff-Sgnl-Sp	All Off	1 :	
TOPO_TRAFCTRL_Symb	Invert On/Off		
TOPO TRAFCTRL_Symb			
TOPO_TRAFCTRL_Sign-Class-II	Off By Element		
TOPO TRAFCTRL Sign-Class-II	All Except Element		
TOPO TRAFCTRL Sign-Class-I	Save Filter	•	
TOPO_TRAFCTRL_Mile-Post-Ma	<u>3ave i iitei</u>	•	
TOPO_TRAFCTRL_Mile-Post-Ma	Level <u>M</u> anager	•	
TOPO_TRAFCTRL_Device-Line-	Misc	•	
TOPO_TRAFCTRL_Delineator-Ty	/pe-III	•	
TOPO_TRAFCTRL_Delineator-Ty	/pe-II	•	
TOPO_TRAFCTRL_Delineator-Ty	/pe-l	•	
TOPO_TERRAIN_Terrain-Single-	Shots	•	
TOPO_TERRAIN_Break-Lines		•	
TOPO_TELEPHONE_Vault		•	
TOPO_TELEPHONE_Undergrour		•	
TOPO_TELEPHONE_Undergrour	id-Cable	•	-

The nested Survey/Topo graphics are displayed.



5. Back in the Reference dialog box, select the upper-level **CU12345UTIL_Model.dgn** master file in the *Hierarchy* pane. On the right, select the **12345DES_Model.dgn** reference and **toggle off** *Display*.

Both Design and Survey/Topo are turned off since Survey/Topo is nested.

- 6. Turn the display of the **Design** reference back **On**.
- How would you turn off the Design graphics and leave the Survey/Topo graphics on? Currently, as nested references, you can't do this. However, in the next section you will accomplish this using Copy Attachment.

Use the Copy Attachment option

Many times, especially in Model files, you want all your references to be upper level references (as opposed to nested references) so that you can turn on/off the display of individual reference files. To accomplish this you can either reference all the nested files one by one or you can use the **Copy Attachment** option.

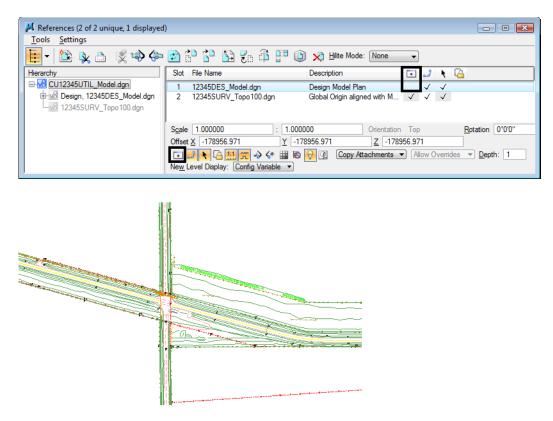
1. With the *Design* reference selected on the right, change the **Live Nested** option to **Copy Attachment**.

Iools Settings Image: Settings Image: Settings Hierarchy Slot File Name Description Image: Settings Slot File Name Description Image: Settings Slot File Name Description Slot File Name Description Image: Settings Source Slot File Name Description Image: Settings Slot Setting Slot File Name Description Image: Settings Slot Setting Slot File Name Description Image: Settings Segie Station Of Setting Design Model Plan Image: Setting Setting Segale 1.000000 Image: Setting Setting Segale Setting Setting Segale 1.000000 Image: Setting Setting Setting Setting Segale 1.000000 Image: Setting Setting Setting Setting Segale 1.000000 Image: Setting Setting Setting Setting Setting Segale 1.000000 Image: Setting Setting Setting Setting Setting Setting Setting Settin	📕 References (2 of 2 unique, 2 displayed	
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New Level Display: Config Variable Copy Attachments		

Note: Notice that in the Heirarchy pane of the **References** dialog box both the Design and the Survey/Topo references are now upper level references. As a result of changing **Live Nesting** to **Copy Attachments**, the nested Survey/Topo reference was copied in as a direct attachment.

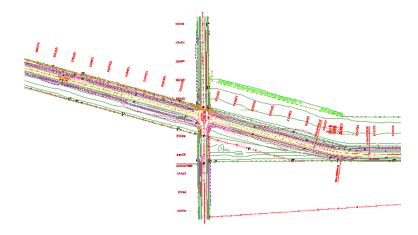
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Copy Attachments Allow Overrides Depth: 1 New Level Display: Config Variable

2. On the right-hand side of the *References* box, select the reference for the **Design** model and toggle the *Display* off.



With both references as direct attachments, each reference cand be individually turned on/ off. In this example the Design reference is turned off while the Survey/Topo graphics remain on.

- **Note:** As a rule of thumb for Model files, you can reference nested to avoid having to attach multiple times. Then, once the nested references are attached, use the **Copy Attachment** option to make all nested references direct attachments. For Sheet files (see Chapter 9), you should typically use nested attachments.
- 3. Turn the *Design* reference display back **On**.



Lab 8.5 - Drawing in 3D (using Depth lock)

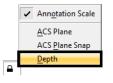
In the next series of steps, you will practice placing utility graphics from the CDOT Menu with and without *Depth lock*. The Depth lock sets the elevation of the graphics are placed in a 3D file.

Place overhead electrical lines

1. To check your active depth, key in az= then $\langle D \rangle$ in the view.

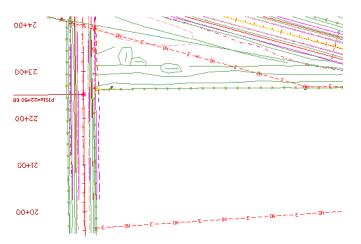
The default active depth for the CDOT for the Utility model file is **0.00**.

Select the Locks button on the status bar and verify that Depth lock is turned Off.



With **Depth lock** turned off, you will pick up the elevation of elements you snap to in a 3D file.

2. Zoom in on the south side of the intersection cross road.



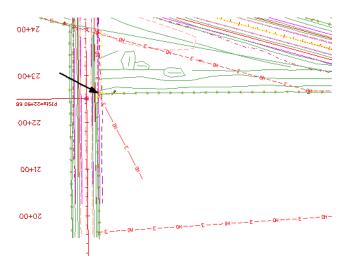
- 3. On the CDOT Menu highlight the Utilities group and set Status to Proposed.
- 4. Select the **Electric** category.
- 5. Set the *Filters* category to All.

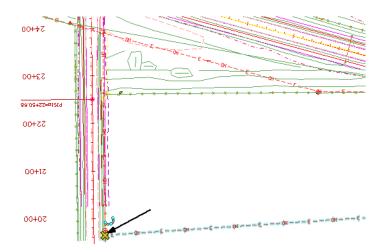
- CDOT Menu - • • CDOT Groups CDOT Tools Options Help Drafting Status ? Bridge Existing Proposed Construction Design Utilities Geometry Hydraulics ∖**A 🕸 🚳** 셈 Landscape Environmental Overhead Line Materials Geotechnical Ele ROW Survey Underground Line . ⊕ Traffic ITS Fiber Optic A <New Text String> - Utilities * Catenary Pole Gas * Decorative Light Standard ☆ Fire Alarm Box Sanitary Sewer 🔆 Guy Wire * Lighting Post < 111 Telephone * Manhole * Miscellaneous Television * Pedestal or Pull Box Water * Power Pole * Relocated Light Standard * Tower 🔆 Vault Settings...
- 6. Select the **Overhead Line** item.

Note that the active level is automatically set to *UTIL_ELECTRICAL_Overhead* and the *Place SmartLine* command is started.

🔎 (none) 🔻		
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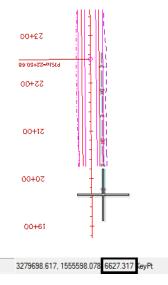
7. **AccuSnap** to the end of the existing North/South overhead line at the power pole as shown.





8. AccuSnap to the end of the existing east/west overhead line at the power pole as shown.

- 9. **<R>** to complete this line.
- 10. Turn **Off** the display of the Topo/Survey reference to better see the proposed graphics.
- 11. **<T>** on the end of the proposed overhead electrical line you just placed.



- *Note:* Even though the active depth is 0, since **Depth lock** is turned off the line was placed at the elevation of the existing overhead line (6627.317).
- 12. **<T>** on the other end of the proposed overhead electrical line to check its elevation.

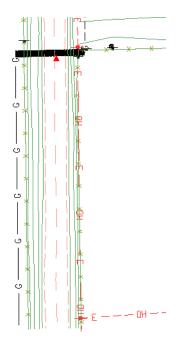
3279695.272, 1555897.262 6623.081 KeyPt

Place proposed gas lines

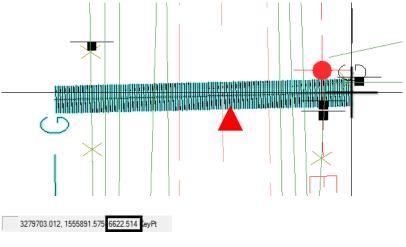
- 1. Turn **Off** the display of the *Design* reference and turn **On** the display of the *Survey/Topo* reference.
- 2. On the CDOT Menu, select the *Gas* category.

- 🚰 CDOT Menu - • • CDOT Groups CDOT Tools Options Help Drafting Status ? Bridge Existing Proposed Construction Design Utilities Geometry Hydraulics N 🛠 🚳 📶 Landscape Environmental Gas Line Materials Geotechnical Electric ROW Survey Hiah Pressure Lin . Traffic ITS A <New Text String> Fiber Optic Utilities 🔆 Manhole Gas ☆ Valve 🔆 Vault Sanitary Sewer ☆ Vent-Pipe 4 111 Þ Telephone Television Water Settings...
- 3. Select the **Gas Line** item.

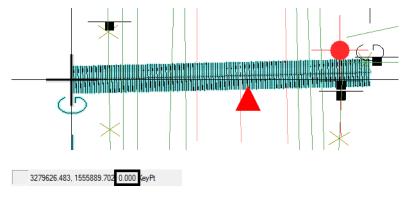
- 4. **<T>** on the end of the existing gas line on the east side of the road.
- 5. Place data points to draw the gas line in the approximate location shown.
- 6. **<R>** when done.



Note: The line does not look as expected. **<T>** on the East end of East-West section of the newly placed gas line and note the elevation.

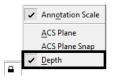


<T> on the West end and note the elevation



<T> snapping to an existing element positions the starting point of the new element at the elevation of the original element. Subsequent points that are not snapped to are placed at the *Active Depth* (Elevation) *of 0*. In this case, what you see is a proposed gas line that goes from an elevation of +/- 6622 to an elevation of 0 making the utility much longer than it should be. Because there are now so many "G" symbols in a line that is over 6000' long, it gives the appearance of a thick line.

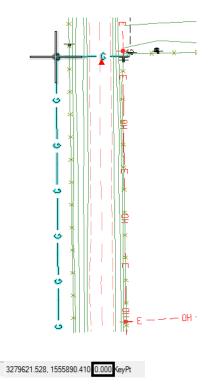
- 7. **Delete** the proposed gas utility line you just placed.
- 8. Select the **Locks** from the status bar.
- 9. Toggle **On** *Depth Lock*.



10. On the Snap Mode toolbar, toggle AccuSnap Off.



- **Note:** AccuSnap doesn't work consistently when **Depth Lock** is on. Therefore, to ensure Depth lock works correctly, toggle AccuSnap off.
- 11. Place the proposed gas line again by a **<T>** on the end of the existing gas line and then placing the other data points in the approximate location shown.
- 12. **<T>** anywhere on the proposed gas line you just placed and note the elevation.



Since *Depth lock* is on, the proposed gas line was placed at an elevation of **0**.

Note: To return to the default settings, turn *Depth lock* Off and toggle *AccuSnap* back On.

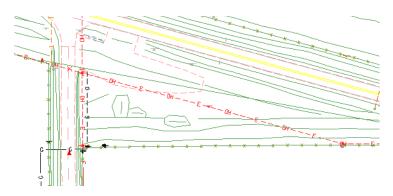
Place fiber optic lines using parallel copy

Follow the steps below to place a fiber optic line by copying parallel an existing telephone line.

Locate reference graphics for copying

1. Turn off the TOPO_TERRAIN_Break-Lines level in the SurveyTopo reference.

2. **Window** in on the existing overhead electrical line in the southeast quadrant of the intersection as shown.

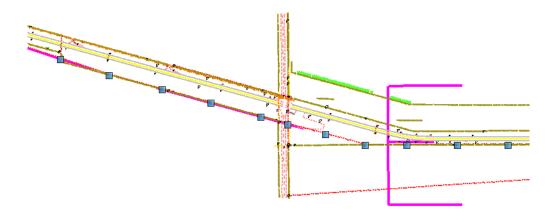


- 3. Select the **Move Parallel** tool from the *Manipulate* toolbar.
- 4. In the *Tool Settings* box, set the options as shown below.

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	8 Stretch	
55	9 Move Parallel	
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_	Open as ToolBox	

- 5. **<D>** on the existing overhead line
- 6. Move the cursor down to specify the direction of the parallel copy.

7. **<D>** to place the copy.



- **Note:** When copying graphics from a Topo file, elements will maintain a hard coded linestyle scale and thus appear at the incorrect scale. This scale needs to be adjusted using the Element Info tool. In this example the linestyle scale of the new utility line need to be changed from a value of 100 to 1.
- 8. Select the new graphic and **<D>** on the *Element Info* tool.



- 9. Expand the *Extended* category and *Line Style Parameters* sub-category.
- 10. Change the value of the *Scale* option to **1**.

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Geometry	8
Groups	8
Extended	â
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Modified	Modified
New	New
Locked	Unlocked
Thickness	0.000
Line Style Parameters	
Scale	1.00000
Width Mode	None
Shift Mode	None
Corner Mode	From Line Style
Raw Data	8

11. **Close** the Element Info

Change element attributes

Change the overhead electrical line to an underground fiber optic line using the *Change* command.

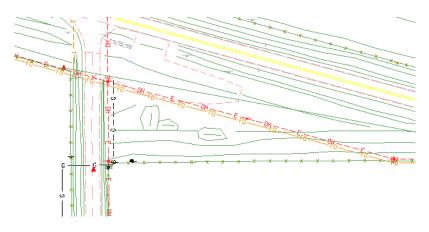
1. Set the active level to UTIL_FIBEROPTICS (hint: use a filter to help you set the level).

Attributes			
🕞 Utilitie 🔻	UTIL_FIBEROPTICS		
	Filter: Utilities.Fiber Optic		
	UTIL_FIBEROPTICS	~	0
	UTIL_FIBEROPTICS_Overhead	~	• 🗖
	UTIL_FIBEROPTICS_Symb	~	• 🗖
	UTIL_FIBEROPTICS_Text	~	o 🗖

- 2. Select the Change Element Attributes command from the Change Attributes toolbar.
- 3. Set *Method* to Change.
- 4. Toggle On Use Active Attributes.
- 5. Toggle On *Level* (this picks up the active level).

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- 6. **<D>** on the overhead electrical line you just copied as the element to change.
- 7. **<R>** when done.



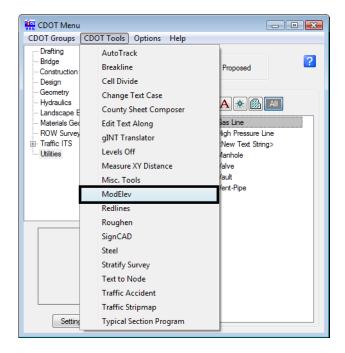
Since the *Use Active Attributes* option was turned on, the element was changed to the active level UTIL_FIBEROPTICS.

Set the elevation

1. **<T>** on the fiber-optics line you just placed.

3279913.476, 1555958.930 6616.131 KeyPt

The proposed fiber-optics line is in the 6615 elevation range (your exact elevation may be vary depending on where you placed a tentative point). This elevation is wrong for the fiber optic line since you copied the overhead electrical line. For now, you can set the elevation of this line to 0 and later, it can be placed as a feature in the InRoads surface at the correct elevation. One way to set the elevation of an element is to use the **ModElev** command on the CDOT Menu.



2. On the CDOT Menu, select **CDOT Tools > ModElev**.

3. In the *ModElev* tool settings box, set the elevation to *O*.

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Elevation:	0.000000
Single	Fence All

- 4. Select **Single** (to identify a single element).
- 5. **<D>** on the new fiber-optics line you created.
- 6. **<D>** to accept.
- 7. **<R>** when done.

8. **<T>** on the fiber-optics line to check its elevation.

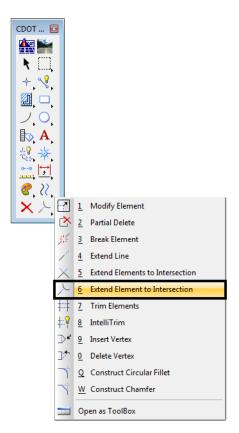
3279531.734, 1556062.755 0.000 KeyPt

The Z value is now at 0. Use the ModElev command to easily set the elevation of any element or group of elements (selected with a fence).

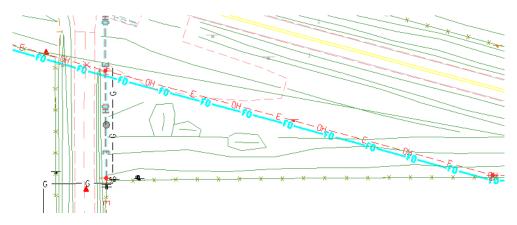
Trim graphics

The new fiber optic line is only going in on the east side of the intersection cross road. Follow the steps below to use the *Extend Element to Intersection* command to trim the fiber optic graphics.

1. Select the Extend Element to Intersection command from the Modify toolbar.

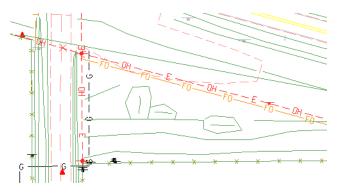


2. **<D>** on the fiber optic line to the right of the intersection, this is the section we wish to keep.



3. **<D>** on the north/south proposed overhead electrical line as the cutting element.

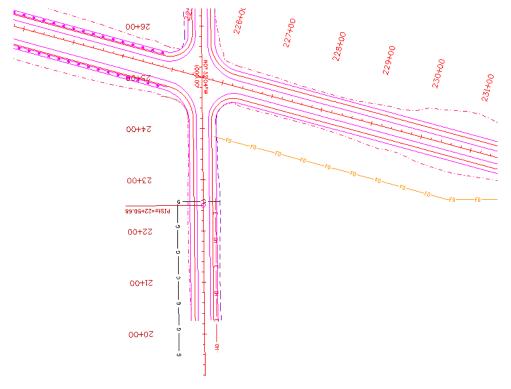
The fiber-optics lines are trimmed as shown.



- 4. Turn off the display of the **Survey/Topo** references.
- 5. **Fit** the view.



Only the proposed gas, electric and fiber-optic utility graphics should appear in the *CU12345UtilityModel01.dgn* file.



6. Turn the display of the *Design* reference **On** and window into the intersection as shown.

Move the utility model to the Reference Files folder

Move the utility model so that other groups can reference your work.

1. Select File > Save As and set the directory to the project's \Utilities\Drawings\Reference_Files folder.

Save in:	Reference_Files	-	- 🕝 彦	► 🔝 🏷	۲	3D - V8 DGN
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	Save as type: Micro Stati	on V8 DGN Files (*.dgn)	-	Cancel	

2. Remove the **CU** initials from the file name and select **Save**.

The file is saved to the new location.

- **Note:** The project template delivers standard dgn's for model and sheet files as starter files. Use caution when when prompted to confirm saving over an existing file as you could lose data.
- 3. Select File > Close.
- 4. In the *MicroStation Manager* verify that the file was saved to the *Reference_Files* folder.

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- 5. Set the directory to **\Utilities\Working**.
- 6. **Right-click** while hovering over the file and select **Delete** to delete the file from the Working folder.

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7. **Cancel** the MicroStation Manager to exit.

LAB 9 - Create Landscape Graphics

In this lab you'll create a Landscape & Environmental (L&E) model file and then use the CDOT Menu to place silt fence lines, hay bale cells and wetlands regions.

Chapter Objectives:

After completing this exercise you will know how to:

- Use the CDOT Menu to place L&E custom lines
- Use the CDOT Menu to place L&E cells
- Use the CDOT Menu to place L&E shapes (wetlands)
- Use the CDOT Menu to pattern areas

Lab 9.1 - Create the L&E Model File

- 1. Start MicroStation.
- 2. Re-set Project to 12345.
- 3. Set the directory to \Landscape_Environmental\Drawings\Reference Files.
- 4. Select the file **12345LAND_ENVI_Model.dgn** and select **Open**.

Look in:	Reference_	Files	- 🕝 🖄) 🖻 🛄	💌 🛅 🔁	٠	3D - V8 DGN	
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 After opening the file, select File > Save As... and set the directory to C:\Projects\12345\Landscape_Environmental\Working. 6. Change the file name to CU12345LAND_ENVI_Model.dgn and select Save to save a copy to the Working folder.

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	Save as type:	MicroStation V8 DGN Files (*.dgn)		•	Cancel	
					Options	

- 7. Select **References** from the **Primary** toolbar.
- Using what you've learned, attach the Design model reference (from Design's \Drawings\ Reference_Files folder), Coincident-World and at a 1:1 scale. Copy
 Attachments at a depth of 1 to bring in the Survey/Topo as direct attachments. See below.

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9. Fit the view.

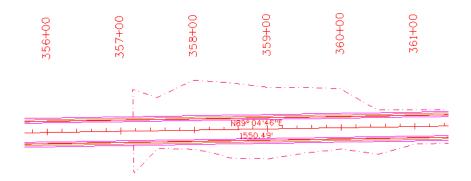


10. From the **Reference** dialog, Turn *off* the display of Design's raster references.

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2 12345SURV To	Global Origin aligne Ref	Wireframe
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-	-178956.971 Z -178956.971	
	-	Overrides Depth: 1 New Level Display: Co

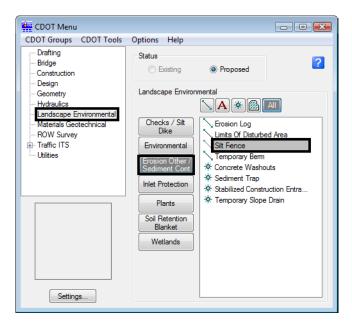
Place silt fence

1. Window around the end of the project just east of the existing bridge.



- 2. From the CDOT Menu, select the Landscape Environmental Group.
- 3. Set Status to Proposed.
- 4. Set the category to Erosion Other / Sediment Control.

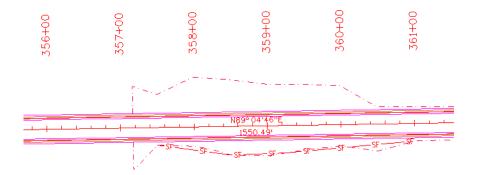
5. Select the Silt Fence item.



This automatically sets the active level to LAND_ENVI_Erosion-Silf-Fence and selects the Place SmartLine tool.

(none:

6. Place data points to draw the silt fence along the toe-of-fill line on the south side of the proposed road (similar to the one shown).

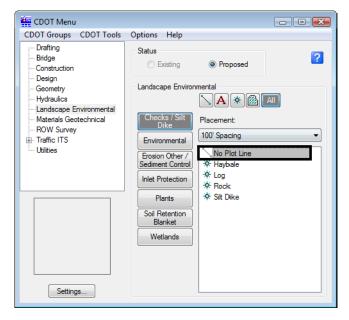


7. **<R>** when done.

Place Haybales

1. Set the category to **Checks / Silt Dike**.

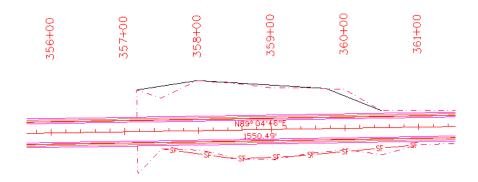
2. Select the item **No Plot Line**.



This automatically sets the active level to **DRAFT_INFO_No-Plot** and selects the **Place SmartLine** tool. The **No Plot** level allows you to place a construction line representing the location of haybales, silt dikes, etc. that you can later divide with a cell.

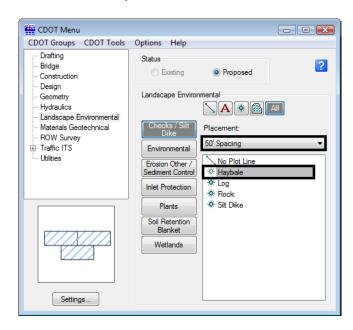
D (none] ▼	DRAFT_INFO_No-Plot	
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3. Place data points to draw the haybale construction line on the north side of the proposed road as shown.



4. **<R>** when done.

- CDOT Menu CDOT Groups CDOT Tools Options Help Drafting Status ? Bridge Existing Proposed Construction Design Landscape Environmental Geometry Hydraulics **∖** A ≉ 🚳 Landscape Environmental ks / Silt Materials Geotechnical Placement: ROW Survey 50' Spacing Traffic ITS Environmental ---- Utilities No Plot Line Erosion Other / ediment Control * Haybale 🔆 Log Inlet Protection * Rock 🔆 Silt Dike Plants Soil Retention Blanket Wetlands Settings... - • • 🚝 Active Settings Active Scale: 100.00 Apply Active Angle: 0.00 Close 6. Set Placement to 50' Spacing.
- 7. Set the item to Haybale.

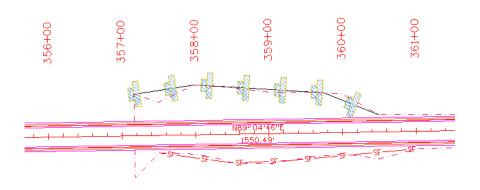


This automatically selects the **Place Cell** command and starts the **Cell Divide** program.

8. When prompted to Identify Element, <D> on the No Plot line you just placed.

5. On the CDOT Menu, select Settings and set Active Scale to 100, Apply and then Close.

9. **<D>** to accept.

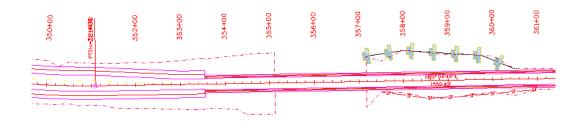


The No Plot line is divided with the haybale cells at 50 ft. intervals.

Create wetlands

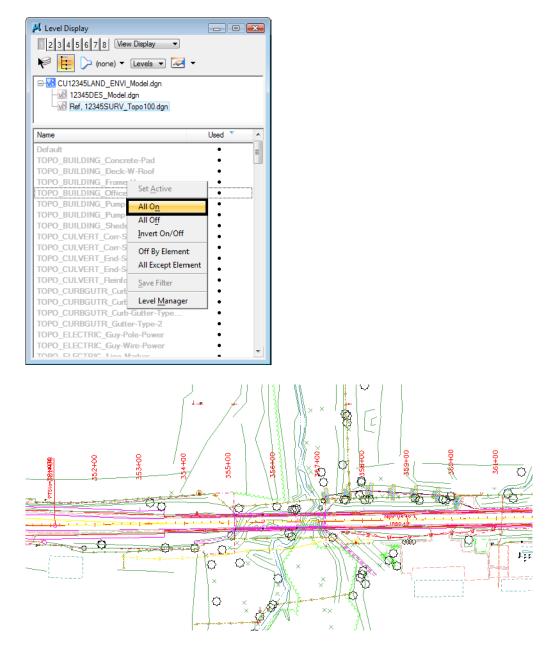
Draw the wetland shapes

1. Pan over to the left to the area around the bridge as shown.



2. From the Reference File dialog box turn on the display of the **Survey/Topo** file.

3. Open Level Display, highlight the Survey/Topo reference, right-click in the list of levels and turn on all of the Survey/Topo reference levels.

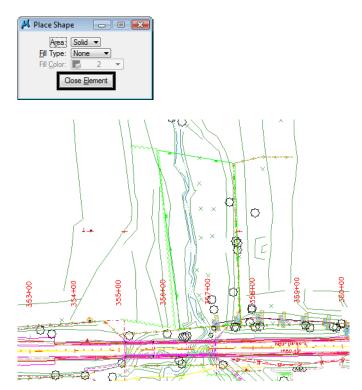


4. On the CDOT Menu, set the category to Wetlands.

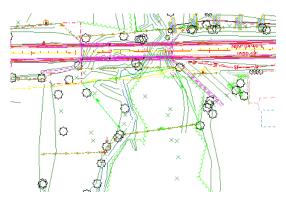
- CDOT Menu - • • CDOT Groups CDOT Tools Options Help Drafting Status ? Bridge Existing Proposed Construction Design Landscape Environmental Geometry Hydraulics 🔪 A 🕸 🙆 Landscape Environmental Checks / Silt ≺Wetland Le Materials Geotechnical Dike ROW Survey Wetland Rig ⊕ Traffic ITS Environmental Existing ---- Utilities Mitigation Erosion Other / 🛞 Permanent Sediment Control Temporary (Hatch) Inlet Protection Plants Soil Retention Blanket Settings...
- 5. Select the item Wetland Right.

This automatically sets the active level LAND_ENVI_Wetland-Right and selects the Place Shape tool.

6. Place data points to define the wetlands region as shown. To close the shape, select **Close Element** in the **Place Shape Tool Settings** box.

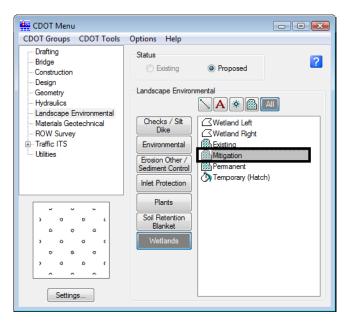


7. Repeat for the area on the other side of the bridge as shown.



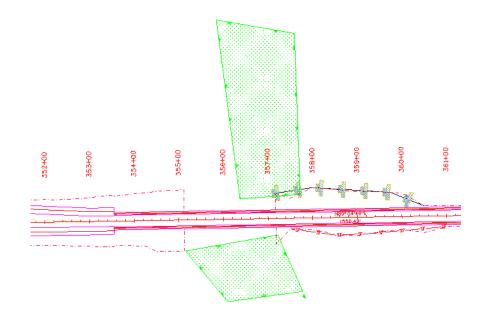
Pattern the wetlands

8. On the CDOT Menu, select the Mitigation item from the Wetlands category.



This automatically selects the Pattern Area command and sets the active pattern cell.

- 9. When prompted, **<D>** on the wetland shape you just drew and then **<D>** to accept.
- 10. Repeat for the other wetlands shape on the north side of the bridge.



11. Turn *off* the display of the **Survey/Topo** reference.

- 12. Save Settings.
- 13. Proceed to the next lab.

LAB 10 - Create Hydraulics graphics

Chapter Objectives:

After completing this exercise you will know how to:

- Use the CDOT Menu to place Hydraulics custom lines (pipes)
- Use the CDOT Menu to place Hydraulics cells (inlets)
- Use the CDOT Menu to place Hydraulics terminators (RCES)

Lab 10.1 - Create the Hydraulics Model File

- 1. In MicroStation, select **File > Open**.
- 2. Set the directory to \12345\Hydraulics\Drawings\Reference Files
- 3. Select the file 12345HydraulicsModel##.dgn and select Open.

Look in:	📙 Reference_	Files	- 0	ø 🆻	 •	ù 🔁 🗈]	3D - V8 DGN	
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CDOT User									
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Computer									
Network									
	•	III				•			
	File name:	12345HydraulicsMode	l## dan		- 6	Open	User	CDOT User	_
			-					12345	
	Files of type:	MicroStation DGN File	is (".dgn)		_	Cancel			
		Open as read-only				Options	Interface:	CDOT	

4. Select File > Save As... and set the directory to \Hydraulics\Working

5. Change the file name to **CU12345HydraulicsModel.dgn** and select **Save** to save a copy to the **Working** folder.

Save in:	Working		- 🌀 🏚 📂		*
	Name	*		Date modified	Туре
Recent Places		This	folder is empty.		
Desktop					
CDOT User					
Computer					
Network					
	•				4
	File name:	CU12345HydraulicsModel.dg	gn	*	Save
	Save as type:	MicroStation V8 DGN Files (*.dgn)	•	Cancel
		(Options

- 6. Select **References** from the **Primary** toolbar.
- Using what you've learned, attach the Design model reference (from Design's \Drawings\ Reference_Files folder), Coincident-World and at a 1:1 scale. Copy Attachments at a depth of 1 to bring in the Survey/Topo file as direct attachments. See below.

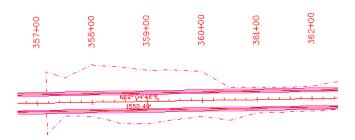
📕 References (2 of 2 unique, 2 displayed) — 8 💌
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📴 - 🖹 💺 👌 🛒 🗇 🗇	🗈 🎦 🏠 🌠 🌐 📳 🕲 🗙 Hilte Mode: None 🕞
Hierarchy	Slot File Name Description 💽 🗈 🍾 🔓
E-108 CU12345HydraulicsModel.dgn	1 12345DES_Model.dgn Global Origin aligned with M ✓ ✓ ✓
🕀 😡 12345DES_Model.dgn	2 12345SURV_Topo100.dgn Global Origin aligned with M ✓ ✓ ✓
Ling Ref. 12345SURV_Topo100.dgn	
	Scale 1.000000 : 1.000000 Orientation Top Rotation 0°0'0"
	Offset X -178956.971 Y -178956.971 Z -178956.971
•	Image: Copy Attachments Allow Overrides Depth: 1 New Level Display: Config Variable Image: Config Vari

8. From the **References** dialog, turn off the display of the design model's raster references.

Place Inlets

Using known coordinates and the **CDOT Menu**, place proposed Type R inlets along the curb flowline at the end of the project.

1. Window into the area shown near the end of the project.



This area of the projects is a proposed 2-Lane urban section with curb, gutter and sidewalk. You'll first place inlets along the curb flowline.

- 2. Select Locks from the status bar and make sure Depth lock is turned off.
- 3. On the CDOT Menu, select the Hydraulics Group.
- 4. Set the **Status** to **Proposed**, select the **Inlets (Plan)** category, and then select the **Type** *R L* **10** item.

(
E CDOT Menu						
CDOT Groups CDOT Tools	Options Help					
···· Drafting ···· Bridge ··· Construction	Status	Proposed				
Design Geometry Hydraulics Landscape Environmental	Hydraulics					
Materials Geotechnical ROW Survey	Conveyance	 ✤ Denver Type 16 (Doubl ✤ Denver Type 16 (Triple) 				
Traffic ITS Utilities	Drainage Basin	* Denver Type 16 (True				
t Utilities	FES (Plan)	 ☆ Type 13 (True Scale) ☆ Type C (True Scale) 				
	FES (Profile)	 ※ Type D (True Scale) ※ Type R L 10 (True Scale) 				
<u> ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا ا</u>	Inlets (Plan)	- ☆ Type R L 15 (True Scale) ☆ Type R L 5 (True Scale)				
	Inlets (Profile)	 ☆ Vane Grate (Double) (Tr ☆ Vane Grate (True Scale) 				
	Miscellaneous	☆ Vane Grate w/Apron (D				
	Pipes (Plan)	☆ Vane Grate w/Apron (T				
	Pipes (Profile)					
Settings	Structures					

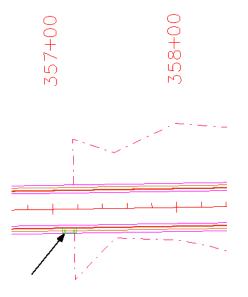
Note: This automatically sets the active level to **HYDR_Inlets** and selects the **Place Cell** command. The inlet cell is attached to your cursor at the origin point. Since you know the coordinate location for the inlets, you can place them with precision keyins.

5. Select Settings and set Active Scale to 1 and Active Angle to 180. Apply and then Close.

s	
1	Apply
180	Close
	1

6. For the 1st inlet, key in **xy=3292424.652, 1553316.387, 6351.8**

The inlet appears in the location shown.



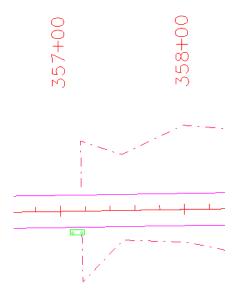
- **Note:** If you don't see the inlet, it could be outside your display depth. Key in **dp=0,7000** Enter, and then select the view. You could also fit the view and then window back to this location.
- 7. For the 2nd inlet, key in **xy=3292674.652, 1553320.404, 6350.4**
- 8. For the 3rd inlet, key in *xy*= 3292900.384, 1553324.031, 6348.8
- 9. **<R>** to exit the **Place Active Cell** command

- 📕 Level Display 2 3 4 5 6 7 8 View Display -🜾 📴 🍃 (none) 🔻 Levels 🔹 🕶 🗸 ⊡-108 CU12345HydraulicsModel.dgn -W 12345DES_Model.dgn Ref, 12345SURV_Topo100.dgn Name Used N ignilient-Jort ta-Mino ٠ 362+00 360+00 359+00 361+00 357+00 358+00 N89° 04'46' ____ 1550.49 6.1 9 ب ر ب ر ب . **. . .** . ÷.
- 10. Turn off the **Design** reference levels shown to better see the inlets.

Connect the inlets with pipes

Place the pipes

1. Zoom in on the first inlet.



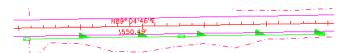
2. Verify that **Depth lock** is still turned **off**.

When placing pipes, you want to pick up the elevation of the inlets, therefore you need to turn **Depth lock off**.

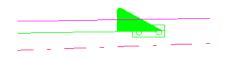
- 3. On the CDOT Menu, set the category to Pipes (Plan).
- 4. Select the item **Reinforced Concrete**.

🚝 CDOT Menu			_ • •
CDOT Groups CDOT Tools	Options Help		
Drafting Bridge Construction	Status	Proposed	?
···· Design ···· Geometry ···· Hydraulics	Hydraulics	∖A ≉∭	All
Landscape Environmental Materials Geotechnical ROW Survey Traffic ITS	Conveyance Drainage Basin	Corrugated Meta	I
L Utilities	FES (Plan) FES (Profile)	Plastic Reinforced Conc Temporary	rete
	Inlets (Plan)		
	Inlets (Profile)		
	Miscellaneous		
	Pipes (Plan)		
	Pipes (Profile)		
Settings	Structures		

- **Note:** This automatically set the active level to **HYDR_PIPES_Concrete** and selects the **SmartLine** tool.
- 5. AccuSnap on the right-side midpoint of the inlet to begin the pipe.
- 6. Pan to the right and AccuSnap on the left-midpoint of the second inlet.
- 7. Pan to the right and **AccuSnap** on the right-midpoint of the third inlet.
- 8. **<R>** when done.

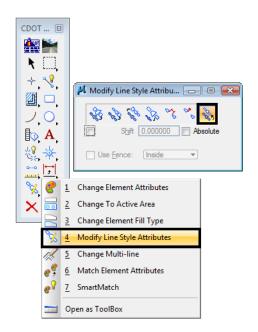


Note: This connects the inlets with the concrete pipe. Notice how the directional arrow on the pipe custom line style falls on top of the last inlet. You can correct this by shifting the custom line style.



Shift the line

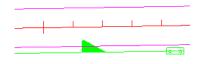
- 1. Select the Change Element Attributes toolbar from the Main toolbar.
- 2. Select the Modify Line Style Attribute command.
- 3. Set the **Modify** option to **Shift**.



Note: The Shift command is also located on the CDOT Misc. Toolbar.



4. **<D>** on the concrete pipe that you just placed and move your cursor to the left. Note how the custom line style shifts as you move your cursor. When the arrow is moved off of the inlet, **<D>** to accept.



Note: Use the **Modify Line Style** command to shift custom lines styles as needed, especially in corners where there may be gaps.

Place a Type C inlet and connect pipes

Turn on the Survey/Topo reference

To help determine the location of the inlet, turn on the Survey/Topo Reference and the Contour reference.

 On the Reference dialog, select the Design reference set the Copy Attachment Depth to 2.

Scale 1.000000	: 1.000000	Orientation Top	Rotation 0°0'0"
Offset X -178956.971	Y -178956.971	Z -178956.971]
🖸 😹 🕷 🕒 🛄 📆 🌛	🐓 🏭 😰 🚺 🖸	Copy Attachments Allow Overrides	✓ <u>D</u> epth: 2
New Level Display: Config Va			

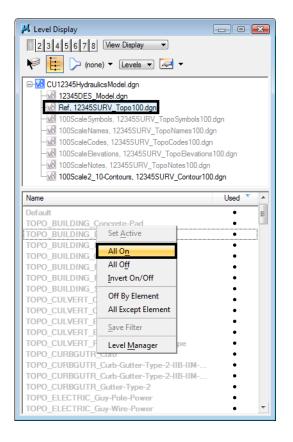
Note: This brings in the Contour reference since the Contour model file is referenced to the Survey/Topo file.

2. Be sure the display of all other reference files are off.

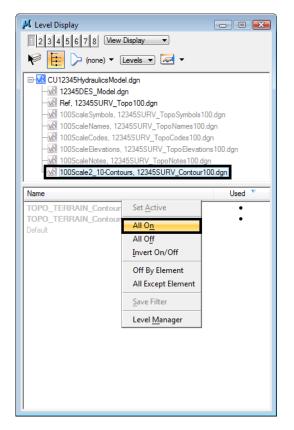
References (8 of 8 unique, 3 displayed) <u>T</u> ools <u>S</u> ettings		
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Hierarchy	Slot File Name Description 🗔 🎜 🍾 🔓	
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€-w 12345DES_Model.dgn	2 12345SURV_Topo100.dgn Global Origin aligned with M 🗸 🗸 🗸	
-w8 Ref, 12345SURV_Topo100.dgn	3 12345SURV_TopoSymbols100.dgn Fieldbook Data 🗸 🗸	
-w8 100ScaleSymbols, 12345SURV	4 12345SURV_TopoNames100.dgn Fieldbook Data 🗸 🗸	
	5 12345SURV_TopoCodes100.dgn Fieldbook Data 🗸 🗸	
-will 100ScaleCodes, 12345SURV T	6 12345SURV_TopoElevations100.dgn Fieldbook Data	
-vol 100ScaleElevations, 12345SUR	7 12345SURV_TopoNotes100.dgn Fieldbook Data	
	8 12345SURV_Contour100.dgn Surface Data 🗸 🗸 🗸	
-weight 100ScaleNotes, 12345SURV_T(Scale 1.000000 : 1.000000 Orientation Top Rotation	n 0°0'0''
-w8 100Scale2_10-Contours, 123455	Offset X -178956.971 Y -178956.971 Z -178956.971	
		epth: 1
4 III >>	New Level Display: Config Variable 🔻	

Turn on reference levels

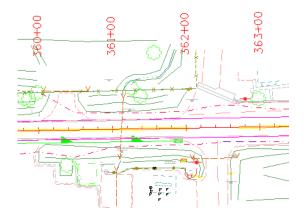
1. In the Level Display box, turn on all of the Survey/Topo reference levels.



2. Turn **on** all **Contour** reference levels.

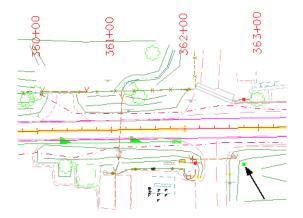


3. Window into the location shown.

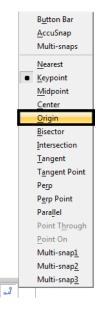


- • 🛄 CDOT Menu CDOT Groups CDOT Tools Options Help Drafting Status ? Bridge Existing Proposed Construction Design Hydraulics Geometry Hydraulics 💊 A 🚸 🙆 🔤 Landscape Environmental 🛠 Denver Type 16 (Doubl. Materials Geotechnical Convevance ROW Survey * Denver Type 16 (Triple)... Drainage Basin * Denver Type 16 (True Utilities 13 (True Scale) FES (Plan) pe C (True Sca vpe D (True S FES (Profile) * Type R L 10 (True Scale) Type R L 15 (True Scale) .€ Ш * ts (Plan) * Type R L 5 (True Scale) ☆ Vane Grate (Double) (Tr... Inlets (Profile) * Vane Grate (True Scale) Miscellaneous * Vane Grate w/Apron (D., 🔆 Vane Grate w∕Apron (T.. Pipes (Plan) Pipes (Profile) Structures Settings.
- 4. On the CDOT Menu, select the Inlets (Plan) category and then select the Type C item.

- **Note:** This automatically sets the active level to **HYDR_Inlets** and selects the **Place Cell** command. The inlet cell is attached to your cursor at the origin point.
- 5. Key in xy= 3292986.899, 1553291.431, 6347.0
- 6. **<R>** to exit the **Place Active Cell** command.

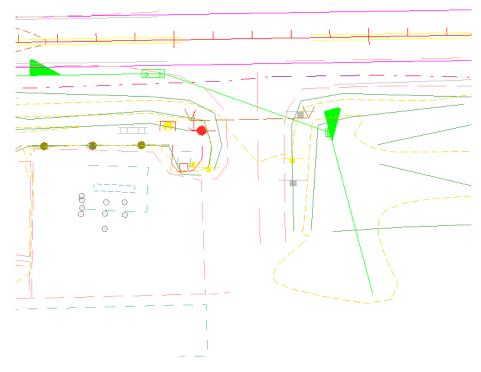


- 7. On the **CDOT Menu**, set the category to **Pipes (Plan)** and select the **Reinforced Concrete** item again.
- 8. Key-in **AZ=6346** then **<D>** in the view to set the active depth to 6346.0. This will allow the placement of the pipe outlet at the correct elevation.
- 9. AccuSnap on the right-midpoint of the last Type R L 10 inlet.



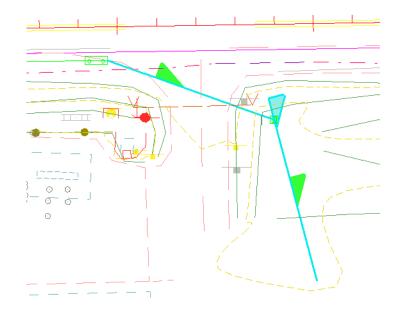
10. Select the Origin snap mode and AccuSnap on the Type C inlet. (see below).

11. Place a final **<D>** in the location shown for the end of the pipe near the contour line (see below).



12. **<R>** when done.

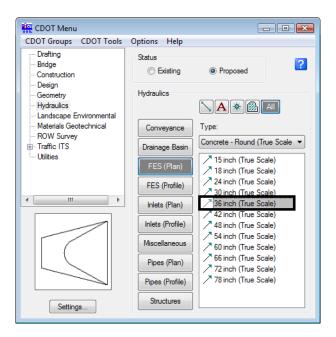
13. Use the **Modify Line Style** again command and **Shift** the pipe line style as necessary to ensure the arrow does not fall on top of an inlet.



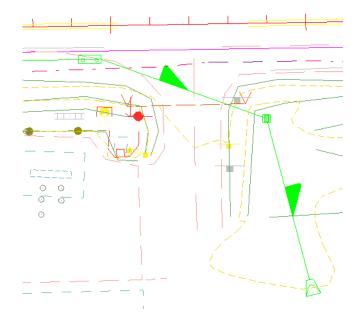
Place the pipe terminator

The pipe terminates at a 36" RCES, which you can place as a cell line terminator.

- 1. On the CDOT Menu, set the category to FES (Plan).
- 2. Set Type to Concrete Round.
- 3. Select the **36 inch** item.



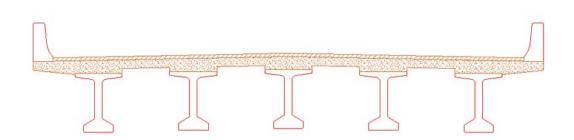
- *Note:* This automatically set the active level to HYDR_FES and selects the Place Active Line Terminator tool from the Cells toolbar.
- 4. **<D>** on the end of the concrete pipe as shown.
- 5. **<D>** to accept.



- **Note:** The RCES terminator is automatically rotated to the appropriate angle and placed on the end of the pipe.
- 6. Save Settings.
- 7. Exit MicroStation.

LAB 11 - Draw a Bridge Typical Section

In this lab, you'll practice all of the drawing concepts you've learned so far to create a bridge typical section.



Chapter Objectives:

After completing lab 11, you will know how to:

- Use the Bridge Menu to set active attributes (level, color, line style, weight).
- Use basic drawing tools (*AccuDraw*, *AccuSnap*, *Modify* and *Manipulation* tools, *cells*, *patterns*, etc.) to draw a bridge typical section and a reinforcement detail.
- Use *Selection Sets* to group graphics.

Lab 11.1 - Create a Bridge Model file for details

- **Note:** Since you have already selected *xxMulti-Discipline* from the *Select Group* utility, you have access to all Bridge levels. However, you could also select the Bridge Group before starting MicroStation to limit your levels to just those needed for Bridge.
- 1. Start MicroStation.
- 2. In the MicroStation Manager dialog box, re-set *Project* to 12345.
- 3. Set the directory path to \Bridge\Drawings\Reference_Files.

📕 MicroStation N	Manager - C:\Proj	iects\12345\Bridge\Drawings\Refe	rence_Files	١			.
Look in:	Reference_F	iles 🔹	G 🤌	▼ 🛄 梵	i) 🔁 🗈	3D - V8 DGN	
Recent Places Desktop COOT User Computer	Name				odified 18 8:52 AM 18 8:52 AM		
Network	File name: Files of type:	12345BRDG_Model.dgn [MicroStation DGN Files (*.dgn)] Open as read-only		•	Open Cancel Options	User: CDOT User Project: 12345 Interface: CDOT	• • •

4. Select the file *12345BRDG_Model.dgn* and then select **Open**.

The blank model file opens.

- 5. Select **File > Save As...** and set the directory to the project's **\Bridge\Working** folder.
- 6. Rename the file *CU12345BRDG_Detail.dgn* and select **Save**.

Note: Note that you are renaming this file from "*Model*" to "*Detail*".

📕 Save As - C:\P	rojects\12345\Bri	dge\Working\				(×
Save in:	📗 Working	•	G 🤌 📂		*		
C a	Name	*		Date modified	а Тур		_
Recent Places		This folder is e	mpty.				
Desktop							
Desktop							
100							
CDOT User							
Computer							
<u>.</u>					•		
Network	File name:	CU12345BRDG_Detail.dgn		- C	Save		
					Cancel		
	Save as type:	MicroStation V8 DGN Files (*.dgn)		[Options		
					Opuolis		н

The file is copied to the working folder with the initials *CU* (CDOT User, for training purposes).

- DGN File Settings Modify Working Unit Settings Category Linear Units Active Angle <u>0</u>K Custom MU Master Unit: MU:SU Active Scale Axis bel MU:SU:PU abel: Cancel Color Sub Unit: Element Attributes Accuracy 0.1234 Fence Advanced Settings Grid Resolution: 12000 per Distance Survey Foot Isometric Working Area: 1.42159E+008 Miles Solids Area: 157.829 Miles Locks Rendering Solids Accuracy: 8.33333E-006 Survey Feet Snaps Stream Angles Format: DD MM SS 🔻 Working Units Mode: Bearing 🔻 N29°52'35.56" Accuracy: 0.12 -Focus Item Description Set linear unit display format. Set to master unit only(MU), master and sub unit(MU:SU), or master
- 7. Select Settings > Design File > Working Units and set the Format to MU:SU.

8. Select **OK** to change the coordinate readout. Your readout will now show values in feet and inches.

Lab 11.2 - Draw a bridge typical section

In the next series of steps, you'll use *AccuDraw* and MicroStation tools (*drawing tools*, *manipulation and modify tools*, *grouping tools*, etc.) to create the bridge typical section shown.

You'll begin by drawing construction lines on a drafting level, and then create the final detail on the appropriate bridge level.

Draw the slab construction lines

You'll draw the right side of the top of slab starting at the crown point of the road. The right side consists of a 12 ft. travel lane and a 6 ft. shoulder, both at a 2% cross slope.

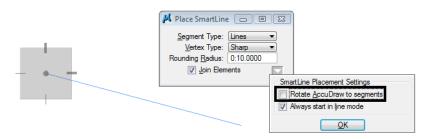
1. On the CDOT Menu *Drafting* group select the **Linework** category.

2. Set the filter to **WT** and select **Weight 1**.

🗱 CDOT Menu		
CDOT Groups CDOT Tools	Options Help	
Drafting Bridge Construction Design	Status O Existing	Proposed
Geometry Hydraulics Landscape Environmental	Drafting	
Materials Geotechnical ROW Survey	Border	Weight 0
Traffic ITS Utilities	Border RE	Weight 2
	Dimensions	Weight 4
	Linework	Weight 6
	Patterning	vveignt /
	Symbols	
	Text	
Settings		

This sets the active level to **DRAFT_WT-1**.

- 3. **<D>** anywhere to place the first point.
- 4. Make sure your *AccuDraw* compass is in *Rectangular* mode. If it is not press <**spacebar>**.
- 5. In the *SmartLine Tool Settings* box, make sure *Rotate AccuDraw to Segments* is turned Off.



This will keep the X axis horizontal as you draw SmartLine segments.

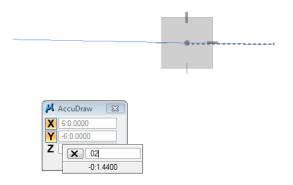
- 6. Move your cursor down and to the right to establish the direction of the *SmartLine*.
- 7. In *AccuDraw*, key in *12* for *X*, then **<TAB>**.
- 8. In AccuDraw, key in 12*.02 for Y, then <TAB>.
- 9. **<D>** to place the first *SmartLine* segment.
- 10. **Zoom In** if needed to see the line.

Note: Do not reset out of the *SmartLine* command. This will break the *SmartLine*, which you do not want to do. You want the top slab line to be all one element.

1
📕 AccuDraw 🛛 🔯
12:0.0000
-12:0.0000
Z X .02
-0:2.8800

This creates the 12 ft. travel lane at a 2% slope.

- 11. For the next shoulder segment, move your cursor down and to the right to establish the direction of the *SmartLine*.
- 12. In AccuDraw, key in 6 for X, then <TAB>.
- 13. In AccuDraw, key in 6*.02 for Y, then <TAB>.



14. **<D>** to place the second *SmartLine* segment, this creates the 6 ft. shoulder at a 2% slope.

15. **<R>** out of the *SmartLine* command.

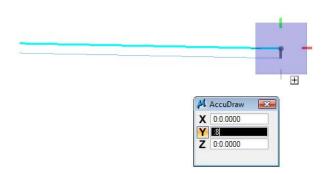
Create the bottom slab construction line

Vertically copy the top slab line down 8 inches for the bottom of slab on the right side.

1. Select the **Copy** command from the *Manipulate* toolbar.



- 2. AccuSnap on the right end of the top slab to identify the element to copy.
- Move your cursor down and lock on to the -Y AccuDraw axis to establish the copy direction. In *AccuDraw*, key in :8 for Y and the press <TAB> to accept the entry. The value converts to 0.667 feet.



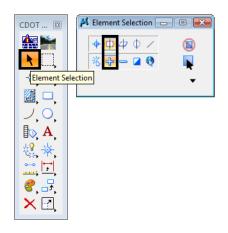
Note: Don't forget to key in the colon before the 8 to specify 8 inches.

4. **<D>** to place the copy, then **<R>** to complete.

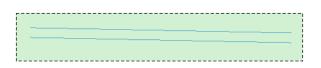
Create the slab left side

Since the right and left sides of the road are symmetrical, you can *mirror* the right side to create the left side.

1. Select the **Element Selection** command and set the *Tool Settings* as shown.



2. Place a fence around the slab graphics (**<D>** for upper left corner and then **<D>** for lower right corner).



- 3. Select the **Mirror** command from the *Manipulate* toolbar:
 - Set *Mirror About* to Vertical.

• Toggle on **Make Copy**.

COOT ⊠	Mirror Mirror Mirror About: Vertical About Element Center Make Copy Use Fence: Inside
	Manipulate

4. **<D>** on the left endpoint of the upper slab line (the crown point) for the mirror copy.

2	
Line String, Level: DRAFT_WT-1	

- 5. **<R>** when done.
- 6. Select the **Element Selection** command again and select the **Clear** icon from the tool settings window to remove the selection set.

•

7. **Fit** the view.

Place the girders

- 1. On the *CDOT menu*, select the **Bridge** Group.
 - Set the *Category* to **Bridge Levels**
 - Set the *Type* to **Basic**
 - Select the **Outline** item

Note: This changes the active level from a **DRAFT** level to the **BRIDGE_OUTLINE** level for placing the girders.

(none;
BRDG_OUTLINE

- 2. On the *CDOT menu*, select the **Bridge** Group.
 - Set the *Category* to **Cells**

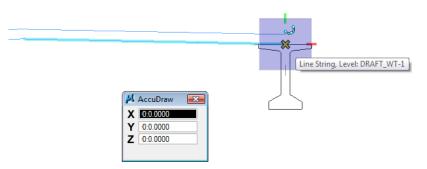
- Set the *Type* to **Girders-BT**
- Select the **BT54** item

Note: This automatically selects the correct girder cell from the bridge cell library and activates the *Place Cell* command.

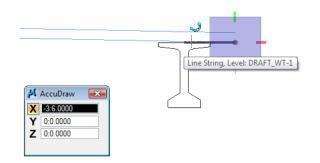
- 3. On the CDOT menu, select the **Settings** button
 - Set *Active Scale* to *1*
 - ♦ Set Active Angle to *O*
 - **<D> Close** to exit the Settings window
- 4. Using AccuDraw we can establish an orientation point from which to place the first girder. With the girder cell attached to your cursor, hover over right endpoint of the bottom slab line (don't *AccuSnap*, just hover and lock on to the point).



5. Click into the *AccuDraw* box to set it active and press the letter *O* on the keyboard to move the *AccuDraw* compass origin to this point.



6. Move you cursor to the left to establish the placement direction, and key in *3:6* in the *X* field.



7. With your cursor locked on the \boldsymbol{X} axis $\langle \boldsymbol{D} \rangle$ to place the girder cell.



This places the first girder 3 ft. - 6 in. from the right side of the slab. You'll later move the girder down for the proper haunch depth.

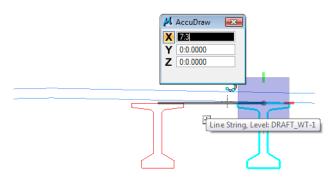
Place additional girders

Copy the girder cells to space them 7 ft. 3 in on center.

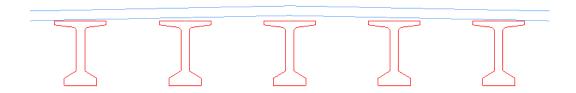
- 1. Select the **Copy** command.
- 2. In the *Tool Settings* box, key in *4* for the number of copies.

 •	<u>1</u> Copy
CDOT 🛯	2 Move
📩 📷 📷	<u>3</u> Scale
	4 Rotate
🔔 🤜 🖄	5 Mirror
	<u>6</u> Array
	7 Align Elements By Edge
	8 Stretch
A , 27	9 Move Parallel
🖏 🔆 🕅	0 Move To Contact
	Open as ToolBox
<u>∧ □,</u>	🔑 Copy Element 🛛 🗖 💌
	Copies: 4

- 3. Click into the *AccuDraw* window to set it active.
- 4. **<D>** on the girder at the top midpoint.
- 5. Move your cursor to the left to establish the copy direction and key in **7:3** in the **X** field in **AccuDraw**.



6. With your cursor locked on the *X axis*, **<D>** to place the copies.

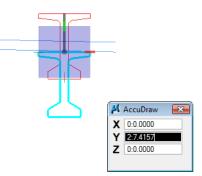


Move the girders down to establish the haunch depth

1. Select the **Move** command from the *Manipulate* toolbar.



- 2. Click into the *AccuDraw* window to set active.
- 3. **<D>** on the right end girder at the top midpoint for the move from location.
- 4. Move your cursor up and lock on the **Y** axis to establish the direction, then press **<Enter>** on the keyboard.

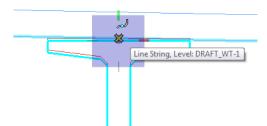


By pressing **<Enter>** you "smartlock" the *AccuDraw X* and *Z* axes, so that you can only move in the *Y* direction.

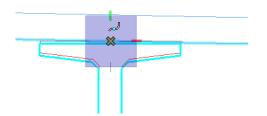


5. Press *N* on the keyboard for the *Nearest* snap mode.

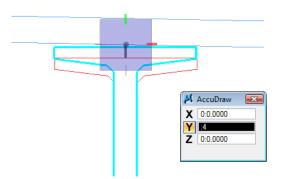
6. *Hover over* (do not data point) at the nearest snap point on the bottom slab line.



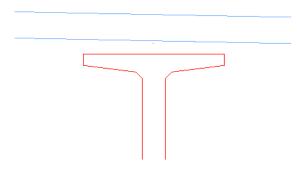
7. Press the letter **O** on the keyboard to move the **AccuDraw** origin to this point.



8. Move your cursor down to establish the move direction, lock on to the **-***Y* axis and key in **:***4* in the *AccuDraw Y* field.

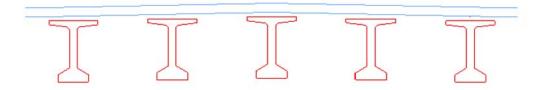


9. **<D>** to move the girder.



This moves the girder down 4 inches from the bottom of the slab for the correct haunch thickness.

10. Repeat the above steps to vertically move the remaining girders down 4 inches from the bottom of the slab.



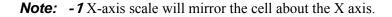
Place the Bridge Rail

- 1. On the CDOT menu, select the **Bridge** Group.
 - Set the *Category* to **Bridge Rail**
 - Select the **Rail Type 7** item
- 2. AccuSnap on the left end of the top of slab as shown.

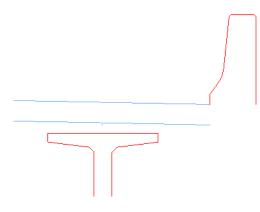
Line String, Level: DRAFT_WT-1	

- 3. For the right-side rail, select the **Place Active cell** command again.
- 4. In the *Tool Settings* box, **Unlock** the *XYZ lock* and set the *X* scale to -1.

📕 Place Activ	• 💌	
Active <u>C</u> ell: Active <u>A</u> ngle:	bridgerail_type_7 0°0'0.00''	Q ₽
X Scale:	-1.000000	
<u>Y</u> Scale:	1.000000	.
<u>Z</u> Scale:	1.000000	
		•



5. Place the cell as shown.

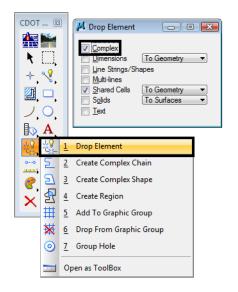


6. **<R>** when done.

Extend elements

Extend the slab lines to join up with the bridge rail. To do this, you'll need to drop the bridge rail cell to its original elements.

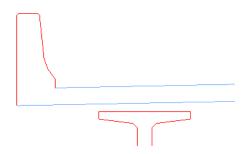
1. Select the **Drop** command from the *Groups* toolbar.



- 2. Select **Drop Element**, and toggle on **Complex** (the cell is considered a complex element).
- 3. **<D>** on the right-side bridge rail cell.
- 4. The cell is dropped to its original elements.

- 1 Modify Element 🔀 2 Partial Delete 3 Break Element CDOT ... 🛽 Extend Line 4 <u>in 1</u> Extend Elements to Intersection Extend Element to Intersection **Trim Elements** 7 2 IntelliTrim Insert Vertex 9 0 Delete Vertex 1 Q Construct Circular Fillet ÷ W Construct Chamfer 8. mł Open as ToolBox X 🕜
- 5. Select the Extend Elements to Intersection from the *Modify* toolbar.

6. **<D>** on the bottom slab line and then **<D>** on the back of rail line to extend these elements.

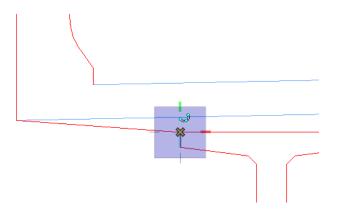


7. Repeat the above steps for the right side.

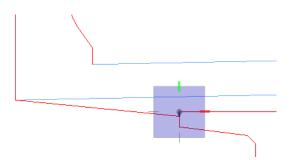
Draw the slab

- 1. With the active level set to **BRIDGE_OUTLINE**, select the **Place SmartLine** tool.
- 2. Click in the *AccuDraw* window to set it active.
- 3. Starting on the left side, AccuSnap on the bottom of the bridge rail.
- 4. You want the next point to be 1" below the left-top of the first girder. To do this, you'll need to move the *AccuDraw* origin to the top of the girder and then locate 1" down.

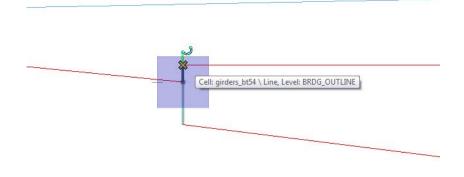
5. Hover over the left-top of the girder as shown, click in the *AccuDraw* box and press the letter *O* on the keyboard to move the *AccuDraw* origin to this point.



6. Move your cursor down, lock on the Y axis and key in a value of : 1(1 inch).

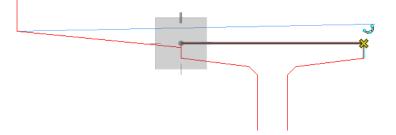


- 7. **<D>** to place the *SmartLine* segment.
- 8. **AccuSnap** on the left-top of the girder as shown.

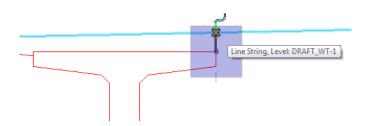


Note: Remember, if you make a mistake, **Undo** the last data point, don't reset out of the SmartLine command.

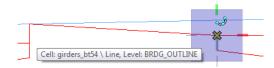
9. AccuSnap on the right-top of the girder as shown.



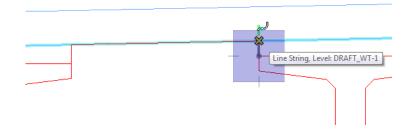
- 10. Move your cursor up, lock on to the **Y** axis and press **<Enter>** to smartlock the axis. You can now only move in the **Y** direction.
- 11. Press \boldsymbol{N} on the keyboard for the nearest snap point.



- 12. **<D>** on the bottom slab line as shown.
- 13. Hover over the next girder's top-left endpoint as shown.



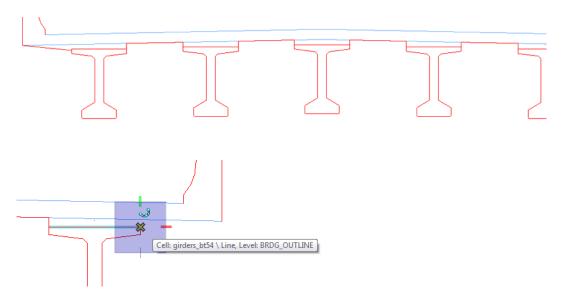
- 14. Press **O** on the keyboard to move the **AccuDraw** origin to this point (do not data point).
- 15. Move your cursor up, lock on to the **Y** axis, and press **<Enter>** to smartlock the axis.
- 16. Press \mathbf{N} for the nearest snap point.
- 17. **<D>** on the bottom slab line as shown.



18. **<D>** on the top left girder edge as shown.

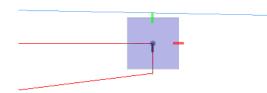


19. Continue these steps on each girder to place *SmartLine* segments as shown until you get to the last girder location shown below.



Remember to **Undo**, not reset, if you make a mistake on a segment.

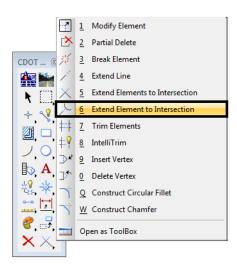
- 20. On the last girder (far right), move your cursor down, lock on to the Y axis and key in a Y value of :7 (1 inch).
- 21. **<D>** to place the point.



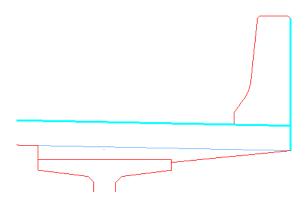
22. **<D>** on the right end of the bottom slab line.



- 23. **<R>** out of the *Place SmartLine* command.
- 24. Select the Extend Element to Intersection tool from the Modify toolbar.

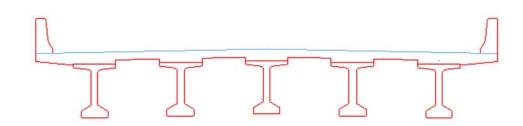


25. **<D>** on the blue top of slab line and then **<D>** on the back of bridge rail line to extend these elements.



- 26. Repeat for the left side.
- 27. **Delete** the blue bottom of slab lines.

28. Fit the view.

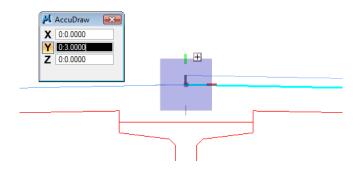


Create the top of pavement

- 1. **Fit** the view.
- 2. Select the **Copy** command.
- 3. **<D>** on the right-side top slab line (blue construction line) at the crown point to select it for copying.

Note: If you select the bridge slab shape (red element), **<R>** until the top slab line highlights.

- 4. Move your cursor up and lock-in on AccuDraw's Y axis.
- 5. In AccuDraw, key in a Y value of :3 (3 inches).



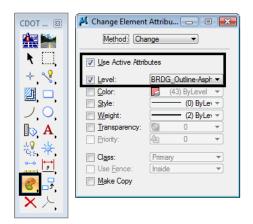
- 6. **<D>** to copy the top slab line.
- 7. Repeat for the left side.

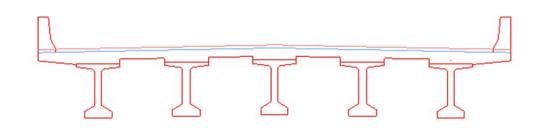
Note: You can move your cursor up and lock in on the last distance tic mark of 3 inches, eliminating the need to key in the Y value.

- 8. On the CDOT menu, select the **Bridge** Group.
 - Set the *Category* to **Bridge Levels**
 - Set the *Type* to **Outline**
 - Select the **Outline-Asphalt** item

This sets the active level to the asphalt level.

9. Change the top of pavement lines to the active asphalt level.

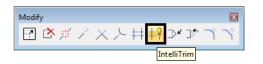




Clean-up lines at the rails

You now need to trim the top of pavement lines that run through the bridge rails, as well as the bottom of the rail that extends below the top of slab.

1. Select the IntelliTrim command from the *Modify* toolbar.

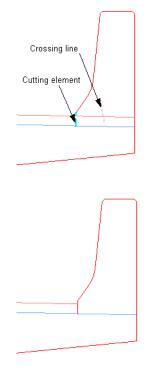


2. Set the *Mode* to **Quick** and the *Operation* to Trim.



3. **<D>** on the vertical edge of the rail to select it as the cutting element, as shown below.

4. Draw a *crossing line* on the top of pavement line inside the rail as the portion to trim.



5. Repeat the above steps for the left-side rail.

Lab 11.3 - Complex the bridge rail graphics

Since you dropped the bridge rail cell to trim the graphics it is no longer one entity. Instead it was dropped to individual lines. You will now group the lines into a complex chain.

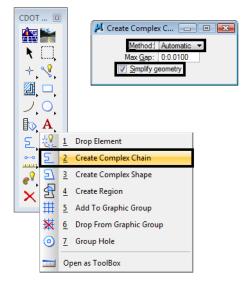
1. Select the **SmartMatch** command and **<D>** on any red bridge line to match it.



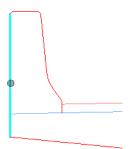
This sets the active level to *Bridge_Outline* to match the slab.

- 2. Select Create Complex Chain from the *Groups* toolbar.
- 3. Set the *Method* to Automatic and toggle on Simplify Geometry.

Note: With the **Automatic** method, you do not have to individually identify each element to add to the complex chain. The elements are found automatically within a maximum gap range. **Simplify geometry** will make the new element a **SmartLine** instead of a complex element.

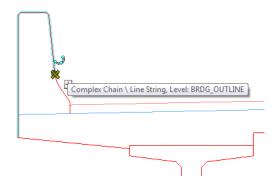


4. **<D>** on the first segment of the bridge rail as shown.

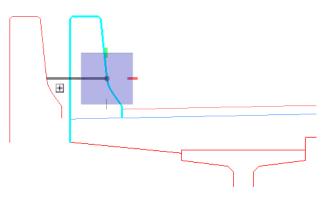


- <D> anywhere above this element to define the direction for adding elements. The remaining bridge rail elements are added to the chain and placed on the active *Bridge_Outline* level.
- 6. **<D>** to accept.
- 7. Repeat for bridge rail on other side of bridge.

Note: With some MicroStation commands (like the **Complex Chain** command), if you hover over the complex element it will still show you the individual elements that make up the chain. However, notice that pop-up information tells you it really is a complex chain. When you use the **Copy** command in the next step, you'll see the chained elements behave as one element.



8. Select the **Copy** command from the *Primary* toolbar and copy the bridge rail to a clear area of the design file.



The individual graphics are now chained together into one element.

- 9. **Undo** the copy.
 - **Note:** You can use the *Create Complex Shape* in a similar fashion to create closed shapes from individual graphics.

Lab 11.4 - Create a Selection Set of the Bridge Section

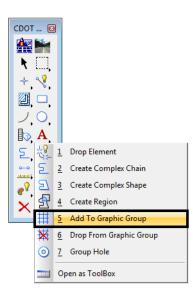
- 1. **Fit** the view.
- 2. Choose the **Element Selection** tool from the *Main* toolbar.
- 3. Hold down the data button **<D>** and drag across the bridge section (corner to opposite corner). Be sure to include all of the section graphics in this area.

- Note: The elements are added to the selection set and are highlighted purple (the selection set color). To change the color, choose Settings > Design File > Color > Selection Set Color. The lower right corner of the status bar shows how many elements are now in the selection set.
- 4. **<D>** in the center of the typical section, hold down the data button and drag the selection set to a new location in the file.
- 5. Drag the selection set back to its original location.
- 6. **<D>** anywhere in a clear area of your design file to remove the selection set.

Note: The selection set is a temporary group of graphics until you drop the set.

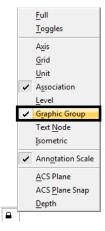
Lab 11.5 - Create a Graphic Group of the Bridge Section

- 1. Use the **Element Selection** tool and place the bridge typical section graphics into a selection set again.
- 2. From the *Groups* toolbar, select Add to Graphic Group.

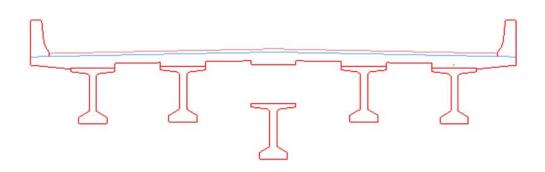


- 3. **<D>** to accept the selection set element to add to the group.
- 4. **<R>** out of the command.
- 5. **<D>** anywhere in a clear area of your design file to remove the selection set. The elements "un-highlight" and return to their normal symbology.

6. On the status bar, check your locks and make sure *Graphic Group lock* is **On**.



- 7. Select the **Move** command.
- 8. **<D>** on the bridge typical section graphics. All elements in the graphic group highlight.
- 9. Move the graphics and a new location and **<D>** to accept. With *Graphic Group lock* **On**, the elements behave as a group.
- 10. On the status bar, turn the *Graphic Group lock* Off.
- 11. Select the **Move** command again.
- 12. **<D>** on one of the BT 54 girders. Only the girder highlights.
- 13. Move it to a new location and **<D>** to accept.



With the Graphic Group lock Off, you can manipulate the individual elements in the group.

- 14. **Undo** the *Move* command on the girder.
- 15. Turn the *Graphic Group lock* back **On**.
- 16. Move the bridge typical section graphics back to their original location.

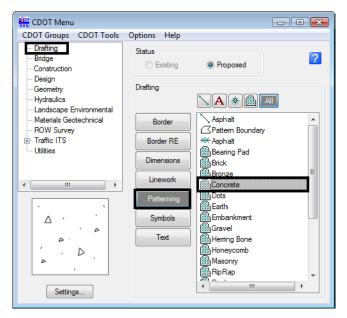
Note: When working in design model files, most InRoads graphics are displayed as graphic groups (*e.g.* contours, profiles, cross sections).

Pattern pavement and slab

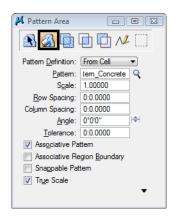
- 1. **Fit** the view.
- 2. On the CDOT menu, select the **Bridge** Group.
 - Set the *Category* to **Bridge Levels**
 - Set the *Type* to **Basic**
 - Select the **Pattern** item to set the active level

(none) V BRDG_PATTERN V

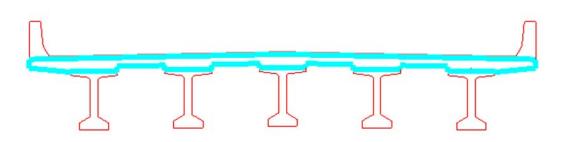
- 3. From the CDOT Menu Explorer:
 - Select Drafting.
 - Set the *Category* to **Patterning**.
 - Select the **Concrete** item.



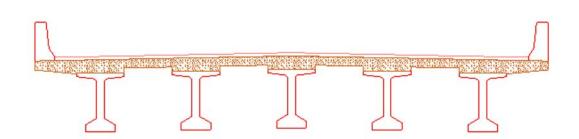
4. In the *Pattern Area Tool Settings* box set the *Method* to **Flood**, *Active Scale* to *1* and the *Active Angle* to *0*.



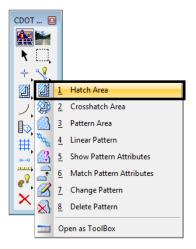
5. Make sure the entire region to flood is shown in your view. Then, **<D>** anywhere inside the bridge slab region. The region to flood with the pattern highlights.



6. **<D>** to accept. The shape is patterned with the concrete cell.



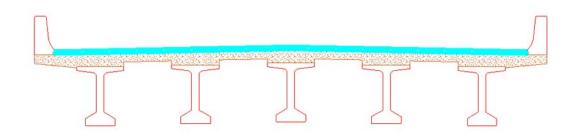
7. Select the **Hatch Area** command from the *Patterns* toolbar.



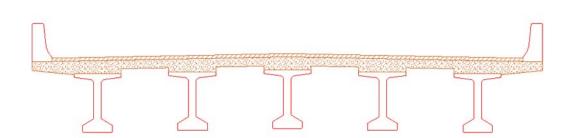
8. In *Tool Settings*, select the **Flood** method, set *Spacing* to *:3* and the *Angle* to *45*.



9. **<D>** anywhere inside the pavement area. A dynamic display shows the flooded area.



10. **<D>** to accept. The region is flooded with the hatch pattern.



- 11. Save Settings.
- 12. Exit MicroStation.

LAB 12 - Create a Plan/Profile Sheet for the Intersection

Several plan/profile sheets have already been created using the InRoads *Plan/Profile Generator*. However, there are times when you need to create special plan or plan/profile sheets not created by the *Generator*. In this lab, you'll create a plan/profile sheet for the side road that runs through the intersection.

Chapter Objectives:

After completing this exercise you will know how to:

- Create a sheet file using a generic project file.
- Attach model files coincident-world
- Attach model files as saved views.
- Rotate the view to horizontal
- Use the CDOT Menu to place a border and associated information (bar scale, north arrow, region cell, etc.)
- Use the CDOT Menu to place a clipping boundary.
- Clip references
- Work with reference levels.
- Move references

Lab 12.1 - Review Plan/Profile Sheets

Review the Plan/Profile sheets for this project previously created by the InRoads *Plan/Profile Generator*.

1. Start MicroStation.

2. In the MicroStation Manager, open **12345DES_PnP10.dgn** from the project's ...**Design\Drawings** folder.

Look in:	🌗 Drawings		- 🗿 🏂	► 🔝 🏷	- 	3D - V8 DGI	N
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ecent Places	🔏 12345DES_	PnP06.dgn		2/12/2	2008 8:53		and the
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	Files of type:	MicroStation DGN Files (*.dgn)		-	Cancel	Project: 12345	
		Open as read-only			Options	Interface: CDOT	

The *InRoads Plan/Profile Generator* automates the creation of sheet files along the mainline alignment. This includes rotating the plan-view to horizontal, placing the corresponding profile, placing the border, north arrow and match lines. MicroStation references are used to bring in plan and profile graphics to the active sheet file.

3. Use **Level Display** to review the reference levels on which plan and profile graphics are placed in the sheet file.

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	12345DES_PnP13.dgn					
Computer	12345DES_P	nP15.dgn				
	▲12345DES_P	nP16.dgn III				
Network	File name: 12345DES_PnP10.dgn					
	Files of type: MicroStation DGN Files (*.dgn)					
	Open as read-only					

Note that the only levels with graphics in the sheet file are sheet levels for the border, match line, north arrow, *etc*.

4. Open other plan/profile sheets, as desired, from the *Drawings* folder and review the sheets.

Lab 12.2 - Create a New Sheet File

Since the *InRoads Plan/Profile Generator* did not create a sheet for the county cross road at the intersection, you'll create this P&P sheet file manually.

- 5. Select **File > New**.
- 6. Set the directory to the project's \Design\Drawings folder.
- 7. In the New box, make sure that the seed file is set to *3D-Seed_CDOT.dgn*. If not, pick the **Browse** button and then select this file. Key in the name *12345DES_PnP19.dgn*.

Nineteen is the next number in the plan/profile set of sheets.

Save in:	Drawings		🚽 🎯 🥬 📂	 ▼		🔁 🖻
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Select **Save** to create the file.

Lab 12.3 - Attach the Model file

- 8. Select the **Reference** icon from the *Primary Tools* toolbar.
- 9. In the *References* dialog box, select **Tools > Attach**.

 Use the Directory pull-down menu and select the C:\Projects\12345\Design\Drawings\Reference_Files folder and select the file 12345DES_Model.dgn

X Attach Reference - C:\Projects\12345\Design\Drawings\Reference_Files\						
Look in:	Reference_Files	•	🌀 🤌 📂 🛄	- 🔁 🖲	3D - V8 DGN	
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	File name: 12345DES_Model Files of type: CAD Files (*.dgn,* ▼ Save Relative F	.dwg;*.dxf)	•	Open Cancel Options	H.	

- 11. Verify the Attachment Method is set to Interactive. Select OK.
- 12. In the *Reference Attachment Settings* box:
 - Key in a logical name of *Design* and *Proposed Intersection* for a description.
 - Verify that *Orientation* is set to **Coincident-World** and the *Scale* is set at *1:1*
 - Set *Nested Attachment* to Live Nesting and set *Depth* to *1*.

	Settings for 12345DES_Model.dgn				
<u>Fi</u> le Name: 1234 Full Path:\Dr <u>M</u> odel: CDOT	awings\Reference_Files\12345DES_Model.dgn				
Logical Name: Desig	n				
Description: Proposed Intersection					
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Clip Boundary Element: Level: <u>N</u> ested Attachments: Display Overrides:	V Depth: 1 Allow V Use MS_REF_NEWLEVELDIt 1				

• Turn off Display Raster References.

- 13. Select **OK**.
 - **Note:** The **Coincident World** option ensures that references are attached with their true coordinate information. A scale factor of **1:1** ensures that plan graphics are referenced in actual size. These two options allow plan sheet graphics to maintain their true model coordinates and size.
- 14. Turn on the Show Hierarchy to expand the hierarchy list.

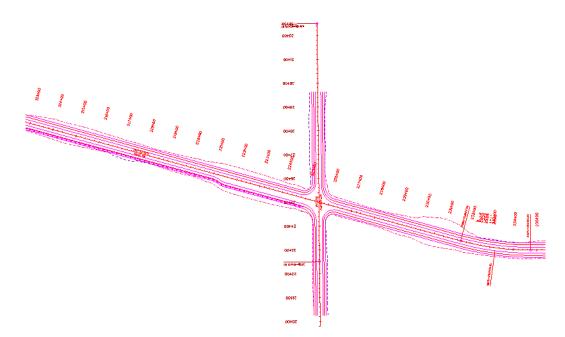
Keferences (2 of 2 unique, 1 displayed			
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- **Note:** Note that with nested references, the Survey/Topo reference is nested below the Design model file. You can typically reference model files as nested to sheet files instead of using the **Copy Attachment** command (as in this case, you want to show both Design and Survey/Topo graphics in the sheet file). However, if you need to control individual references in the sheet file, then use the **Copy Attachment** command.
- 15. Close the References dialog.
- 16. Fit View using the icon so all graphics are displayed.
- 17. Select **File > Save Settings** from the menu.

Lab 12.4 - Rotate the View using the 3-point method

Rotate the view so that the side road appears horizontal in the view.

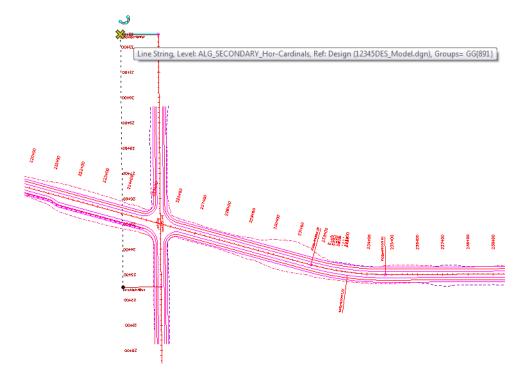
1. Window around the intersection as shown.



2. Select the Rotate View command and set the *Method* to 3 Points.

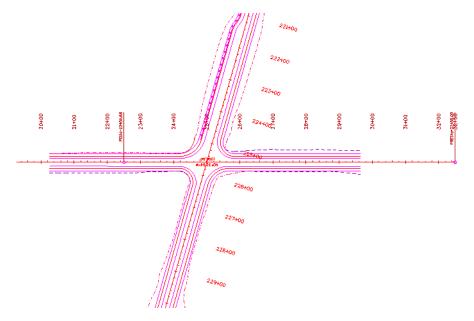


- 3. Follow your prompts and *AccuSnap* on the end of the PI leader line shown.
- 4. For the second point (X axis of the view), *AccuSnap* on the POE leader line.



5. For the third point (Y direction), **<D>** anywhere to the left of the first two points.

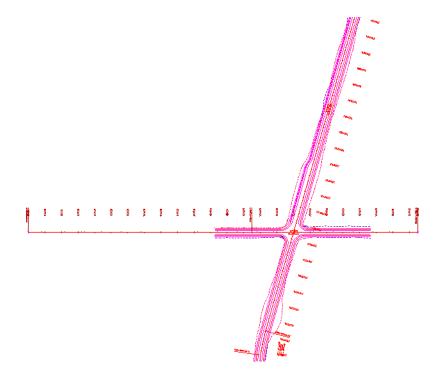
The view is rotated so that the side road appears horizontal.



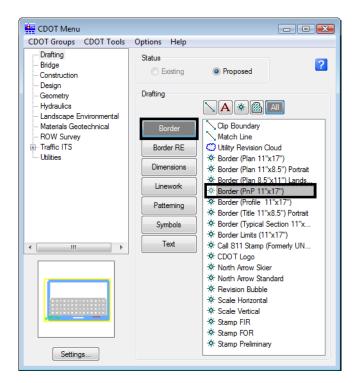
- **Note:** Remember that you are rotating the view, not the graphics. The graphics maintain their original coordinate position in the sheet file.
- **Note:** The leader lines are both placed at elevation 0. If you pick points at different elevations, you'll need to first turn on Depth lock before choosing the 3-Point rotation command to avoid a skewed rotation.

Lab 12.5 - Place the Border Cell

6. **Zoom out** as shown.



7. From the *CDOT Menu* Explorer, select **Draffing** and then select the **Border** category and choose the **Border** (**PnP 11**"x17") Item.



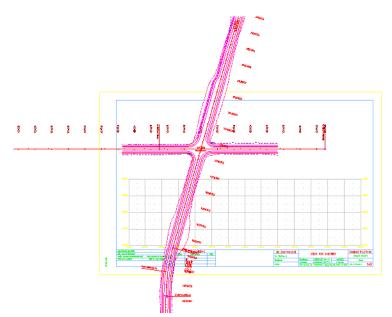
8. Select **Settings** and set *Active Scale* to *100* and *Active Angle* to *0*.

Active Settings		- • •	
Active Scale:	100.00	Apply	
Active Angle:	0.00	Class	
		Close	

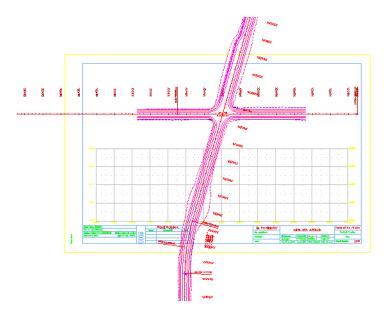
Note: Coordinate with the Region Surveyor when you are creating sheets that are not at a 1:100 scale. They will provide you with the topography and survey MicroStation files at a different scale. Otherwise, the line work and cells will not be the correct size for the print scale.

The *Active Angle* is view independent and not associated with view rotation. Therefore, the x-axis is always horizontal regardless of the view rotation. You will not need to set this for correct placement of the North Arrow or other cells.

- 9. Select Apply and Close in the Active Settings box.
- 10. When prompted to locate the cell origin of the sheet border, **<D>** in the approximate location shown to place it. Don't worry about an exact location you'll move it in the next step.

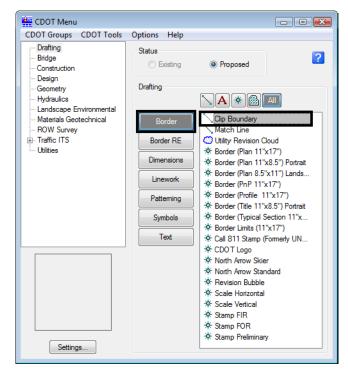


11. If necessary, use the **Move** command and move the border cell so that the intersection is centered in the upper plan portion as shown.



Lab 12.6 - Placing a Clip Boundary

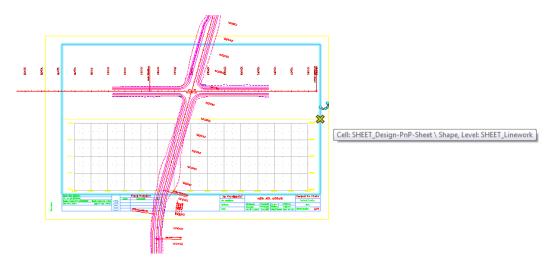
- 1. From the CDOT Menu Explorer select **Draffing**.
- Set the *Category* to **Border**
- Select the Item Clip Boundary
- Verify the SHEET_Clip-Boundary level is active.



Note: Since **Plot** is turned off for the level **SHEET_Clip-Boundary** in the **Level Manager**, it will not print.

The *Place SmartLine* command is now automatically selected, allowing you to draw an irregular closed shape that represents your clipping boundary of the model file. However, if your clipping boundary is a rectangle, you can use the *Place Block* command.

2. Select the **Place Block** icon from the *Main* toolbar and draw the clipping boundary as shown (corner to opposite midpoint on the blue inside margin).



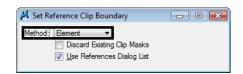
Lab 12.7 - Clip the Reference File

- 1. In the *References* dialog box, highlight the **Design** reference.
- 2. Select the **Clip Reference** icon.

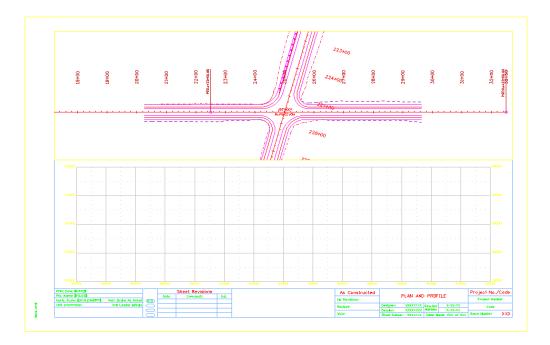
References (2 of 2 unique, 1 displayed)						
Tools Settings						
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Hierarchy Clip Reference	Slot File Name	Description	💽 🎜 🕇	G		
	1 12345DES_Model.dgn	Proposed Intersection	1 1 1			
	Scale 1.000000 Offset X -178956.971			Rotation 0°0′0″ ides • Depth: 1		

Note: You can select more than one reference file at a time by holding the **<Shift>** or **<Control>** keys down while you are making your selection. You can clip multiple drawings in one step when they are all selected.

3. In the *Tool Settings* box, verify *Method* is set to **Element**.



- 4. When prompted to *Identify Clipping Element*, **<D>** on the rectangular clipping boundary you just placed.
- 5. **<D>** to accept.
- 6. Fit the MicroStation view and Save Settings after clipping the reference files.



Note: Once the clipping boundary is placed, do not delete it. The clipping region of the reference file will be lost if the boundary is deleted.

In the next Chapter, you'll edit the border text to add project specific information.

Lab 12.8 - Turn off the Profile Grid and Text

- 1. Open the *Level Display* box and turn **Off** the following levels:
- SHEET_Grid
- SHEET_Grid-Minor
- SHEET_Grid-Text

This turns off the border's grid for the profile. You'll use the grid provided by the InRoads profile.

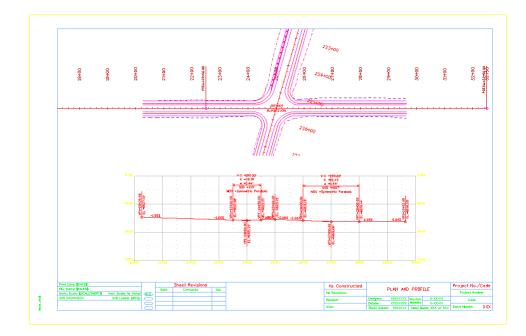
Lab 12.9 - Attach the Design Profile

- 1. In the *References* dialog box, select **Tools > Attach**.
- Use the Directory pull-down to navigate to the C:\Projects\12345\Design\Drawings\Reference_Files folder and select the file 12345DES_Prof03.dgn
- 3. Verify the Attachment Method is set to Interactive. Select Open.
- 4. In the *Reference Attachment Settings* box:
- Set *Orientation* to **Top**
- Key in a Logical Name of *Profile Side Road* and *Proposed profile for side road* as the *Description*.
- Set *Scale* to *1:1*
- Set Nested Attachment to No Nesting.

Reference Attachment	Settings for 12345DES_Prof03.dgn
File Name: 1234	5DES Prof03.dan
Full Path:\Dr	awings\Reference Files\12345DES Prof03.dgn
Model: CDOT	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
Logical Name: Profile	
	e Side Road
Description: Propo	osed profile for side road
Orientation:	
View	Description
Coincident	Aligned with Master File
Coincident - World	Global Origin aligned with Master File
Standard Views	=
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Nested Attachments:	
Display Overrides:	
Ne <u>w</u> Level Display:	Use MS_REF_NEWLEVELDI
Global LineStyle Scale:	Master
	OK Cancel

5. Select **OK**.

6. The outline of the profile reference is attached to your cursor. **<D>** in the approximate location shown to place the profile.



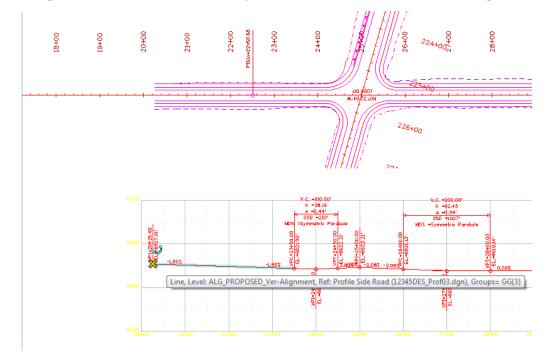
Move the profile reference

Since you attached the profile reference by a top view, it did not come in at a precise location. Next, you'll move the profile to line it up better with the plan.

- 1. Turn on AccuDraw if it's not already on.
- Highlight the *Profile* in the *Reference* dialog and select the Move Reference icon or select Tools > Move.

References (3 of 3 unique, 2 displayed	
<u>T</u> ools <u>S</u> ettings	2 1 1 1 2 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2
Hierarchy	Slot File Name Description Move References
	Les researched in Proposed Intersection V V V 2 12345DES_Prof03.dgn Proposed profile for side road V V V
	Scale 1.000000 Orientation Top Rotation 90"374.93"
	Offset X 3677631.663 Y 864585.607 Z -178956.971 Image: Comparison of the state of
1	Ne <u>w</u> Level Display: Config Variable 💌

• Click into the AccuDraw window to set it active.

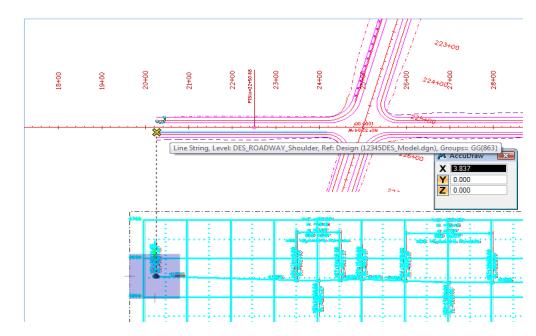


• Snap to the left end of the vertical alignment (the first VPI) as the Move From point.

Move your cursor to the left along AccuDraw's **X** axis to set the focus (blinking cursor) in the AccuDraw **X** field, then Press **Enter**.



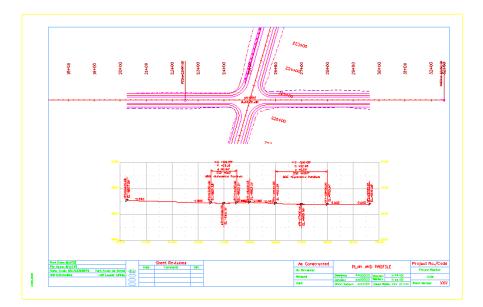
Note: The *Enter* key executes AccuDraw's *SmartLock*. It locks the Y and Z axes to 0 so you can only move in the X direction.



• Move your cursor and **AccuSnap** on the end of the shoulder line as shown. You can zoom in, if needed.

The beginning of the vertical alignment is now aligned with the beginning of the horizontal alignment.

- 3. **<R>** when done.
- 4. **Fit** the MicroStation view.

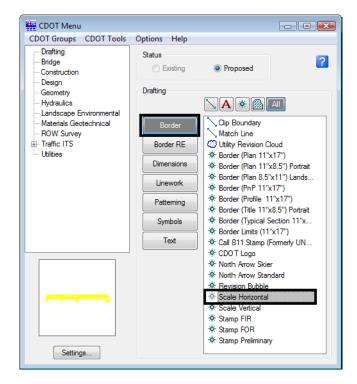


Lab 12.10 - Place the bar scale, north arrow and RE cells



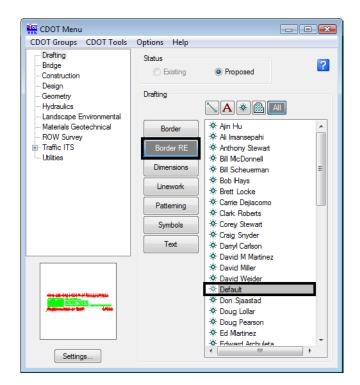
Follow the steps on the next page and use the diagram below to place the various border cells.

- 1. From the *CDOT Menu* Explorer, select **Draffing**. Set the *Category* to **Border**.
- 2. Select the Item Scale Horizontal.



3. When prompted to locate the cell origin of the *Bar Scale*, **<D>** inside the sheet border.

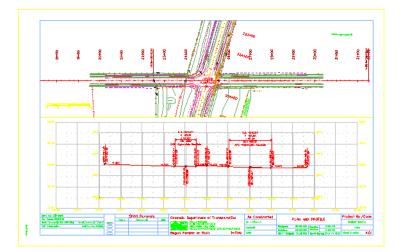
- 4. Select the Item North Arrow Standard
 - 🟪 CDOT Menu CDOT Groups CDOT Tools Options Help Drafting Status ? Bridge Existing Proposed Construction Design Drafting Geometry Hydraulics **A 🏽 🖾** 🗛 Landscape Environmental Clip Boundary Materials Geotechnical Border ROW Survey Match Line Border RE 💭 Utility Revision Cloud Utilities * Border (Plan 11"x17") Dimensions ✤ Border (Plan 11"x8.5") Portrait * Border (Plan 8.5"x11") Lands... Linework * Border (PnP 11"x17") * Border (Profile 11"x17") Patterning * Border (Title 11"x8.5") Portrait * Border (Typical Section 11"x... Symbols * Border Limits (11"x17") Text * Call 811 Stamp (Formerly UN.. * CDOT Logo ✤ North Arrow S 🔆 North Arrow Standard Revision Bubble * Scale Horizontal * Scale Vertical * Stamp FIR * Stamp FOR * Stamp Preliminary Settings...
- 5. When prompted to locate the cell origin of the *North Arrow*, **<D>** inside the sheet border.
- 6. Set the Category to Border RE.
- 7. Select the Item **Default**.



8. When prompted to locate the cell origin of the *Region Engineer* cell, **Zoom in** as necessary on the bottom portion of the border and **<T>** to the correct location and then **<D>** to accept.

Lab 12.11 - Turn On the Reference Display

- 1. On the *References* dialog, select the **Survey/Topo** reference nested under the *Design* Reference.
- 2. Toggle on **Display** for the *Survey/Topo* reference.
- 3. Use *Level Display* to turn **On** all *Survey/Topo* levels.
- 4. **Fit** the view.



5. Save Settings.

Lab 12.12 - Optional Exercise

Change the Design reference's nested depth to **2** and turn on the display of the contour reference – **12345SURV_Contour100.dgn.** Use **Level Display** to turn **On** the contour levels to display the existing contours in the plan sheet.



LAB 13 - Create a project specific border

In the last section, you placed a generic border for your plan/profile sheet from the CDOT menu. This is handy when you have only one or two sheets to create since you have to edit the border with project specific information for each sheet. But what if you had several sheets to create? You wouldn't want to edit every sheet to add the project information. Instead, you can create a project-specific border that can be used for all sheets of the same type. This way, you only have to fill in the project information one time.

Chapter Objectives:

After completing this exercise you will know how to:

- Create a project-specific border cell library.
- Use the CDOT Menu to place the border and associated information.
- Edit the border text to place project-specific information.
- Make the border graphics a cell.

Lab 13.1 - Create the Border File

Since you will use this border for multiple sheets, create one project border to avoid editing multiple borders later.

- 1. In MicroStation Manager, select File > New.
- 2. Set the directory to C:\Projects\12345\Miscellaneous.
- 3. Verify the Seed File is set to 3D-Seed_CDOT.dgn, if not then select it as the seed file.
- 4. In the Name field, key in a drawing file name 12345DesignPlanBorder.cel.

Note: The .cel extension denotes this file as a cell library.

5. In the **New** dialog box, select **Save**.

Save in:	🔒 Miscellaneo	US	- 🕝 🏚 📂 🖽 -	S 🗈
e.	Name	Date modified	d Type	Size
Recent Places		No items mat	ch your search.	
Network	·	m		
	File name:	12345DesignPlanBorder.cel	5 -	Save
	Save as type:	MicroStation DGN Files (*.dgr	n) 💌	Cancel
	Seed:	andards-Global\MicroStation	seed\3D-Seed CDOT dop	Browse

6. The file you created will be highlighted. Select **Open** to open that file.

Lab 13.2 - Use the CDOT Menu to Create the Border

- 1. From the CDOT Menu Explorer, select Drafting and set the Category to Border.
- 2. Select the Item Border (Plan 11"x17")

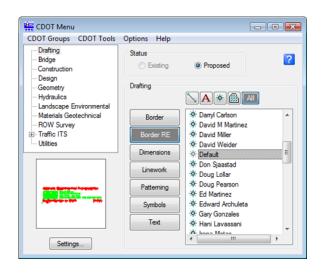
CDOT Menu			
CDOT Groups CDOT Tools	Options Help		
Drafting Bridge Construction Design	Status Existing	Proposed	?
- Geometry - Hydraulics - Landscape Environmental	Drafting		
- Materials Geotechnical - ROW Survey	Border	Clip Boundary	
Traffic ITS Utilities	Border RE	Utility Revision Cloud Border (Plan 11"x17"	
	Dimensions	* Border (Plan 11'x8.5'	
	Linework	 ☆ Border (Plan 8.5"x11" ☆ Border (PnP 11"x17") 	
	Patterning	☆ Border (Profile 11'x1 ☆ Border (Title 11'x8.5)	
	Symbols	★ Border (Typical Section ★ Border Limits (11"x17	
	Text	* Call 811 Stamp (Form	
Settings		< III	+

3. Select Settings and set Active Scale to 1 and Active Angle to 0.

🚆 Active Settin	gs	
Active Scale:	1	Apply
Active Angle:	0.00	Close

- **Note:** You will create the generic project border cell at a scale of 1 (11 x 17 master units). You'll actually scale the border, according to your plot scale, later when the cell is placed in the sheet file.
- 4. Select Apply and Close in the Active Settings box.
- 5. **<D>** to place the border anywhere in the blank file.
- 6. Set the Category to **Border RE**.
- 7. Select the Item **Default**.

8. **Fit** the view.



9. When prompted to locate the **Region Engineer** cell, **<D>** to the location shown.

Print The	Name Filling		-	She	et Revisions	146	Colorado	Department	t of Transp	ortation	As Constructed		PLAN	SHEET	Project No.
Here Unit	nore FLCO 5 Sole SCAEDON Grandia	Vert. Scolar Ja No. URL Labor Sile	19E				10.011	City, Shafe	te Ceda		No Revolutes Revised	Dealgrans		Skutlere Nord-Bre	Project Har Dode
							Charles H	mber or St	ARTING FAR	Initials	Volte	Databart Sheet Suberts		Vaniters	

Note: You will not place the bar scale and north arrow cell now, but later in each individual sheet.

Move the border

The lower left corner of the border *must* be located at the 0,0 coordinate in the file since this will be the origin of the cell. So, move it to this location.

1. Place a **Fence** block around the entire border.

2. Select the Move command and toggle on Use Fence. Set the mode to Inside.



3. Snap to the lower-left corner of the yellow block (outside edge) as the move from point.

M View1 - Top	- 0	x	1
Move from this point	8		
Call: SHEET_Design-Sheet \ Shape, Level: SHEET_Plot-Boundary) 🔛 😫 🕞 🗰 🕜 🧗 🛠 🚱 🥠 📖			i

- 4. Key in *xy=0,0* as the move to point.
- 5. The border moves to the new location.
- 6. Reset **< R>**.
- 7. **Fit** the view.
- 8. **<T>** on the lower-left edge to verify it's at 0,0.

0.000, 0.000, 0.000 KeyPt

Lab 13.3 - Edit the Border Text with Project Specific Information

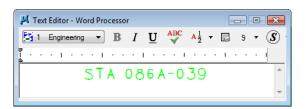
1. **Zoom in** on the lower-right corner of the border as shown.

	DL AN	PLAN SHEET		Project No.,	/Code
	PLAN	SHEET		Project Num	ber
Designer:		Structure		Code	
Detoiler:		Numbers			
Sheet Subset:	eet Subset: XXXXXXX		ts: XXX of XXX	Sheet Number	XXX

2. Select the Edit Text command from the Text toolbar.



- 3. **<D>** on the **Project Number** text.
- 4. In the Text Editor, replace this with STA 086A-039.



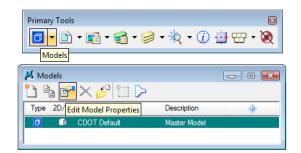
- 5. **<D>** anywhere to accept.
- 6. **<D>** on the **Code** text.
- 7. In the **Text Editor**, replace this with **12345** and **<D>** to accept.
- 8. Edit the X's beside Designer and replace with your initials (CU is used in the illustration, but you can use yours).
- 9. **<D>** anywhere to accept.
- 10. Edit the X's beside Detailer and replace with your initials.
- 11. **<D>** anywhere to accept.

	PLAN SHEE		OUFET		Project No./Code			
		PLAN	SHEET			39		
T	Designer:		Structure		12345			
	Detailer:		Numbers					
	Sheet Subset:		Subset She	ets: XXX of XXX	Sheet Number	XXX		

12. Fit the view.

Lab 13.4 - Make the Border a Cell

1. Select Models from the Primary toolbar.



- 2. In the Models dialog box, select Edit Model Properties.
- 3. In the Model Properties box:
 - Toggle on Can be placed as cell.
 - Change the Name to 12345 Design Plan Border.
 - Change the **Description** to *Project Border Cell*.
 - For Ref. Logical key in *Plan Border*.
 - Leave all other options as shown

📕 Mod	del Properties	23
	Iype: Design ▼ 3D ▼	
	Name: 12345 Design Plan Border	
	Description: Project Border Cell	
	Ref Logical: Plan Border	
	▲ 1"=100' 100.0000 : 1.00000	
Lin	e Style Scale: Annotation Scale	
	Update Fields Automatically	
Cell Pr	roperties ☐ Can be placed as a cell Cell Type: Graphic ▼	
] <u>C</u> an be placed as an annotation cell	
	OK Cancel	

- 4. Select **OK**.
- 5. Close the Models box.
- 6. Save Settings (File > Save Settings).
- 7. **Exit** MicroStation.

LAB 14 - Create a 40-scale plan sheet

The CDOT default scale for plan sheets is 100. This lab illustrates how to create a special 40-scale plan sheet for the intersection.

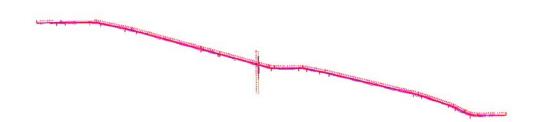
Chapter Objectives:

After completing this exercise you will know how to:

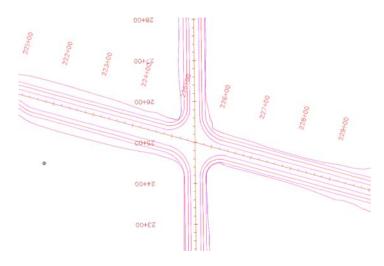
- Create a Plan sheet
- Scale the border for a 40-scale drawing
- Set the **Annotation Scale** to match the border and plot scale.

Lab 14.1 - Open the Model File

- 1. Start MicroStation and open **12345DES_Model.dgn** form the project's **\Design\Drawings\Reference_Files** folder.
- 2. Select File > Raster Manager and turn off the display of the raster files.
- 3. Fit the view.

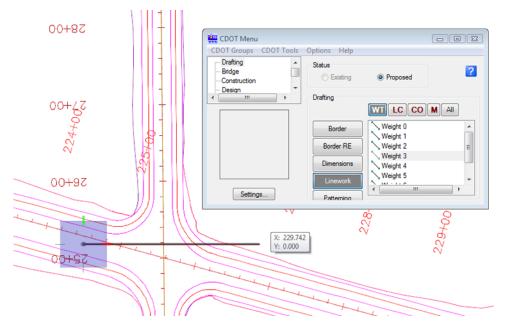


4. Window around the intersection as shown.

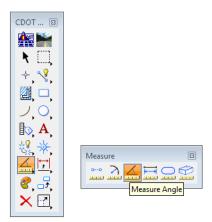


Lab 14.2 - Determine the rotation angle for the sheet

- 1. On the CDOT Drafting Menu, set Line Weight to 3.
- 2. Using AccuDraw, draw temporary horizontal line in the approximate location shown.



3. Select the Measure Angle command from the Measure toolbar.



- 4. **<D>** on the horizontal line, then **<D>** on the SH86 proposed centerline.

MicroStation displays the result as approximately 15 degrees. This is the rotation angle needed to rotate the view to horizontal at the intersection in a counter-clockwise direction.

5. **Delete** the temporary measurement line.

Lab 14.3 - Placing the Plan Limits Cell

1. Select **Cells** form the **Primary** toolbar to open the cell library.

Primary Tools	×
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Cells	_

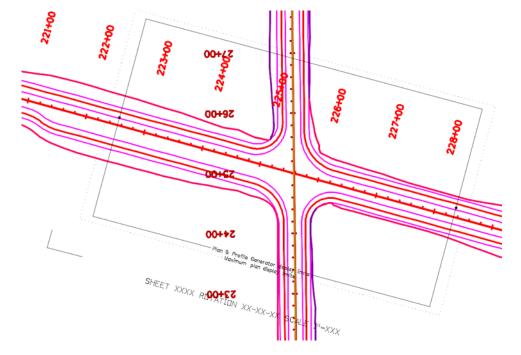
2. Toggle on **Display All Cells in Path** and select the **SHEET_Design-Plan-Limits** cell and make it the active placement cell.

Cell Library: [\MicroStation\ File	Cell\General.cel]		
Use Shared Cells	splay All Cells In Path		<u>D</u> isplay: <u>Wireframe</u> ▼
Name *	Description	•	
SHEET_Design-A-Size-Sheet SHEET_Design-A-Size-Sheet-Land SHEET_Design-A-Size-Title-Sheet SHEET_Design-Pin-Umits SHEET_Design-Profile-Sheet SHEET_Design-Profile-Sheet SHEET_Design-Sheet SHEET_Design-Typical-Sect-Sheet	General Sheet Design A-Size Sheet General Sheet Design A-Size Sheet Landscape General Sheet Design A-Size Title Sheet General Sheet Design Plan & Profile Sheet General Sheet Design Profile Sheet General Sheet Design Profile Sheet General Sheet Design Sheet General Sheet Design Typical Section Sheet	E	
SHEET_FIR-Stamp SHEET_FOR-Stamp	General Sheet FIR Stamp General Sheet FOR Stamp	-	I
•		•	
Active Cells Placement SHEET_Design-F	lan-Limits Point Element		Edit Delete

- **Note:** This cell helps to define the plan sheet limits in the model file before placing the border in the sheet file. It contains text characters that can be edited to indicate sheet name, rotation, & scale. The outer line-work depicts the maximum display limits for graphics as it relates to the border sheet. The inside shape reflects ¹/₂ inch inside this maximum limit and is the clipping boundary. All graphical information for this cell is on to the MicroStation level, **DRAFT_INFO_No-Plot**.
- 3. Close the Cell Library dialog box.
- 4. Turn on the level **DRAFT_INFO_No-Plot** if it is not currently on.
- 5. Select the Place Active Cell command and set the Active Angle to -15 and the Scale to 40.

	Place Active Cell Image: Cell Cell Active Cell: Design-Plan-Limits 9
	Active Angle: 345°0'0.00"
CDOT 🖾	<u>X</u> Scale: 40.000000
🚵 📷	Y_Scale: 40.000000
	Z Scale: 40.000000
R LLL,	
$\rightarrow \sqrt{8}$	True Scale
	Relative
	Mirror: Horizontal -
10	Interactive Rotate and Scale
	■ Flatten Top ▼
₿ <mark>₽, A</mark> ,	Scale Multi-line Offsets
- 🔆 🔆	Scale Dimension Values
	Scale <u>Annotations</u>
	Ass <u>o</u> ciation
🥏 🖧	
× 🖽	Cells
	★ ** ** ** ** ** #
	Place Active Cell

Note: The scale should be set to the plot scale of the sheet. Since the positive angles are measured counterclockwise in MicroStation, enter the 15 degree angle as *negative*. MicroStation converts this to a positive 345 degree angle.



6. Place plan limit cell in the approximate location shown.

7. Select the **Edit Text** command and **<D>** on the text at the bottom of the cell.

Text	
$\mathbf{A} \checkmark^{\mathbf{A}} \overset{\mathbf{B}}{\checkmark} \overset{\mathbf{ABC}}{\checkmark} \overset{?}{\ast} \overset{\mathbf{ABC}}{\overset{\mathbf{A}}{\ast}} \overset{\mathbf{ABC}}{\overset{\mathbf{A}}{\ast}} \overset{\mathbf{A}}{\overset{\mathbf{A}}{\ast}} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast}} \overset{\mathbf{A}}{\overset{\mathbf{A}}{\ast}} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast}} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast}} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast} \overset{\mathbf{A}}{\ast} \mathbf{$	
Edit Text	
K Text Editor - Word Processor	
$[\underline{\underline{S}} \ 1 \ \text{Engineering} \underline{\mathbf{B}} I \underline{\mathbf{U}} \overset{\text{ABC}}{\checkmark} \underline{\mathbf{A}}_{\underline{2}}^{\underline{1}} \overline{\mathbf{A}} 0 \underline{\mathbf{v}} \underline{S} \underline{\mathbf{v}} \underline{2}^{\underline{2}} \underline{2}_{\underline{2}}$	
	\cdot \cdot 1 \cdot \cdot \cdot 1
SHEET XXXX ROTATION XX-XX-XX SCALE	1''=XXX
<	4

8. In the **Text Editor**, make the edits as shown.

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$\boxed{31 \text{ Engineering } \bullet \text{ B } I \underline{U} \sqrt[ABC]{\bullet} \mathbb{A}_{2}^{\frac{1}{2}} \mathbb{A}_{2}^{\frac{1}{2$
SHEET PLOT ROTATION 345-00-00 SCALE 1"=40
()

9. **<D>** anywhere in the view to accept.

Lab 14.4 - Create the Drawing File

- 1. From the MicroStation menu bar, select **File > New**.
- 2. Set the directory to C:\Projects\12345\Design\Drawings.
- 3. Verify the Seed File is set to 3D-Seed_CDOT.dgn, if not then select it as the seed file.
- 4. In the Name field, key in a drawing file name 12345DES_Plan21.dgn
- 5. In the **New** dialog box, select **Open**. The Open button is used to accept the new file name and open the drawing at the same time.
- 6. The file you created will be highlighted. Select **Open** to open that file.

Lab 14.5 - Attach the Model File

- Attach the 12345DES_Model.dgn reference from the C:\Projects\12345\Design\Drawings\Reference_Files folder (use the Directory pull-down to quickly find the folder).
- 2. Verify the Attachment Method is set to Interactive. Select Open.
- 3. In the Reference Attachment Settings box:
- Key in a logical name of *Design* and *Proposed Intersection* for a Description.
- Verify that Orientation is set to Coincident-World and the Scale is set at 1:1
- Set Nested Attachment to Live Nesting and set Depth to 1.

👭 Reference Attac	hment Settings for 12345DES_Model.dgn					
File Name: 1	File Name: 12345DES_Model.dgn					
Full Path: .	n:\Drawings\Reference_Files\12345DES_Model.dgn					
Model: C	CDOT Default					
Logical Name: [)					
-	Pesign Proposed Intersection					
Description: Proposed Intersection						
Orientation:						
View	Description					
Coincident	Aligned with Master File					
Coincident - Wo	orld Global Origin aligned with Master File					
Standard Views						
Saved Views (n	ana)					
Named Fences	(none)					
Tog	jles: 💽 🚅 💦 🔂 🏭 🎇 🖓 🕼					
Sc <u>al</u> e (Master:F	Ref) 1.000000 : 1.000000					
Named Gro						
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Clip Boundary Elem	ent: Copy To Master					
	<u>v</u> el:					
—	nts: Live Nesting Depth: 1					
Display Overric	les: Allow					
Ne <u>w</u> Level Disp	lay: Use MS_REF_NEWLEVELDI+					
Global LineStyle Sc	ale: Master 🔻					
	OK Cancel					

4. Select **OK**.

5. Fit the view.



6. Turn on the **Show Hierarchy** and expand the hierarchy list.

References (2 of 2 unique, 2 displayed)			
<u>T</u> ools <u>S</u> ettings			
📴 🗢 🏟 🖹 🗽 🖹	2 6 6 5 6 1 0	🗙 <u>H</u> ilite Mode: Boun	daries 👻
Hierarchy	Slot 🏱 File Name	Model	Description ^
□ - ₩ 12345DES_Plan21.dgn ↓ ₩ Design, 12345DES_Model.dgn ↓ ₩ 12345SURV_Topo100Scale01.dgn	1 12345DES_Model.dgn	CDOT Default	Proposed Intersection
	•		•

Note that with nested references, the **Survey/Topo** reference is nested below the Design model file.

The **Survey/Topo file** that is attached nested to the Model file is for a 100 scale plot. However, you're creating an intersection sheet at a 40 scale. Therefore, you need to attach the correct scale Survey/Topo reference.

- **Note:** Coordinate with the Region Surveyor when you are creating sheets that are not at a 1:100 scale. They will provide you with the topography and survey MicroStation files at a different scale. Otherwise, the line work and cells will not be the correct size for the print scale.
- 7. Select the Design model reference and change the nesting to **No Nesting** to remove the 100 scale **Survey/Topo** reference.

References (1 of 1 unique, 1 displayed)					0	
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Hierarchy	Slot 🏱 File Name	Model	Description ^	Logical	Presentation	
☐ 12345DES_Plan21.dgn ⊕ W Design, 12345DES_Model.dgn	1 12345DES_Model.dgn	CDOT Default	Proposed Intersection	Design	Wireframe	~
	<	111				,
	Sgale 1.000000 : 1.0	000000	Orientation Top	Rotation 0'	0'0"	
	Offset X -178956.971 Y	-178956.971	Z -178956.971 ting V Allow Overrid	des 💌 <u>D</u> epth:	1	

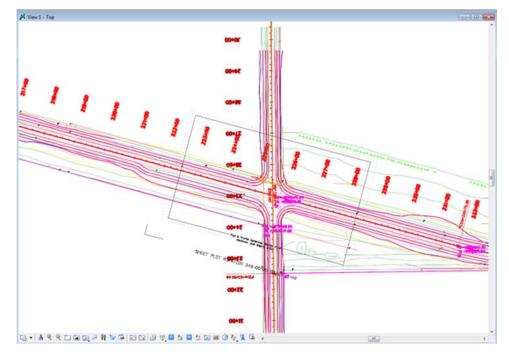
8. Attach the **12345SURV_Topo40.dgn** file from the project's **ROW_Survey_Drawings\Reference_Files** folder with the options shown.

📕 Reference Attachme	nt Settings for 12345SURV_Topo40Scale.dgn
_	5SURV_Topo40Scale.dgn
Full Path:\Re Model: CDOT	ference_Files\12345SURV_Topo40Scale.dgn
	Derault
-	ale Survey
Description: 40 Sc	ale Survey
Orientation:	
View	Description
Coincident	Aligned with Master File
Coincident - World	Global Origin aligned with Master File
Standard Views Saved Views (none)	
Named Fences (none)	
Named Fences (non	6)
Toggles:	•
Sc <u>al</u> e (Master:Ref)	1.000000 : 1.000000
Named Group:	
Revision:	
Clip Boundary Element:	Copy To Master
Nested Attachments:	Live Nesting Depth: 1
Display Overrides:	Alow
	Use MS_REF_NEWLEVELDH
	Master
Giobar aneolyle ocale.	
	<u>O</u> K Cancel

9. **Fit** the view.

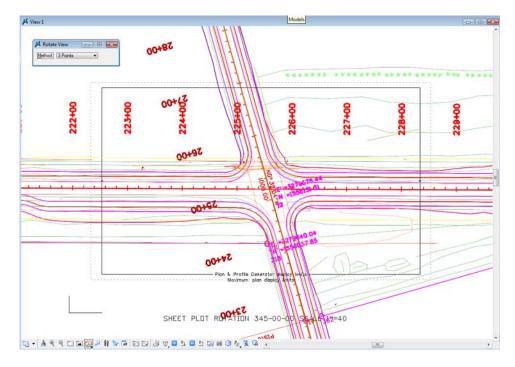
Lab 14.6 - Rotate the View

Rotate the view so that the portion of the mainline alignment through the intersection appears horizontal in the view.



1. **Window** around the intersection as shown.

- 2. Use the **Rotate View**, **3-Point** method to rotate the view so that the plan limits cell is horizontal to the view
 - **Note:** You can also use the keyin *rv=,,15* since you know the rotation angle from the plan limits cell. The commas are used as placeholders since you are not rotating about X and Y axis. You are only rotating about the Z axis the perpendicular axis to the Top View.

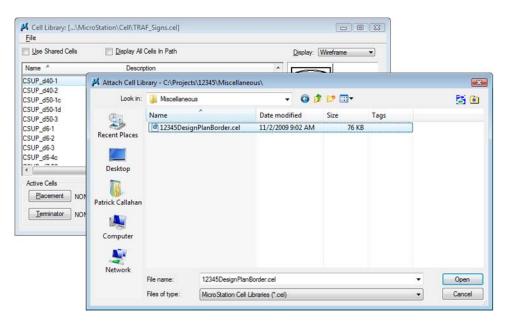


The view is rotated so that the alignment appears horizontal.

Note: Remember that you are rotating the view, not the graphics. The graphics maintain their original coordinate position in the sheet file.

Lab 14.7 - Attach the Border Cell

- 1. Select **Cells** from the **Primary** toolbar.
- In the Cell Library dialog box, select File > Attach and navigate to the C:\Projects\12345\Miscellaneous folder.
- 3. Select the **12345DesignPlanBorder.cel** file.



This is the project-specific border created earlier.

4. Select **Open** to attach the cell library.

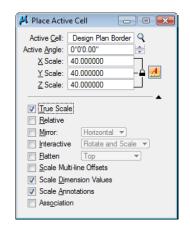
Cell Library: [\12345DesignPlanBorder.cel]	- • •
Lyse Shared Cells Display All Cells In Path	Display: Wireframe
Name A Description	
12345 Design Plan Border Project Border Cell	
Active Cells	
Placement 12345 Design Plan Border Point Element	Edit Delete
Terminator NONE Pattern NONE	Create Share

The cell library only has one cell (model) – the **12345 Design Plan Border** that you previously created.

- 5. Select **Placement** to make the border the active placement cell.
- 6. Close the **Cell Library** dialog box.

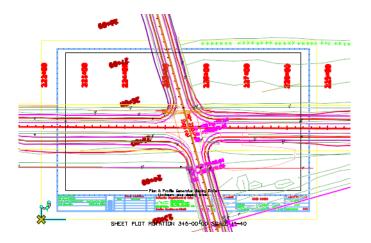
Lab 14.8 - Place the Border

- 1. Select Place Active Cell from the Cells toolbar.
- 2. In the **Tool Settings** box, set **Active Angle** to **0** and the **Active Scale** to **40** for X, Y and Z.



Note: The **Active Angle** is view independent and not associated with view rotation. Therefore, the x-axis is always horizontal regardless of the view rotation. You will not need to set this for correct placement of the North Arrow or other cells.

- **Note:** The **Active Scale** scales the border up 40 times around the full-sized graphics to match the plot scale.
- 3. AccuSnap on the lower left corner of the plan limits cell as shown to place the border.



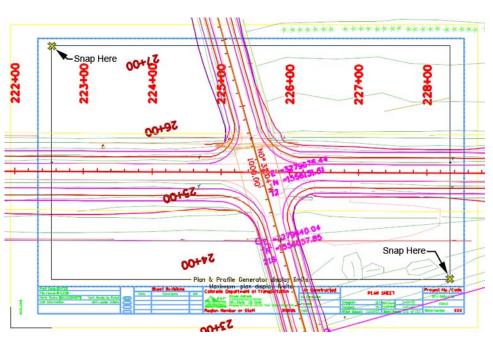
- 4. **<D>** to place the cell.
- 5. **<R>** to exit the command.

Lab 14.9 - Place the Clip Boundary

- 1. From the CDOT Menu Explorer select **Draffing**.
- 2. Set the Category to **Border**.
- 3. Select the Item Clip Boundary .

4. Select the **Place Block** icon from the **Main** toolbar and draw the clipping boundary by snapping on the opposite corners of the plan limits cell as shown (interior most line).



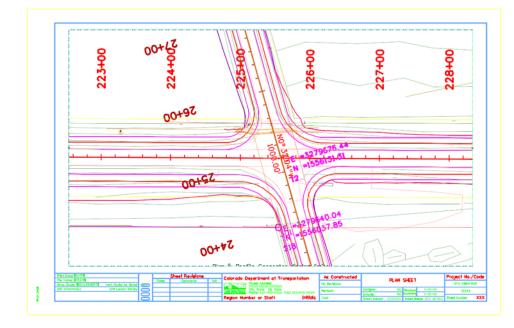


Lab 14.10 - Clip the Reference File

- 1. In the **References** dialog box, highlight both the **Design** and **Survey/Topo** references for clipping.
- 2. Select the **Clip Reference** icon.

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ierarchy	ip Reference File Name	Model	Description *	Logical	Presentation	•	2	*	4
12345DES_	2 12345SURV_Topo40Scale.dgn	CDOT Default	40 Scale Survey	40 Scale	Wireframe	1	~	~	
	1 12345DES_Model.dgn	CDOT Default	Proposed Intersection	Design	Wireframe	4	1	~	
	Scale 1.000000 : 1.0000 Offset X -178956.971 Y -178	00	Orientation Top	Rotation 0°0	0" (A 111 77				

- 3. In the Tool Settings box, verify Method is set to Element.
- 4. When prompted to **Identify Clipping Element**, select the rectangular clipping boundary you just placed.
- 5. **<D>** to accept.

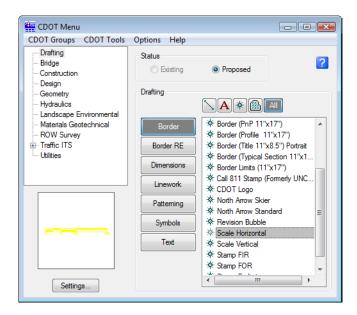


6. Fit the MicroStation view and Save Settings after clipping the reference files.

Note: Once the clipping boundary is placed, do not delete it. The clipping region of the reference file will be lost if the boundary is deleted.

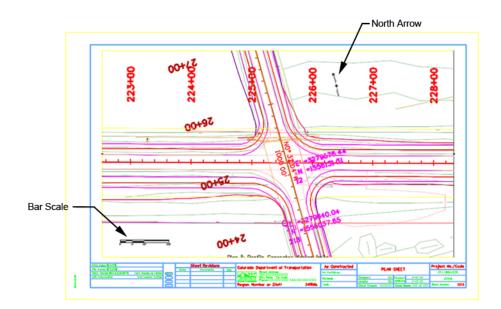
Lab 14.11 - Place the Bar Scale and North Arrow

- 1. From the CDOT Menu Explorer, select Drafting.
- 2. Set the Category to Border.
- 3. Select the Item Scale Horizontal.



- 4. When prompted to locate the origin of the **Bar Scale**, **<D>** inside the sheet border as shown below.
 - CDOT Menu - • • CDOT Groups CDOT Tools Options Help Drafting Status ? Bridge Existing Proposed Construction Design Drafting Geometry Hydraulics 📏 A 🚸 🙆 🗚 Landscape Environmental Materials Geotechnical * Border (PnP 11"x17") ROW Survey * Border (Profile 11"x17") Traffic ITS Border RE * Border (Title 11'x8.5") Portrait - Utilities * Border (Typical Section 11"x1. Dimensions * Border Limits (11"x17") * Call 811 Stamp (Formerly UNC. Linework * CDOT Logo * North Arrow Skier Patterning ☆ North Arrow Standard * Revision Bubble Symbols * Scale Horizontal Text * Scale Vertical * Stamp FIR * Stamp FOR ¥ Settings...
- 5. Select the Item North Arrow Standard.

6. When prompted to locate the **North Arrow**, **<D>** inside the sheet border as shown.



Lab 14.12 - Set the Text Scale Factor

Set the **Text Scale Factor** to match the border and plot scale factors.

- 1. Select **Models** from the **Primary** toolbar.
- 2. In the Models box, select Model Properties.

Note the Annotation Scale is set to 1:100 – the CDOT default.

3. Change the Annotation Scale to 1:40.

Image:	rimary Tools		
Type 2D/3D Name Description CDOT Default Master Model Image: State St	<mark>0</mark> • 🗈 • 🖬 • 餐	• 🥩 • 🖄 • (1) 🖶 🕁 - 🗭
Iype: Design ▼ 3D ▼ Name: CDOT Default Description: Master Model Ref Logical:	Type 2D/3D Nam	e *	Description 🔆
Name: CDOT Default Description: Master Model Ref Logical: 100.000(: 1.00000) Line Style Scale: 1"=100' U:*=500' omatically Cell Properties 1"=60' Can be place 1"=50' Can be place 1"=40' I = 30' Cancel I = 10' Cancel	🔑 Model Pro	operties	X
1"=1'	Ref I Line Style Cell Propertin ∑Gan	Name: CDOT Default cription: Master Model logical: 1"=100" 1"=500" 1"=500" 1"=500" 1"=500" 1"=100" 1"=60" 1"=50" 1"=60" 1"=50" 1"=60" 1"=50" 1"=70" 1"=20" 1"=20"	t (100.0000): 1.00000 () omatically ell Type: Graphic ()

- 4. Select OK.
- 5. At the Alert message, select Yes to propagate the changes.
- 6. Close the Models box.

The **Annotation Scale** for the file now matches the border and plot scales. Later, when text and dimensions are placed in this file, they will be the correct size.

Lab 14.13 - Edit the Bar Scale

- 1. Window in to the bar scale cell.
- 2. Select the Edit Text command from the Text toolbar.
- 3. **<D>** on the **X'** text on the bar scale.
- 4. Change the text to 20' and **<D>** to accept.



5. Make the other edits as shown.



- 6. **Fit** the view.
- 7. Save Settings.
- 8. **Exit** MicroStation.

LAB 15 - Create a Typical Section Sheet

Normally, all graphics are created in the model file and referenced to the sheet file. The sheet file contains the border, annotations and dimensions. However, typical section sheets are an exception to this rule.

Roadway Design typical sections can be created with the **CDOT Typical Section Generator Program**. The **Generator Program** not only creates the graphics, but it also annotates and dimensions the typical section. It uses a **Text Scale Factor** of 10 for all text. Therefore, the program must be run in a sheet file set up at a 10 scale. The auto-populated file **JPC#DES_TyplSect##.dgn** is automatically created with the text scale factor set to 10 and the border placed at a 10-scale. Therefore, run the **Typical Section Generator** in the sheet file.

Chapter Objectives:

After completing this exercise you will know how to:

- Create a Typical Section sheet.
- Attach a project-specific border cell library.
- Use the **Replace Cell** command to replace a generic border with a project border.
- Use the **CDOT Typical Section Program** to automatically create a typical section based on input values.
- Use AccuDraw and "SmartLock" to align graphics.
- **Save** the typical section input file.

Lab 15.1 - Create a New Sheet File

1. Start MicroStation and open the file **12345DES_TyplSect##.dgn** from the **\12345\Design\Drawings** folder.



The file opens and contains the generic border.

Select File > Save As... and rename the file to 12345DES_TyplSect01.dgn and select OK.

The file is copied to the **Drawings** folder with the new name.

Lab 15.2 - Attach the Border Cell Library

- 1. Select **Cells** from the **Primary** toolbar.
- In the Cell Library dialog box, select File > Attach and navigate to the C:\Projects\12345\Miscellaneous folder.
- 3. Select the 12345DesignPlanBorder.cel file.
- 4. This is the project-specific border created earlier.
- 5. Select **Open** to attach the cell library.

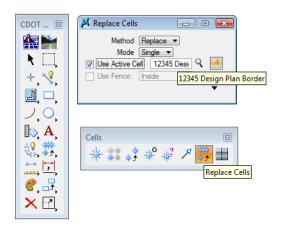
Cell Library: [\12345DesignPlanBorder.cel]	
<u>F</u> ile	
Use Shared Cells Display All Cells In Path	<u>D</u> isplay: <u>Wireframe</u> ▼
Name A Description	
12345 Design Plan Border Project Border Cell	
<)	
Active Cells Placement 12345 Design Plan Borc Point Element	Edit Delete
Terminator NONE Pattern NONE	Create Share

The cell library only has one cell (model) – the **12345 Design Plan Border** that you previously created.

- 6. Select **Placement** to make the border the active placement cell.
- 7. Close the Cell Library dialog box.

Replace the border

1. Select **Replace Cells** from the **Cells** toolbar.



- 2. In the **Tool Settings** box
 - Set Method to Replace
 - Set Mode to Single
 - Toggle on Use Active Cell
- 3. When prompted to Identify Cell, <D> on the Typical Section Border.
- 4. **<D>** to accept.

The generic border is replaced with the project border.



Lab 15.3 - Edit the Border Text for a Typical Section Sheet

- 1. Select the Edit Text Command from the Text toolbar.
- 2. **<D>** on the **Plan Sheet** text.
- 3. Change the text to *Typical Section*.

	ext $\mathbf{A} \sim \mathbf{A} \xrightarrow{\mathbf{A}} \mathbf{A} \xrightarrow{\mathbf{BC}} \xrightarrow{?} \mathbf{A} \xrightarrow{\mathbf{A}} \mathbf{A} \xrightarrow{\mathbf{A}} $	$I_{\Delta 1} \xrightarrow{\Delta_{1}} \frac{\Delta_{1}}{\Delta_{2}} \xrightarrow{\text{and}} \frac{\Delta_{1}}{\Delta_{2}}$			
ed.				Project No.,	/Code
		SHEET		STA 086A-0	039
	Designer: CU	X-XX-XX	12345		
	Detailer: CU	Numbers	X-XX-XX		
	Sheet Subset: XXXXXXX	Subset Sh	eets: XXX of XXX	Sheet Number	XXX

4. **<D>** to accept.

_	TYPICAL SECTION				
	Designer:	CU	Structure X-XX-XX		
-	Detailer:	CU	Numbers	X-XX-XX	-
	Sheet Subset:	XXXXXXX	Subset Sheets: XXX of XXX		

Lab 15.4 - Check Model Properties

- 1. Select File > Models from the menu (or select the Models icon from Primary Tools).
- 2. Select the Edit Model Properties icon

Note that the **Annotation Scale** factor is set to 1:10 for running the CDOT Typical Section Program. The text placed from the program will appear the correct size.

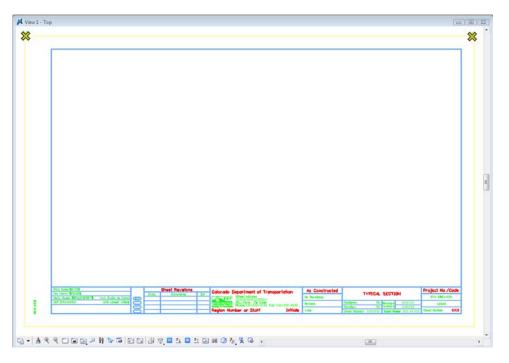
CDOT 🖾	
₩ ₩ \ + \	Measure Distance
	<u>Distance:</u> 100.000' Accumulated Distance: 100.000'
≣ ♥, ∧ , 	
©;; *♪, <u> </u>	Measure E
₹	Measure Distance

Note: You must change the Annotation Scale Factor if you run the Typical Section Program in any file other than the JPC#DES_TyplSect##.dgn file.

3. Select the Measure Distance command and set the Distance to Between Points.

CDOT 🖾	
★ ○ ★ ◇ ★ ◇	Measure Distance
✓, , , , , , , , , , , , , , , , , , ,	Accumulated Distance: 100.000'

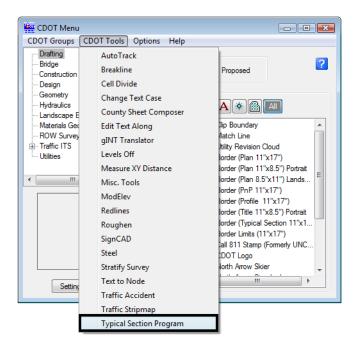
4. Measure the height and length of the border (AccuSnap along the yellow edge).



Note that the border measure 110×170 , or 10 times the actual size. If the border cell was scaled to a factor other than 1:10 (like 1:100 for a plan sheet), then it must be re-scaled or replaced at the proper scale of 10.

Lab 15.5 - Start the Typical Section Program

1. On the CDOT Menu, select Add On's > Typical Section Program.



The **CDOT Typical Section Program** lets the user input different values based on the desired roadway section. The various options are highlighted in blue.

Pavement Type	Pavement Thickne	ess	Median Type	Vertical Factor
 Asphalt Concrete Overlay Widening 	Top Lift: Lift 3: Lift 2: Bottom Lift:	1.50 i 1.50 i 1.50 i 1.50 i	 None Barrier Curb Depressed Mountable Curb 	2.00 x Actual Vertical Distance Roadway Cross Slope Cross Slope 2.00 %
	ABC: Subbase	12.00 i 12.00 i	 Paved Single Lane / Ramp 	Z-Slopes Dist: 12.00 ft Slope: 6.00 : 1
Left Side Outside Shoulder Travel Lane 10.00 ft 0.00 ft	Inside Travel Lane	Median Le Shoulder Me 0.00 ft 0.1	lian Median Shoulder	Right Side Inside Outside Travel Lane Travel Lane Shoulder 12.00 ft 0.00 ft 10.00 ft
Left Curb None Barrier		Existing P Left Side 0.00	Right Side ft 0.00 ft	Right Curb None Banier
Mountable Sidewalk: 0.00 ft Required Fields (Must be G		Bench Left Side 0.00	Right Side ft 0.00 ft way Slope Away	⊘ Mountable Sidewalk: 0.00 ft

Note: Items that require input are shown in red.

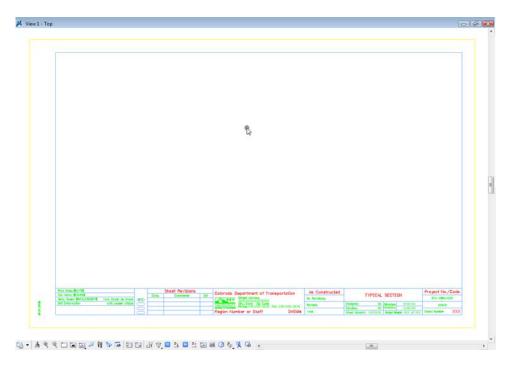
Create a 2-Lane Rural Typical Section

- 1. On the Create Typical Sections dialog box, select **Options > Writelock** to toggle it **On** (a checkmark).
 - **Note:** If **Writelock** is **On**, permanent graphics will be generated in the file. If **Writelock** toggle is **Off**, the graphics are temporary and if you zoom or pan, the graphics will disappear. A checkmark next to **Writelock** indicates that it is on.

CDOT Create Typical S File Options Help	ections				
Pavement Type Asphalt Concrete Overlay Widening	Pavement Thickness Top Lift: Lift 3: Lift 2: Bottom Lift: ABC: Subbase	s 3.00 1.50 0.00 0.00 12.00 12.00	in in in in in	Median Type None Barrier Curb Depressed Mountable Curb Paved Single Lane / Ramp	Vertical Factor 2.00 x Actual Vertical Distance Roadway Cross Slope Cross Slope 2.00 % Z-Slopes Dist: 12.00 ft Slope: 6.00 : 1
Left Side Shoulder Travel Lane 10.00 ft 0.00 ft	Inside Travel Lane S	houlder	Left Median 0.00 ft	Right Median Shoulder 0.00 ft 0.00 ft	Right Side Inside Outside Travel Lane Travel Lane Shoulder 12.00 ft 0.00 ft 10.00 ft
Left Curb None Barrier		Existin Left S	n g Pavemen Side ft	t Right Side 0.00 ft	Right Curb None Barrier
Mountable Sidewalk: 0.00 ft Required Fields (Must be C			-	Right Side 0.00 ft Slope Away from Road	Mountable Sidewalk: 0.00 ft Apply Gose

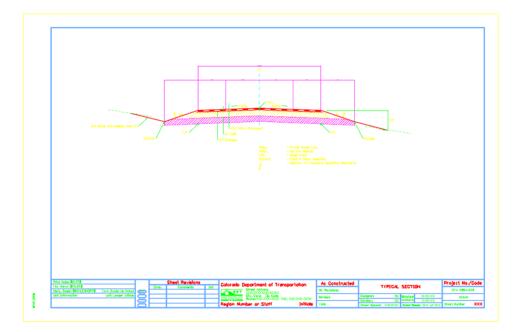
2. Set the Typical Section Program options as shown.

- 3. Select Apply.
- 4. When prompted to locate the profile grade point, **<D>** near the top-center of the sheet as shown.



The 2-Lane rural section is automatically drawn, annotated and dimensioned.

5. *Do not* close the Create Typical Section dialog box.



Create a 2-Lane Urban Typical Section

1. Set the **Typical Section Program** options as shown.

🙀 CDOT Create Typical S	ections					
File Options Help						
Pavement Type Pavement Thickness Asphalt Top Lift: Concrete Lift 3: Overlay Lift 2: Widening Bottom Lift:		3.00 in 1.50 in 1.50 in 1.50 in	Median Type None Barrier Curb Depressed Mountable Curb	Vertical Factor ? 2.00 x Actual Vertical Distance Roadway Cross Slope ? Cross Slope %		
	ABC: Subbase	10.00 in 14.00 in	 Paved Single Lane / Ramp 	Z-Slopes Dist: 12.00 ft Slope: 6.00 : 1		
Left Side Outside Shoulder Travel Lane 10.00 ft 0.00 ft	Inside Travel Lane S	edian Left houlder Median .00 ft 0.00 ft	Right Median Shoulder 0.00 ft 0.00 ft	Right Side Inside Outside Travel Lane Travel Lane Shoulder 12.00 ft 0.00 ft 10.00 ft		
Left Curb None Barrier Mountable Sidewalk: 6.00 ft	t	Existing Pavement Left Side 0.00 ft Bench Left Side 0.00 ft	nt Right Side 0.00 ft Right Side 0.00 ft	Right Curb None Barrier Mountable Sidewalk: 6.00 ft		
Required Fields (Must be C	Greater than 0.0)	Slope Away from Road	Slope Away from Road	Apply Close		

- 2. Select Apply.
- 3. When prompted to locate the profile grade point, **<D>** near the bottom-center of the sheet below the first section.

The 2-Lane urban section is automatically drawn, annotated and dimensioned.



4. Do not close the Create Typical Sections dialog box.

Save the 2-Lane Urban Section Input File

- 1. From the Create Typical Section dialog box, select File > Save.
- 2. Navigate to the C:\Projects\12345\Miscellaneous folder.
- 3. Key in a File name SH86_2L_Urban_Typical and select Save.

The input file is saved. If you need to generate this typical section again, Select **File > Open** form the **Create Typical Section** dialog box and select this text file.

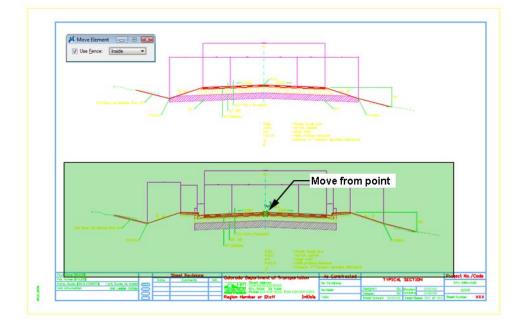
4. Close the Create Typical Section dialog box.

Align the Sections

Since you did not snap to a location for the sections, you may need to align the sections at their centerlines as well as move the section graphics into the border.

- 1. Place a fence block around the urban section.
- 2. Select the **Move** command from the **Manipulation** toolbar and toggle on **Use Fence**.

📕 Move Element	- • 💌
Use <u>F</u> ence:	Inside 🔻

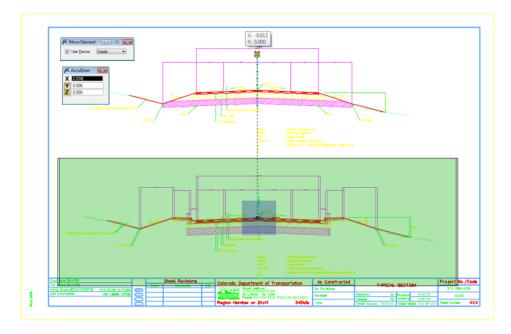


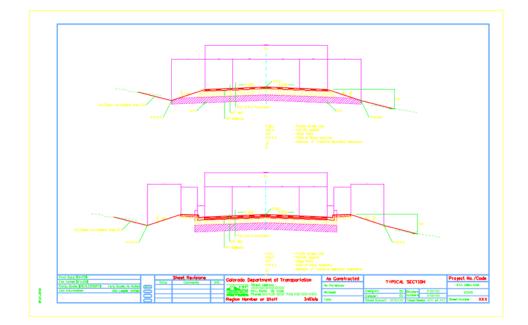
3. AccuSnap on the centerline of the urban section as shown for the move from point.

4. **Move** your cursor horizontally (either to the right or left), lock on AccuDraw's X-axis then press **<Enter>** on the keyboard.

This **smartlocks** the **AccuDraw** axis so that you can only move in the horizontal direction.

5. **<D>** on the rural section centerline as shown for the move to point.





The two sections are now aligned at the centerlines.

- 6. Fit the view.
- 7. Save Settings.
- 8. Exit MicroStation.

LAB 16 - Create a Bridge General Layout Sheet at Different Scales

In this exercise, you'll create a General Layout sheet using the bridge graphics drawn earlier. The exercise will demonstrate how to create a sheet with graphics at different scales.

Chapter Objectives:

After completing this exercise you will know how to:

- Place a border at a 40-scale.
- Create saved views in the model file for referencing to the sheet.
- Reference plan graphics coincident-world at 1:1
- Reference saved-view section and detail graphics at different scales on the same sheet

Lab 16.1 - Setup Bridge Model File

Open the bridge model file for plan

- 1. Start MicroStation.
- 2. Open the file CU12345BRDG_Model.dgn in the project's \Bridge \Working folder.

The blank bridge model file opens.

Reference the Design Model file

- 1. Open Level Display and turn on the BRDG_TOOLS_Outline-Bridge level.
- 2. **Fit** the view.



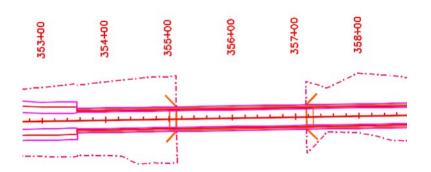
The proposed outline graphics for the bridge have been already created in plan view.

3. Attach the **12345DES_Model.dgn** from the project's **Design\Drawings\Reference_Files** folder as shown. Attach Coincident-World at a Nesting Depth of 1. Do not attach raster references.

<i>(</i>)	
Attachment Setting	s: 12345des_model.dgn 🛛 🕅 🏼 🕅
File Name:	12345DES_Model.dgn
Full Path:	\reference files\12345des model.dgn
	CDOT Default
<u>M</u> odel.	CDOT Deladir.
Logical Name:	Design
Description:	Design Plan
Sc <u>al</u> e (Master:Ref)	1.000000 : 1.000000
Le <u>v</u> el:	· · · · · · · · · · · · · · · · · · ·
Named Group:	· · · · · · · · · · · · · · · · · · ·
Revision:	· · · · · · · · · · · · · · · · · · ·
Nested Attachments:	Live Nesting Depth: 1
Display Overrides:	Allow
Ne <u>w</u> Level Display:	Use MS_REF_NEWLEVELDI*
Global LineStyle Scale:	Master
☑ Display	Clip Back
Snap	Clip Front
V Locate	Display Raster References
Manipulate as Elen	
True Scale	V Use Lights
Scale Line Styles	Plot As 3D (PDF)
V Joane Line Styles	
	OK Cancel

The design model is attached coincident to the proposed bridge graphics. A nested depth of 1 also references the Survey/Topo file (currently the Survey/Topo display is off). You will later reference the bridge plan to a sheet file.

4. **Zoom out** as shown.



5. Save Settings.

Move the Bridge Model to the Reference_Files folder

Since the work in the model file is complete, move from the **Working** folder to the **Reference_Files** folder so that other groups can reference, if needed.

- 1. Select File > Save As...
- 2. Set the directory to C:\Projects\12345\Bridge\Drawings\Reference_Files
- 3. Remove the CU (CDOT User) initial prefix and rename the file to **12345BRDG_Model.dgn.**
 - **Note:** Your initials are removed from the file when it is ready to transfer to the **Reference_Files** folder.

X Save As - C:\Projects\12345\Bridge\Drawings\Reference_Files\										
Save in:	Reference_File	es	•	G 🤌 📂 🗉	- 👔	3D - V8 DGN				
Ca.	Name		Date modified	Туре	Size					
Recent Places	12345BRDG_I		11/3/2009 11:1	DGN File	64 KB					
Recent Places	12345BRDG_I	Prof.dgn	1/18/2008 7:00	DGN File	34 KB					
Desktop										
CDOT_User										
Computer						,				
Network										
Network	File name:	12345BRDG_M	lodel.dgn	•	Save					
	Save as type:	MicroStation V8	BDGN Files (*.dgn)	•	Cancel					
					Options					
						ii.				

- **Note:** The project template delivers standard dgn's for model and sheet files as starter files. You may be prompted to confirm saving over an existing file. Please use caution when performing these tasks as you could lose data. Be sure the files are empty or you are working with the latest files.
- 4. Select **OK** to save the file.
- 5. Select File > Close to return to the MicroStation Manager.

6. In the MicroStation Manager, verify your 12345BRDG_Model.dgn file was copied to Reference_Files folder.

Look in:	Reference_	Files	•	G 🕫 🖻 🛙	🗗 📩 🔁	٠	3D - V8 DGN
Pa	Name	^	Date modified	Туре	Size		
Recent Places	-12345BRD	G_Model.dgn	11/3/2009 11:1	DGN File	63 KB		
Desktop Patrick Callahan	12343BKU	G_Prof.dgn	1/18/2008 7:00	DGN File	34 KB		
Network	File name:	123458RDG_	Model.dgn	•	Open	User:	CDOT User
.setwork	Files of type:	All Files (".")		•	Cancel	Project:	12345

- 7. Change the directory to \Bridge \Working.
- 8. Select the CU12345BRDG_Model.dgn from the Working folder. *Right* click on the file and select Delete.

Note: Make sure you select the BRDG_Model file and *not* the BRDG_Detail file.

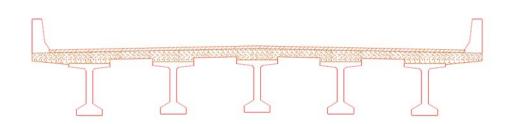
📕 MicroStation I	Manager - C:\Proje	ects\12345\Bridge\Wo	rking	j\.							×
Look in:	\rm Working			- 0	1 🕫 🖻	• •	٦.	3 🖻		3D - V8 DGN	
Ca.	Name	^		Date mod	ified	Туре		5			_
Recent Places	A party and a second se	IG_Model.dgn geModel01.dgn		Select				·			
				Scan for							
Desktop				Open Wit	th		*				
			đ	WinZip Restore p	revious v	versions	,				
CDOT_User				Send To			•				
				Cut							
Computer				Сору							
	•			Create Sh	ortcut			P.			
Network	File name:	CU12345BRDG_Mode		Delete					User:	CDOT User	•
	Files of type:	All Files (*.*)		Rename					Project:	12345	•
		Open as read-only		Propertie	s				Interface:	CDOT	•
			_					·			

9. Select **Yes** to delete the working file if prompted to confirm deleting an existing file.

Open the bridge model file for section and details

- 1. Open the CU12345BRDG_Detail.dgn file from the C:\Projects\12345\Bridge\Working folder.
 - a. Create Saved Views
- 1. **Fit** the view.

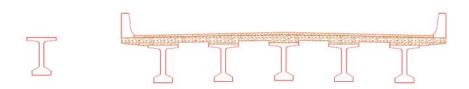
2. Make sure that only the section graphics are showing in the view. If not, **Window** around the bridge section. Be sure that the entire section encompasses the view and no other graphics are shown in the view.



- 3. Save the view by keying in *sv=bridge section*
- 4. When prompted, **<D>** to in the view to save it.
- 5. Select **Utilities > Saved Views** to open the **Saved Views** dialog box and verify that the view was saved.

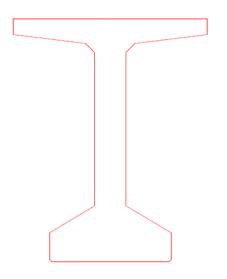
📕 Saved Views	- • 💌
°, • × 7; 6) <u>M</u> ew: 1 •
Name Descr	iption
bridge section	
Apply Options	
Window: Aspect F	Ratio 🔻
Camera Position	
View Attributes	√ <u>L</u> evels
Clip Volume	Reference Settings
Close	Apply
Gose	Дрруу

- 6. Make sure the **Graphic Group** lock is turned *off*.
- 7. Select the **Copy** command and copy one of the BT 54 girder cells to the approximate location shown (outside of the section saved view).



This will be used as a reference on your details sheet.

8. **Window** around the single girder you just copied to create a saved view for the girder detail. Make sure only the girder is shown in the view.



9. Key in *sv=bridge rebar detail* and *<D>* in the view to save.

Note: You can either use the *sv*= keyin or the dialog box option to create saved views.

📕 Saved Views 📃 🗉	×
🖏 🚰 🗙 💱 🍰 🛛 <u>V</u> iew: 💷	
Name Description	
bridge rebar detail	
bridge section	
Apply Options	
<u> Wi</u> ndow: Aspect Ratio ▼	
Camera <u>P</u> osition	
View Attributes Views	
Clip Volume Reference Settings	
Close Apply	

- 10. Fit the view.
- 11. Save Settings.

Move the model file to the Reference_Files folder

You're finished working in this bridge model file, so move it to the Reference_Files folder.

- 1. Select File > Save As...
- 2. Set the directory to C:\Projects\12345\Bridge\Drawings\Reference_Files
- 3. Remove the CU (CDOT User) initial prefix and rename the file to **12345BRDG_Detail.dgn.**

📕 Save As - C:\P	rojects\12345\Brid	ge\Drawings\R	eference_Files\			×
Save in:	Reference_File	es	•	G 🤌 📂 🗉	•	
Recent Places Desktop CDOT_User Computer	Name 12345BRDG_1 12345BRDG_6	-	Date modified 11/3/2009 11:1 1/18/2008 7:00	Type DGN File DGN File	Size 63 KB 34 KB	
Network	File name:	12345BRDG_D)etail.dgn	•	Save	
	Save as type:	MicroStation V8	3 DGN Files (*.dgn)	•	Cancel Options	

- 4. Select **Save** to save the file.
- 5. Select File > Close to return to the MicroStation Manager.
- 6. In the MicroStation Manager, verify your 12345BRDG_Detail.dgn file was copied to Reference_Files folder.

7. Change the directory to the **\Bridge\Working** folder. Right click on the file and select **Delete** to delete the **CU12345BRDG_Detail.dgn** file.

Look in:	Norking		-	🌀 🧊 📂 🛄	🕨 🗋 🚰 🖪		3D - V8 DGN
	Name	~	Date	modified Typ	e s		
sktop		IRDG_Detail.dgn IridgeModel01.dgn	Delete File	you sure you wan	t to move this file t CU12345BRDG_ Type: DGN File Size: 70.0 KB Date modified:	Detail.dgn	
T_User						Yes	No
	د [•	Yes	No
	۲ile name:	CU123458RDG_			Open		No CDOT User
- nputer		CU12345BRDG_ All Files (*.*)			Open Cancel		CDOT User

8. Select **Yes** to delete the working file if prompted to confirm deleting an existing file.

Lab 16.2 - Create the Sheet File

Create a new sheet file from a seed file.

- 1. In the MicroStation Manager, set the folder location to C:\Projects\12345\Bridge\Drawings.
- 2. Select the New File icon from the MicroStation Manager.



- 3. In the Seed File section, choose the Select button.
- 4. Select the seed file **3D-Seed_CDOT.dgn** and select **OK**.

📕 New - C:\Proj	ects\12345\Bridge\	Drawings\			X
Save in:	🐌 Drawings		•	o 🌶 🖻 🖽	- 🔁 🖹
Ca	Name		Date modified	Туре	Size
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Recent Places	🌗 Tabs		8/4/2009 6:50 A	File Folder	
Desktop					
CDOT_User					
Computer					
Network					
	File name:	12345BRD0	G_Plan01.dgn	•	Save
	Save as type:	Micro Station	n DGN Files (*.dgn)	•	Cancel
	Seed:	ds-Global\M	licroStation\seed\3D-	Seed_CDOT.dgn	Browse

5. In the Files field, key in the name 12345BRDG_Plan01.dgn.

6. Select Save.

The file appears in the folder list.

7. Select **Open** to open the file.

The empty file is created with all of the Bridge default settings from the seed file.

Reference the Plan graphics

- 1. Reference the **12345BRDG_Model.dgn** file from the **\Bridge\Drawings\Reference_Files** folder.
- 2. In the Attachment Settings box, set the options as shown and select OK.

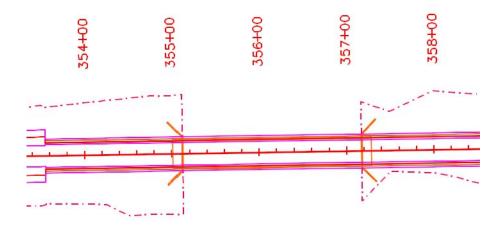
📕 Attachment Setting	s: 12345brdg_model.dgn
<u>Fi</u> le Name:	12345BRDG_Model.dgn
Full Path:	\reference_files\12345brdg_model.dgn
<u>M</u> odel:	CDOT Default
Logical Name:	Bridge Plan
Description:	Bridge Plan
Scale (Master:Ref)	1.000000 : 1.000000
Le <u>v</u> el:	
Named Group:	
Revision:	
Nested Attachments:	Live Nesting Depth: 1
Display Overrides:	Allow
Ne <u>w</u> Level Display:	Use MS_REF_NEWLEVELDI
Global LineStyle Scale:	None 🔻
☑ Display	Clip Back
✓ Snap	Clip Front
✓ Locate	Display <u>Raster</u> References
Manipulate as Eler	nent Ignore Attachment When Live Nesting
✓ <u>T</u> rue Scale	✓ Use Lights
Scale Line Styles	Plot As <u>3</u> D (PDF)
	<u>O</u> K Cancel

The bridge plan and the nested design reference are attached to the sheet file. Since you attached at a 1:1 scale and Coincident-World, all of the bridge plan graphics are in their true coordinate locations and actual size.

3. **Fit** the view.



4. Window in on the bridge area as shown.



5. Toggle off the display of the Design reference.

<u>Tools</u> <u>Settings</u> • <u>Settings</u>	to to to to to to to to	🖉 Hilte Mode: 🛛 Bou	ndaries 👻				
Hierarchy	Slot 🏱 File Name	Model	Description *	Presentation	•	2	۲
E-W 123458RDG_Plan01.dgn	1 12345DES_Model.dgn	CDOT Default	Design Plan	Wireframe	1	1	1
	Offset X -178956.971 Y	00000 -178956.971 S 闷 🗿 Live Ne:	Orientation Top	Eptation 0°01]

6. Only the graphics from the Bridge model are shown.



Place the border

With the bridge plan graphics in place, you can now place the border around them.

- 1. Select **Cells** from the **Primary** toolbar.
- Select File > Attach File and attach the 12345DesignPlanBorder cell library from the C:\Projects\12345\Miscellaneous folder.
- 3. Select the **Placement** option for this cell.

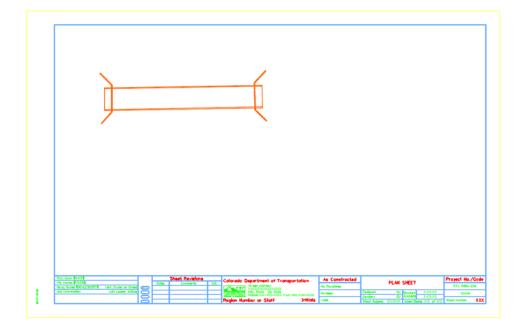
📕 Cell Library: [\12345DesignPlanBorder.cel]	
File	
Use Shared Cells Display All Cells In Path	Display: Wireframe
Name A Description	
12345 Design Plan Border Project Border Cell	
4	
Active Cells	
Placement 12345 Design Plan Border Point Element	Edit Delete
Terminator NONE Pattern NONE	Create Share

4. Select the **Place Active Cell** command and place the border at a 40 scale.

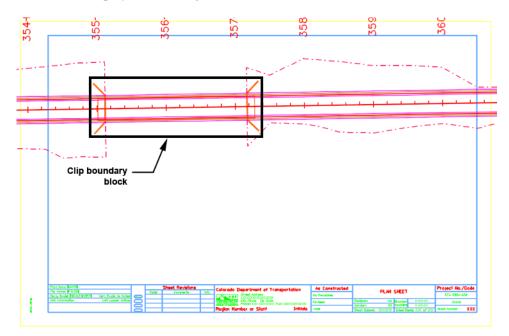
📕 Place Activ	/e Cell 🗖 🗖 💌
Active Cell:	Design Plan Border 🤍
Active Angle:	0°0'0.00''
X Scale:	40.000000
Y Scale:	40.000000 – 🖨 🛃
Z Scale:	40.000000
	Top vilti-line Offsets nension Values notations

The border scale is the same as the plot scale of $1^{"}=40$ '.

5. **<D>** to place the border in the location shown. Be sure to position the border so that the bridge plan is in the upper left corner.



6. Turn on the display of the design reference.



- 7. On the CDOT Menu Explorer, select Drafting.
 - Select the **Border** category.
 - Select the **Clip Boundary** item.
- 8. Select the **Place Block** command and place the clip boundary block as shown.

9. From the **Reference** dialog box, select the Bridge model reference and then select **Tools** > **Clip Boundary**.

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		.000000	Orientation Top	Rotation 0°0	n			
	Scale 1.000000 : 1							

10. **<D>** on the clip boundary to clip the design model reference.

N 1	. /				
<u> </u>					
	N				
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			PLAN	STEL	STA 0554-038
The Homes \$73,853 Date: Conversion	State of the second second	No Revolves			51X 0804-804
	Region Humber of Slotf InHida	No Revision Revision	Delgres CU Detailer OU Sheet Subert XXXXXXX	Sevelare X-832-833 Sambare X-833-833	12345

The bridge plan is now place inside the border at the proper coordinates. Design graphics levels can be turned on/off as needed.

Reference additional graphics at various scales

Reference the typical section at a scale of 1'' = 10'

- 1. From the References dialog, attach the file **12345BRDG_Detail.dgn** from the **\Bridge\Drawings\Reference_Files** folder.
- 2. In the Attachment Settings box:

📕 Reference Atta	chment Settings for 12345BRDG_Detail.dgn
	12345BRDG_Detail.dgn
_	\Drawings\Reference Files\12345BRDG Detail.don
	CDOT Default
-	bridge section
Description:	
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Nested Attachm	ents: No Nesting Depth: 1
Display Oven	rides: Allow
Display Over	
	splay: Use MS_REF_NEWLEVELDI
	splay: Use MS_REF_NEWLEVELDI
Ne <u>w</u> Level Dis	splay: Use MS_REF_NEWLEVELDI

- Select the saved view **Bridge Section** (the logical name will update to the saved view name).
- Set the **Scale** to **40:10**
- **Note:** When working with multiple scales, always key in the border scale in the first field (Master) and the detail scale in the second field (Ref). MicroStation will calculate the scale for your, or you could calculate it yourself and enter **4**:**1**.
- Set the other options as shown.

- 3. Select **OK** and **<D>** to position the saved view reference in the location shown.

4. Reference the **12345BRDG_Detail.dgn** again and repeat the above process and reference the bridge rebar detail at a scale of 1"=5'.

📕 Reference Atta	chment Settings for 12345BRDG_Detail.dgn
	12345BRDG_Detail.dgn
-	\Drawings\Reference_Files\12345BRDG_Detail.dan
	CDOT Default
Model.	
Logical Name:	bridge rebar detail
Description:	
Orientation:	
View	Description
Coincident	Aligned with Master File
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Scale (Master	:Ref) 40.000000 : 5.000000
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Note: You'll annotate and dimension this sheet in the next lab.

- 5. **Fit** the view.
- 6. Save Settings.
- 7. Exit MicroStation.

LAB 17 - Create a General Notes Sheet

The **12345DES_GenNote.dgn** has been created in the project's **\Design\Drawings** folder through the create project utility. This sheet file currently is linked to a generic notes doc file in the CDOT workspace. However, the sheet files should reference the project-specific notes file, **12345GemeralNote.dgn** located in the **\Design\Drawings\Reference Files** folder. You must first update the references in the sheet file to point to the project notes, and then edit the project notes file to be project-specific.

Note: This process is the same for any specialty group.

Chapter Objectives:

After completing this exercise you will know how to:

- Open a project notes sheet file.
- Update the Word document link to point to the 12345 project directory.
- Edit the project-specific general notes Word file.
- Re-link the General Notes Word file to the Notes sheet file.

Lab 17.1 - Create Project General Notes Sheet

Updating Links

1. Start MicroStation and open the file **12345DES_GenNote##.dgn** from the **C:\Projects\12345\Design\Drawings** folder.

THESE GENERAL NOTES SHEETS ARE LINKED TO A DOCUMENT FILE (DES_GROUNDO.DOC). TO EDIT, DOUBLE CLICK ON GRAPHIC. JF YOU EDIT THE FILE SHO RE-LINK THE FILES. TO LINK FILES, FIRST DELETE LINK, THE COPY INFORMATION DUT OF DOCUMENT FILE (DES_GROUNDO.DOC). IN MICROSTATION GO TO EDIT>PASTE SPECIAL, SELECT THE LINKED MICROSOFT OFFIC COOCUMENT, SLECCY MEHADE TO BE BY SIZE, FILL IN 18, CENTER AND PLANE DO TO BE TO BE BY SIZE, FILL IN 18, CENTER AND PLANE DO TO BE TO BE BY SIZE, FILL IN 18, CENTER AND PLANE DO TO BE TO BE BY SIZE, FILL IN 18, CENTER AND PLANE DO TO BE TO BE BY SIZE, FILL IN 18, CENTER AND PLANE DO TO BE BY SIZE, FILL IN 18, CENTER AND PLANE DO TO BE TO BE BY SIZE, FILL IN 18, CENTER AND PLANE DO TO BE TO BE BY SIZE, FILL IN 18, CENTER AND PLANE DO TO BE BY SIZE.



This file was automatically generated by the create project utility program and contains links to a General Notes Word document in the generic project template folder. You will need to update these links to the General Notes Word document in the project folder.

2. Select Edit > Links.

3. Highlight the first link in the list and select **Change Source**.

Links				×
Links: C:\\JPC#	DES GenNote.doc!OLE Li	Type	Update Manual	Close
C:\\JPC#I	DES_GenNote.doc!OLE_Li	nk2 Document	Manual	Update Now Open Source
				Change Source Break Link
Source: Type:	C:\\Tabs\12345D Microsoft Office Wor	-	-	
Update:	Automatic	Manual	al	

 In the Change Source dialog box, set the Look in folder to C:\Projects\12345\Design\Drawings\Tabs and select the file 12345DES_GenNote.doc.

4	Change Source								×
	Look in:	퉬 Tabs			•	G 🤌	⊳ 🔝		
	Recent Places Desktop CDOT_User Computer	12345DES_	GenNote.doc SWMP.doc TabEarthwork.x TabMisc.xls		Size		Tags		
	Network	File name: Files of type:	12345DES_(All Files (*.*)	GenNote.doc			•	Open Cancel	
	Item Name:	OLE_LINK1							

- 5. Select **Open** to update the link.
- 6. Repeat this process for the second link.

Links				×
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Source: Type: Update:	C:∖\Tabs\12345D Microsoft Office Wo ⊚ Automatic	-	ent	

7. Close the Links dialog box.

8. Save Settings (File > Save Settings).

The General Notes sheet file is now linked to the GenNotes.doc file in the project-specific folder. You can now edit the Word file for your project-specific requirements.

Editing the Notes

1. Double click on the first notes link (left sheet).

This opens Microsoft Word and the GenNotes.doc file.

[Notes within [] are designer directions - delete all directions prior to final plan submittal. All XXX shall be filled in by the designer during design phase. If the note does not apply delete it.] Prior to placing bituminous be paid for separately, but For preliminary plan quantities of pavement materials, the following rates of application The Contractor shall coordi were used: existing grades is obtained unless otherwise approved b Overlay of planed areas sha otherwise approved by the E The pavement shall be cut to for separately, but shall b It is estimated that the old Diluted emulsified asphalt for tack coat shall consist of 1 part emulsified asphalt and 1 Moisture-density control wi part water. Asphalt rejuvenating agent shall be diluted in accordance with manufacture's recommendations. For estimating purposes, [XXX] gallons of asphalt rejuvenating agent to one Depth of moisture-density c Eull depth of embankmen Top IXXI Feet of these. Full depth of embankmen Full depth of all emban gallon of water was used. It should be noted that the use of asphalt rejuvenating agent is dependent on results of Bases of cuts and fills Bases of fills [XX] Fee Full depth of spur dike tests performed after completion of surfacing and may not be required by the Engineer. Rejuvenating agent, if required, will be applied as seal coat at the time of construction. Rates of application shall be as determined by the Engineer at the time of application. Full depth of embankmen Diluted [XXX] shall be used as a dust palliative where required and shall consist of a dilution of [XXX] and water, the portions of which shall be [XXX] part(s) water and [XXX] part [XXX], based on volume measurement. Locations shall be as directed by the Engineer. Excavation required for com that operation and will not The minimum thickness of to required based on the avera Water shall be used as a dust palliative where required. Locations shall be as directed by the Engineer. Type of compaction for this Magnesium Chloride shall be used as a dust palliative where required. Locations directed. It is estimated that [XXX] gallons will be required on this project. Locations shall be as Concrete pipe joint fastene All concrete culvert in All concrete culvert in The following shall be furnished with each bituminous naver: A ski type device at least 30 Feet in length.
 Short ski or shoe. Guard posts, delineators an 3. [XXX] Feet of control line and stakes. Mile posts will be adjusted Any layer of bituminous pavement that is to have a succeeding layer placed thereon shall be It is estimated that [XX] g

- 2. Read the first instructional paragraph (red text) and then delete it.
- 3. Delete the following text:

Prime Coat (MC-70) [XXXX]@. XX Gals./Sq. Yd.
Seal Coat (RC[XX]) Diluted Emulsified Asphalt [XXXX]@ XX Gals./Sq. Yd. (Diluted)
Cover Coat Material [XXXX]......@ XX Lbs./Sq. Yd.
Tack Coat (AC[XX].......@ XX Lbs./Sq. Yd.
Asphalt Rejuvenating Agent [XXXX]......@ XX Gals./Sq. Yd.
4. Edit the following text to read as follows: Tack Coat Diluted Emulsified Asphalt.....@ 0.1 Gals./Sq. Yd. (Diluted)

Bituminous Pavement	@ 110 Lbs./Sq. Yd./Inch
Aggregate Base Course (Class 6)	@ 133 Lbs/Cu Yd

5. At the bottom of the first column, add a blank line to place the paragraph beginning "*The Contractor shall coordinate the shouldering*..." at the top of the next column.

Asphalt joints shall fall on lines, shoulders lines or median lines, except where stated in the plans.	It is estimated that [XX] gallons of pavement mar follows:
All travel lanes are subject to smoothness incentive/disincentive payments. Pavement smoothness incentive/disincentive shall be based on Inches/Mile.	White
Road approaches which require bituminous pavement shall be primed and an [XX] Inches thickness of pavement (and [XX] Inches thickness of ABC) placed as follows:	Final signing and striping will be done by state It is estimated that [XX] hours of blading with a
Public approaches and entrances to building or residences shall be paved 50 Feet out from the edge of shoulder or to the Right-Of-Way line, whichever is less. Field entrances shall	horsepower range will be required as directed by It is estimated that [XX] bours of dozing with a
be paved 4 Feet out from the edge of shoulder. ' The Contractor shall not park any vehicles or equipment in. or disturb any areas not	horsepower range will be required as directed by It is estimated that [XX] mile posts will be adju
approved by the Engineer.	Reset Marker.
Willings shall become the property of the State. The Contractor shall supply all necessary equipment to haul this material to a site within the limits of the	It is estimated that [XX] days of Traffic Contro] It is estimated that [XX] days of Traffic Contro]
project as direct by the Engineer. Prior to placing bituminous pavement, the paved surface	It is estimated that $[XX]$ hours of Flagging will
shall be swept and cleaned. This will not be paid for separately, but shall be included in the cost of the Hot Mix Asphalt Pavement item.	It is estimated that [XX] Sanitary Facility will It is estimated that [XX] Public Information Serv
The Contractor shall coordinate the shouldering operation such that full compliance to the existing	It is estimated that [XX] Mobile Profilegraph Opf
operation such that full compliance to the existing It is estimated that [XX] Mobile Pavement Marking Zone will be required on this project.	,
It is estimated that $[XX]$ hours will be required for potholing. The Contractor shall be responsible for contacting and coordinating with the appropriate utility representatives to be onsite during potholing and shall likewise be responsible for determining the type and	

reportable for contacting and contracting with the apploprise during representatives be onsite during potholing and shall likewise be responsible for determining the type and location of underground utilities as maybe necessary to avoid damage thereto. The Contractor shall refer to the utility specification for additional requirements.

It is estimated that [XX] tons of Hot Mix Asphalt Pavement (patching) will be required on this project.

6. Look at the top of the next page and note that your edits have adjusted the text wrapping. The next page now starts with the note:

It is estimated that [XX] Mobile Pavement Marking Zone will be required on this project.

Millings shall become the property of the State. The Contractor shall supply all necessary equipment to haul this material to a site within the limits of the project as direct by the Engineer.	It is estimated that [XX] days of Traffic Contro: It is estimated that [XX] days of Traffic Contro:
Prior to placing bituminous pavement, the paved surface	It is estimated that $[XX]$ hours of Flagging will
shall be swept and cleaned. This will not be paid for separately, but shall be included in the cost of the	It is estimated that $[XX]$ Sanitary Facility will
Hot Mix Asphalt Pavement item.	It is estimated that $[XX]$ Public Information Serv
	It is estimated that [XX] Mobile Profilegraph Op(

It is estimated that [XX] Mobile Pavement Marking Zone will be required on this project. It is estimated that [XX] hours will be required for potholing. The Contractor shall be responsible for contacting and coordinating with the appropriate utility representatives to be onsite during potholing and shall likewise be responsible for determining the type and location of underground utilities as maybe necessary to avoid damage thereto. The Contractor shall refer to the utility specification for additional requirements.

Contractor shall refer to the utility specification for additional requirements. It is estimated that [XX] tons of Hot Mix Asphalt Pavement (patching) will be required on this project. No Right-Of-Way acquisition will be needed for this project. All work will be completed entirely within the existing Right-Of-Way.

- 7. Review the text to make sure the edits are correct. If not, edit the text again until you're satisfied.
- 8. In Word, select File > Exit and select Yes when prompted to save changes.

You are returned to the General Notes sheet in MicroStation.

Review the changes in the sheet file

1. Zoom in on the notes on the first sheet and note your text edits have been updated in the DGN file.

GENERAL N	
For preliminary plan quantities of pavement materials, the following rates of application were used:	The Contractor shall coordinate the shouldering operation such that full compliance to the existing grades is obtained on a daily basis following the paving operation for the affected area unless otherwise approved by the Engineer.
Tack Coat Diluted Emulsified Asphalt	Overlay of planed areas shall commence within 5 working days following the planning unless otherwise approved by the Engineer.
Diluted emulsified asphalt for tack coat shall consist of 1 part emulsified asphalt and 1 part water.	The pavement shall be cut to a neat line [XXX] as directed by the Engineer. This will not be paid for separately, but shall be included in the Hot Mix Asphalt Pavement item.
Asphalt rejuvenating agent shall be diluted in accordance with manufacture's recommendations. For estimating purposes, [XXX] gallons of asphalt rejuvenating agent to one	It is estimated that the old road is to be obliterated at the following locations: $\{XX + XX\}$
gallon of water was used.	Noisture-density control will be required for the full depth of those embankments on this project.
It should be noted that the use of asphalt rejuvenating agent is dependent on results of tests performed after completion of surfacing and may not be required by the Engineer.	Depth of moisture-density control for this project shall be as follows: Full depth of embankments within 100 Feet of bridge abutments. Top [XX] Feet of these embankments which [XX] Feet or more in height.
Rejuvenating agent, if required, will be applied as seal coat at the time of construction. Rates of application shall be as determined by the Engineer at the time of application.	<pre>full depth of esharkments which are less than [XX] feet in height. Full depth of all embankments: Bases of cuts and fills [XX] Feet.</pre>
Olluted [DOX] shall be used as a dust paliative where required and shall consist of a dilution of [DOX] and water, the portions of which shall be [DOX] part(s) water and [DOX] part [DOX], based on volume measurement. Locations shall be as directed by the fingineer.	Bases of fills [XX] feet or lass in height, [XX] feet. Full depth of spur dikes (check with bridge section). Full depth of exhamiment sections used for dicties and channel changes.
Mater shall be used as a dust palliative where required. Locations shall be as directed by the Engineer.	Excavation required for compaction of bases of cuts and fills will be considered as subsidiary to that operation and will not be paid for separately.
Magnesium Chloride shall be used as a dust palliative where required. Locations shall be as directed. It is estimated that [XXX] gallons will be required on this project.	The minimum thickness of topsoil shall be [XXX Inches. It is estimated that [XX] Cu. Yds. will be required based on the average thickness of [XX] Inches.
The following shall be furnished with each bituminous paver: 1. A ski type device at least 30 Feet in length.	Type of compaction for this project will be AASHTO T-[XOX].
 Short ski or shoe. [XOX] Feet of control line and stakes. 	Concrete pipe joint fasteners as shown on N-Standard are required on: All concrete culvert installations excluding side drains. All concrete culvert installations located at stations (XXXXX).
Any layer of bituminous pavement that is to have a succeeding layer placed thereon shall be completed full width before succeeding layer is placed.	Guard posts, delineators and [XXX] will be removed by State forces at no cost to the project. Mile posts will be adjusted or reset by State forces at no cost to the project.
Asphalt joints shall fall on lines, shoulders lines or median lines, except where stated in the plans.	It is estimated that [XX] gallons of pavement marking paint will be required on this project as
All travel lanes are subject to smoothness incentive/disincentive payments. Pavement smoothness incentive/disincentive shall be based on Inches/Hile.	follows: white
Road approaches which require bituminous pavement shall be primed and an (XX) Inches thickness of pavement (and (XX) Inches thickness of ABC) placed as follows:	Final signing and striping will be done by state forces at no cost to the project.
	It is estimated that $[XX]$ hours of blading with a motor grader in the $[XX]$ to $[XX]$ flywheel

2. Zoom in on the notes on the second sheet (right side) and notice that your edits have *not* been updated in the file.

It is estimated that $\ensuremath{\left[\mathsf{XX}\right]}$ days of Traffic Control Inspection will be required on this project.

It is estimated that [XX] hours of Flagging will be required on this project.

It is estimated that [XX] Sanitary Facility will be required on this project.

It is estimated that [XX] Public Information Services will be required on this project.

It is estimated that $\ensuremath{\left[\mathsf{XX}\right]}$ Mobile Profilograph Operation Zone will be required on this project.

It is estimated that [XX] Mobile Pavement Marking Zone will be required on this project.

It is estimated that [XX] hours will be required for potholing. The Contractor shall be responsible for contacting and coordinating with the appropriate utility representatives to be onsite during potholing and shall likewise be responsible for determining the type and location of underground utilities as maybe necessary to avoid damage thereto. The Contractor shall refer to the utility specification for additional requirements.

It is estimated that $\ensuremath{\left[XX\right]}$ tons of Hot Mix Asphalt Pavement (patching) will be required on this project.

No Right-Of-Way acquisition will be needed for this project. All work will be completed

Note: If you make edits that change the wrapping of text between pages in the Word document, you must re-link the file for the edits to update in the MicroStation DGN file.

Re-link the Word document

1. Use the **Element Selection** tool to select the Word document link on the second (right-side) sheet.

2. Select Delete.

IF YOU GOLT THE FILE SHEETS ARE LINKED TO A DOCUMENT FILE (QES GONNOTO DOC). TO EDIT, DOUBLE CLICK ON GRAPHIC. RE-LINK THE FILES! SPECIAL, SELEST THE LINKED MICROSOFT OFFIC DOCUMENTS, SELECT METHOD TO BE BY SIZE, FILL IN 18, CENTER AND PLACE DOCUMENT.

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- 3. Double-click on the Word document link on the first sheet to open the GenNotes.doc file.
- 4. Highlight all of the text on the second page and select Edit > Copy in Word.

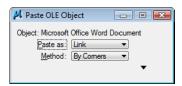
Prior to placing bituminous pavement, the paved surface shall be swept and cleaned. This will not be paid for	It is est
separately, but shall be included in the cost of the Hot Mix Asphalt Pavement item.	It is est
not mix Asphalt Pavement Item.	It is est
	It is est
It is estimated that [XX] Mobile Pavement Marking Zone will be required on this project.	
It is estimated that [XX] hours will be required for potholing. The Contractor shall be responsible for contacting and coordinating with the appropriate utility representatives to be onsite during potholing and shall likewise be responsible for determining the type and location of underground utilities as maybe necessary to avoid damage thereto. The Contractor shall refer to the utility specification for additional requirements.	
It is estimated that [XX] tons of Hot Mix Asphalt Pavement (patching) will be required on this project.	
No Right-Of-Way acquisition will be needed for this project. All work will be completed entirely within the existing Right-Of-Way.	
The following clear zone criteria shall be used during this project: [XXXXXXXXXXXXXXX]	
Where new pavement is to abut existing pavement, the existing pavement shall be removed to a neat vertical line using a cutting saw or other method as approved by the Engineer. Saw cutting asphalt will not be paid for separately, but shall be included in the cost of Removal of Asphalt Mat.	
All surveying necessary to complete the project will not be paid for separately, but shall be included in the work.	
The Contractor shall protect all existing survey <u>monumentation</u> designated to remain from damage during construction operations. Any monuments disturbed by the Contractor that are not designated for relocation, shall be reset at the Contractor's expense. The Contractor and Engineer shall note those monuments in the field prior to construction. See Tabulation of Survey.	
This work shall not be measured and paid for separately, but shall be included in the cost of the work.[Shall only be used when 5% or less, of the estimated cost of the line item makes up the additional work to be included. If the line item involves additional work of more than 5% of the line item price, the additional work shall be broken out into separate line items].	

- 5. *Do not* close Word.
- 6. Switch to the MicroStation application.

7. In MicroStation, select Edit > Paste Special and select the Linked Microsoft Office Word **Document** option and then select **Paste**.

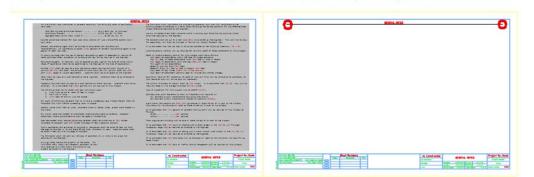
🔑 Paste Special 🛛 🕅	3
Data Type	
Picture of Microsoft Office Word Document Embedded Microsoft Office Word Document	
Linked Microsoft Office Word Document	
Rich Text to Design File Text To Design File	
Paste Cancel	

8. In the Paste OLE box, set Paste As to Link and Method to By Corners.



9. Snap to the two ends of the top guideline as shown.

THESE GENERAL NOTES SHEETS ARE LINKED TO A DOCUMENT FILE (DES_Geminote.DOC). TO EDIT, DOUBLE CLICK ON GRAPHIC. IF YOU EDIT THE FILE AND INFORMATION WRAPS FROM ONE SHEET TO ANOTHER RE-LINK THE FILES! ID LINK FILES DELETELINK, THEN COPY INFORMATION OUT OF DOCUMENT FILE (DES CENING & DOC). IN MICROSTATION GO ID EDITS SPECIAL, SELECT THE LINKED MICROSOFT OFFIC DOCUMENTS, SELECT METHOD TO BE BY SIZE, FILL IN 18, CENTER AND PLACE DOCUMENT.



THESE GENERAL NOTES SHEETS ARE LINKED TO A DOCUMENT FILE (DES_Geminote.DOC). TO EDIT, DOUBLE CLICK ON GRAPHIC. IF YOU EDIT THE FILE AND INFORMATION WRAPS FROM ONE SHEET TO ANOTHER RE-LINK THE FILES! IBEVIA, SELEST THSI CHKEDE LINKSTHEN GEPY INFORMATION DUT OF DOGUMENT FILEY OSSZC. FILL'IN 18, CENTER AND ALIOE GO. J. GO.



10. Zoom in to review the notes and notice that the link has been updated to reflect your edits.

	GENERAL
It is estimated that [XX] Mobile Pavement Marking Zone will be required on this projection	ct.
It is estimated that [XX] hours will be required for potholing. The Contractor shall responsible for contacting and coordinating with the appropriate utility representativ be onsite during potholing and shall likewise be responsible for determining the type location of underground utilities as maybe necessary to avoid damage thereto. The Contractor shall refer to the utility specification for additional requirements.	ves to
It is estimated that [XX] tons of Hot Mix Asphalt Pavement (patching) will be required this project.	d on
No Right-Of-Way acquisition will be needed for this project. All work will be comple entirely within the existing Right-Of-Way.	ted
The following clear zone criteria shall be used during this project: [XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
Where new pavement is to abut existing pavement, the existing pavement shall be remove neat vertical line using a cutting saw or other method as approved by the Engineer. S cutting asphalt will not be paid for separately, but shall be included in the cost of Removal of Asphalt Mat.	Saw
All surveying necessary to complete the project will not be paid for separately, but : be included in the work.	shall

- 11. Switch over to the Word document and select File > Exit. If prompted to save the file, select Yes.
- 12. In MicroStation, Fit the view.
- 13. Save Settings.
- 14. Exit MicroStation.

LAB 18 - Create the Standard Plans List Sheet

The M&S standard sheet is created by downloading the M&S Standards Plan List Index file from the CDOT web site. You can then update the reference in the M&S sheet file to point to this downloaded file.

Chapter Objectives:

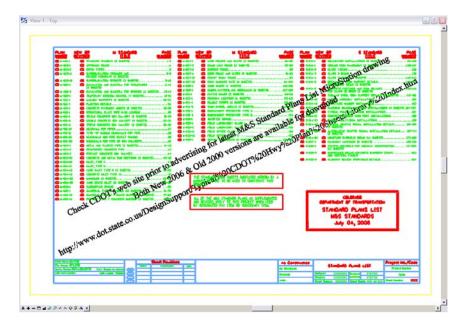
After completing this exercise you will know how to:

- Download the M&S Index file from the CDOT web site.
- Update the M&S sheet file reference to the downloaded file.
- Use the **Create Region** command to update the M&S Index Sheet for the project.

Lab 18.1 - Create Project Standard Plans List Sheet

Open the Sheet File

1. Start MicroStation and open the **12345DES_StdPlanList.dgn** file from the **C:\Projects\12345\Design\Drawings** folder.



The file opens and contains the border along with the M&S Standards Plan List reference. It also contains the web address to obtain the latest M&S Index file.

2. Select References from the Primary toolbar.

References (1 of 1 unique, 1 displayed)	
Tools Settings	
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Note that the **M&S StandardPlansListIndex.dgn** file is already referenced from the project's **\Design\Drawings** folder. It was automatically placed here from the **Create Project Directory** utility.

Note: If you need newer or different version of the M&S Standards, you can download it from the following web address: www.dot.state.co.us/ DesignSupport/. Save the appropriate file to the project's \Design\Drawings folder and then re-attach this reference.

Update the M&S Index

1. Turn off the DRAFT_INFO_No-Plot level to turn off the text.

Note: Since the text is on a "no plot" level, you don't have to turn off the text. However, it just makes working in the file a bit easier.

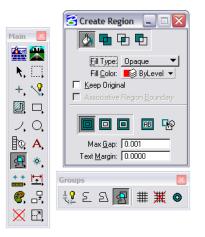
2. Set the active level to **DRAFT_WT-3**.

>•(none 🗸	DRAFT WT-3	
S (none +	Jouwin Twing	

3. Window in to the top of the sheet as shown.

PLAN <u>NUMBER</u>	NEW OR REVISED	M STANDARD <u>TITLE</u>	PAGE <u>NUMBER</u>	PLAN NUMBER
□ M-100-1	STANDARD	SYMBOLS (3 SHEETS)	1-3	□ M-607-
□ M-203-1	APPROACH	ROADS		□ M-607-
□ M-203-2	DITCH TYP	ES	5	□ M-607-
□ M-203-11		ATION CROWNED AND		□ M-607-
		GHWAYS (3 SHEETS)		□ M-607-
I M−2∩3−12		ATION STREETS (2 SHEETS)	9–10	

4. Select the **Create Region** command from the **Groups** toolbar and set the options as shown.



- 5. For the first plan in the list (M-100-1), **<D>** inside the block under the **Plan Number** column.
- 6. **<D>** to accept.

PLAN <u>NUMBER</u>	NEW OR REVISED	M STANDARD <u>TITLE</u>	PAGE NUMBER	PLAN <u>NUMBE</u>
M-100-1	STANDARD	SYMBOLS (3 SHEETS)	1-3	🗖 M-6
□ M-203-1	APPROACH	ROADS	4	🗖 M-6
□ M-203-2	DITCH TYP	PES	5	🗖 M-6
□ M-203-11		/ATION CROWNED AND IGHWAYS (3 SHEETS)		□ M-6
M−2∩3−12		ATION STREETS (2 SHEETS)	9–10	

The block is filled-in using this tool.

7. Fill in other blocks as desired.

Fill in the Border Information

1. From the CDOT Menu Explorer, select **Drafting**, then the **Border RE** category and select the **Default** Resident Engineer cell.

🙀 CDOT Menu		×
Group Display Add On's Optio	ns Help	
Dratting Design Hydraulics Landscape Environmental	Status Existing OProposed	
Settings	Border	

- 2. Apply.
- 3. **Snap** to the location shown to place the cell.

PLAN NUMBER	NEW OR REVISED	N STAN	E	PAGE NUMBER	PLAN NUMBER			ANDARD	PAGE NUMBER	PLAN NUMBER	NEW OR REVISED	S STANDARI	D PAGE Number
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H-203-1		R0405			9-607-2			EETS)		C 5-634-		SIGN PLACEMENT (2 SHEETS).	
H-203-2		ES			9-607-3					S-614-		SIGNS	
U-200-0		ATION CROWNED AN	P		U-0 07-4			(2 SHEETS)		S-614-		509NS	
D #-203-0		ATION STREETS (2		9-10	B M-607-0			SHEFTS)		0 5-614-		I SIGNS (3 SHEETS)	
B #-208-1	D EXCAVATE	IN AND BACKFILL FI						SHEE 153		- s-en-	FOR OR	UND SIGNS (2 SHEETS)	
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H-206-2		IN AND BACKFILL FI			0 9-60-1			EWERS IS SHEETS				SS III SIONS (2 SHEETS)	
G H-208-1		Y ERDSTON CONTROL			0.000			EETSI.		C 5-654-		STEEL SIGN SUPPORT DETAIL	
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0 14-214-1		PAVEMENT JOINTS			0 9-64-2			SHEETS1		0 3-634		BEACON AND SIGN INSTALLA	
0 9412-1					0.000			TYPE 3.		0 3-614		POLE MOUNT SIGN DISTALLAT	
0 M-610-1		AL PLATE PIPE H+2/ NORETE BOX CULVE			0 1-65-2		EMBANONENT PROTECTOR	TYPE &		0 3-614-		E BARRER SIGN POST INSTAL	
0 0-00-2		NORE TE BOX CULVE			0 9-66-1		INVERTED SIPHON			0 3-614-		MULTI-SION INSTALLATIONS	
0 0 00 - 3		NORETE BOX CULVE			- N-620-1		FIELD LABORATORY CLAS	5 1		G 1-64-		TRAFFIC SIGNAL INSTALLATION	
0 14-603-10		FOR PIPES			- N-620-2		FIELD LABORATORY CLAS				(7 SHEE	rs)	
D 14-601-11		SADDLE HEADWALLS			- N-620-1		FIELD OFFICE CLASS 1		126	D 3-614-	40A 🗖 ALTERNA	TIVE TRAFFIC SIGNAL INSTALL	ATION DETAILS 167-171
0 10-001-12		S AND PIPE OUTLET			N-620-1		FIELD OFFICE CLASS 2		127		OS SHEE		-
0 1-00-20		S FOR POPE OR BOX					SURVEY NONLMENTS (2	HEETS)		0 3-614-		E OVERHEAD STONS Q4 SHEET T MARKINGS (5 SHEETS)	
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0 1000-2		D CONCRETE POPE .									(2 96)	TS)	STRUCTION
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-				-	_	1	Phint 2001-2001-1	COX PADE 1001-1000-10000	Reviewdt		Detaler: XXX	CEXEX Numbers X-XX-XX	Code
				-	_	Redor	Number or Staff	Initiale	Vela			CEXEX Subset Sheets XXX of XX	Y Sheet Number XXX

- 4. Use the Edit Text command to edit the Project Number and Code as shown.
- 5. Use the **Edit Text** command to place your initials in the **Designer** and **Detailer** blocks.

		<u>,</u>			Project No./	Code
	STANDARI	J	PLANS	LIST	STA 086A-03	59
	Designer: C	U	Structure	X-XX-XX	12345	
-	Detailer: C	U	Numbers	X-XX-XX		
	Sheet Subset: XXXXXX	Х	Subset Sh	eets: XXX of XXX	Sheet Number	XXX

- 6. **Fit** the view.
- 7. Save Settings (File > Save Settings).
- 8. Exit MicroStation.

LAB 19 - Create a Title Sheet

In this lab, you'll learn how to insert a Vicinity Map into the Project Title Sheet.

Chapter Objectives:

After completing this exercise you will know how to:

- Open a project Title Sheet.
- Locate a vicinity map.
- Attach a vicinity map as a reference to the Title Sheet.
- Move and Clip the vicinity reference.

Lab 19.1 - Create Project Title Sheet

Open the Title Sheet file

1. Start MicroStation and open the file **12345DES_TitleSht.dgn** for the **C:\Projects\12345\Design\Drawings** folder.

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This file was automatically generated by the Create Project Utility program and contains a links to an Excel spreadsheet file in the generic project template folder. You will need to update these links to the **12345DES_TitleSht.xls** file in the project folder.

Updating Links

1. Select Edit > Links.

2. Highlight the first link in the list and select **Change Source**.

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<u>L</u> inks:		Туре	Update	Cancel
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ENGTH	H & DESIGN DATA!R1C1:R50	C4 Worksheet	Manual	Update Now
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Source:	Sheetxls!SHEET ORDEF	COMPLICATED PR	OJECTIR1C1:R250	2
Type:	Microsoft Office Excel Work	sheet		
	C Automatic	Manual		

 In the Change Source dialog box, set the Look in folder to C:\Projects\12345\Design\Drawings\Tabs and select the file 12345DES_TitleSht.xls.

Change Source		?>
Look in:	► Tabs Tabs 12345DES_GenNote.doc 12345DES_TabEarthwork.xls 12345DES_TabBisc.xls 12345DES_TabMisc.xls 12345DES_TitleSht.xls	
	File name: Files of type: All Files (*.*)	Open Cancel

4. Select **Open** to update the link.

5. Repeat this process for the second link.

nks				?
Links:		Туре	Update	Close
	H & DESIGN DATAIR1C1:R5 CATED PROJECTIR1C1:R2		Manual Manual	Update Now
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				Change Source
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Type:	Microsoft Office Excel Wo	rksheet		
Update:	C Automatic	Manual		

- 6. Close the Links dialog box.
- 7. Save Settings (File > Save Settings).

The Title sheet design file is now linked to the Excel spreadsheet file in the project-specific folder. You can now edit the Excel file for your project-specific requirements.

Edit the spreadsheet file

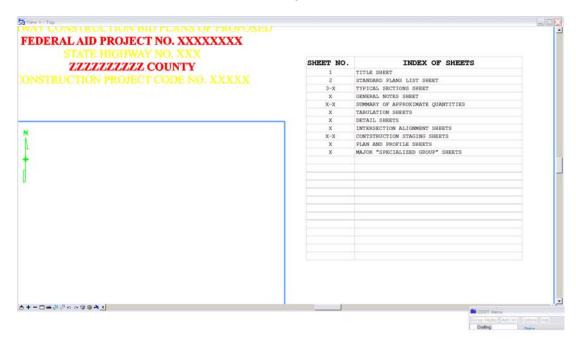
- 1. Double-click on the Tabulation of Length & Design Data link.
- 2. Excel starts and opens the **12345DES_TitleSht.xls** file.

- S.H. XXX *S.H. XXX DESIGN DATA MAXIMUM RADIUS OF CURVE 367.66 FT. 87.32 FT. MAXIMUM GRADE 1.50% 6.50% MINIMUM S.S.D. HORIZONTAL 152 FT. 44 FT. MINIMUM S.S.D. VERTICAL 245 FT. 122 FT. MAXIMUM DESIGN SPEED 88 MPH 40 MPH 2012 DESIGN TRAFFIC DHV = 270DHV = 70ADT = 1350 | ADT = 350DHV TRUCK % 78 CLEAR ZONE DISTANCE (TANGENT) 5.48 FT. 2.10 FT. CLEAR ZONE DISTANCE (XXX MIN. RADIUS) 7.6 FT.
- 3. In the *Design Data* portion of the file, make the following edits:

- 4. When finished, select **File > Exit** In Excel. When prompted to save changes to the file, select **Yes**.
- 5. Switch back to the MicroStation file and note that the edits are now updated in the DGN file.

-		XXX	X.XXX		
S.H.	XXX	*S.H. XXX			
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1.5	i0 %	6.50%			
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7.6	FT.				
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	Da	te:	Comments	Init.	
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10					City, State Zip Code Phone: XXX-XXX-XXXX FAX: XXX-XXX-XX
\square					Region Number or Staff Initi
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6. Window in on the *Index of Sheets* link on the right side of the sheet.

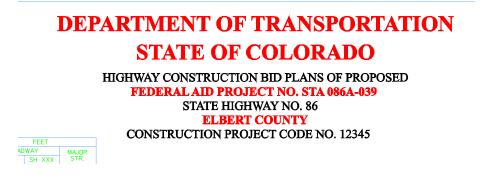


- 7. Using what you've learned, Edit the **12345DES_TitleSht.xls** file and update the DGN file to read as shown below.
 - **Note:** When entering pages ranges (e.g. 3-4) be sure to put a quote mark (') at the beginning of text entry, otherwise Excel will interpret this as a date (i.e. March 4).

SHEET NO.	INDEX OF SHEETS
1	TITLE SHEET
2	STANDARD PLANS LIST SHEET
3-4	TYPICAL SECTIONS SHEET
5	GENERAL NOTES SHEET AND ROADWAY SEEDING PLAN
6-8	SUMMARY OF APPROXIMATE QUANTITIES
9	STRUCTURE QUANTITIES
10	SUMMARY OF EARTHWORK
11	INTERSECTION DETAILS
12-13	WETLAND AND EROSION CONTROL PLAN
14	TEMPORARY WATER DIVERSION PLAN
15	CHANNEL DETAILS
16-17	SH 145 PLAN AND PROFILE SHEETS

Note: You can insert and delete rows as needed in Excel.

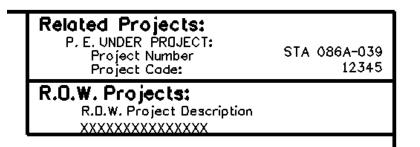
- 8. Edit the Border Text
- 9. Use the Edit Text command to make project specific edits to the border as shown.
- 10. **Window** in to the top center of the title sheet and edit the project numbers, highway number and county name as shown.



11. **Window** in to the lower-right corner and make the project edits as shown.

	Project No./Code						
_	STA 086A-039						
	12345						
	Sheet Number						

12. **Window** in to the upper-right corner and make the project edits as shown.



13. Window around the bar scale and edit the text as shown.





Place the RE cell

1. From the CDOT Menu, select Border RE from the Drafting group.

CDOT Me	nu					X
Group Display	Add On's	Optio	ns	Help		
Drafting Design Hydraulics Landscape	Environmo	ntal		Status O Existing	Proposed	?
Lanuscape	Environine	ritai	r	Drafting		_
					🔨 A 🚸 🚳 🗚	
				Border	 Image: A provide the second se	
				Border RE		
				Dimensions	🛠 Brett Locke	
				Linework	 ✤ Carrie Dejiacomo ✤ Clark Roberts 	
<	11			Patterning	 ✤ Corey Stewart ✤ Craig Snyder 	
				Symbols	☆ Darryl Carlson	
	ينبيبوني اوجر			Text	- ≫ David M Martinez - ≫ David Miller	
		-			i ☆ Default	
					- ॐ Don Sjaastad - ॐ Doug Lollar	
					🔆 Doug Pearson	
Sett	ings	_				

2. Place the **Default** RE cell in the location shown by snapping to the lower-left corner.

7%	S					
5.48	FT. 2.10 FT			PROJECT LOCATION MAP		
7.6 1	T .			e e xe xxe		
	CL	ant Devision				1
	and the second se	eet Revisions	and the second se	Colorado Department of Transportation	As Constructed	Contracto
R-X)	Date:	Comments	S Init.	Street Address	As Constructed	and the second sec
	and the second se	the second s	and the second se	Street Address		Resident I
	and the second se	the second s	and the second se	Street Address	No Revisions:	Contracto Resident E Project E PROJECT ST

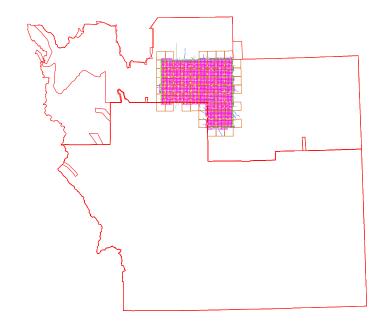
- 3. Fit the View.
- 4. Save Settings.

Lab 19.2 - Review the Vicinity Map

Vicinity maps can be referenced to the title sheet. These maps can be in the form of vector files (CADD elements) or raster files (images).

The CDOT standard procedure is to use county maps that have been translated from GIS information, these maps can be found on the shared drive at: <u>\public\CADD County Maps\</u>. The county of interest should be copied to your project's ... **\Design \Drawings \Reference_Files** folder and can be attached as a reference to the project's Title Sheet file.

 Select File > Open and open Elbert.dgn from the C:\Projects\12345\Design\Drawings\Reference_Files folder.



The Elbert county map was translated from GIS and copied from the <u>\public\CADD County</u> <u>Maps\</u> shared drive. This file contains a *Saved View* to assist in attaching it as a reference file.

6. Select Utilities > Saved Views from the MicroStation pull-down menu

Saved Views	X
🎭 🖻 🗙 🗾 🚰	View 1 🔻
Name	Description
plan	
Apply Options	
	atio 🔽
Camera Position	
View Attributes	Levels
🗖 Clip V <u>o</u> lume	<u>R</u> eference Settings
<u>C</u> lose	Apply

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	15	14 5	13	P	17	16	65	14	13	14	5- 17	15	15	14) u
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	15	14	ľ			. ye	T'P'	14	-13	18	₹ <mark>1</mark>	16	15	14	7 ¹³
	22	<u>_</u>	 - 1 / -	K	20	21	Æ	7	24		72	21	A 12	23	24
	27	*	25	30 30	{ <mark>-</mark> -	. 28	с <u>1</u>		~25	7(29	28	27	25	-

7. **<D>** on the saved view by the name of *plan* and select **Apply**.

The MicroStation view updates to the limits of the saved view.

- 8. Close the Saved Views dialog box.
- 9. Open the Level Display from the Primary toolbar. Note that all information resides on GIS_* levels.

Level Display			×
1 2 3 4 5 6 7 8 View Display 🔻	·		
No 🔚 🐎 (none) 👻 Levels 💌			
K Elbert.dgn			
Name	Number	File	Used V
GIS Bridges	20000	Elbert.dan	•
GIS Cities	20001	Elbert.dgn	
GIS_County-Lines	20002	Elbert.dgn	
GIS_Engineering-Regions	20003	Elbert.dgn	
GIS_Highways	20004	Elbert.dan	
GIS Lakes	20005	Elbert.dgn	•
GIS Maintenance-Sections	20006	Elbert.dgn	•
GIS Milepoints	20007	Elbert.dan	•
GIS Rail-Lines	20008	Elbert.dgn	•
GIS_ROADS-Local	20009	Elbert.dgn	•
GIS_ROADS-Major	20010	Elbert.dgn	•
GIS_ROADS-Ramps-Frontage	20011	Elbert.dgn	•
GIS_Sections	20012	Elbert.dgn	•
GIS_Sections-Text	20013	Elbert.dgn	•
GIS_Streams	20014	Elbert.dgn	•
GIS_Townships	20015	Elbert.dgn	•
GIS_Townships-Text	20016	Elbert.dgn	•
0	0	Elbert.dgn	
ALG_COGO_Points	19001	Alignments.dgnlib	
ALG_EVENT_Points	19002	Alignments.dgnlib	-

10. Turn level displays **on** and **off** to verify the data is on the correct levels. Turn all levels **on** when finished.

Attaching a vicinity map as a reference file

In the next series of steps, you will attach the vicinity file as a reference to the title sheet. Once attached, you can move, scale and clip the reference to fit the display limits in the sheet file.

- 1. Select File > Open and reopen the title sheet 12345DES_TitleSht.dgn from the project's ...\Design\Drawings folder.
- 2. Select **References** from the **Primary** toolbar.
- 3. In the **References** dialog, select **Tools > Attach**.
- 4. Set the directory to the project's ...\Design\Drawings\Reference_Files folder and select Elbert.dgn.
- 5. In the Attachment Settings box:

Reference A	ttachment Settings for Elbert.dgn
<u>F</u> ile Nar	ne: Elbert.dgn
	th:\Drawings\Reference_Files\Elbert.dgn
<u>M</u> oo	del: CDOT default
<u>L</u> ogical Nar	ne: Vicinity
D <u>e</u> scripti	on: GIS locator map for title sheet
Orientation:	
Name	Description
Coincident	Aligned with Master File
Coincident - 1	World Global Origin aligned with Master File
plan	
pian	
Тор	Standard View
Scale (M	aster:Ref) 1.00000(: 5280.00(🔽 Irue Scale
<u>N</u> ested Atta	achments: No Nesting Depth: 1
🔲 Display R	aster References

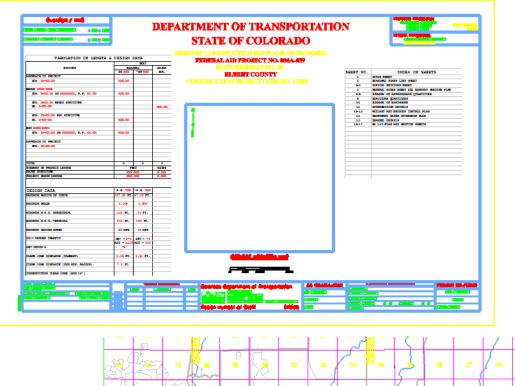
- Under Orientation, select plan (the saved view).
- Key in a Logical Name of Vicinity and a Description of GIS locator map for title sheet.
- Key in a **Scale** of *1:5280*

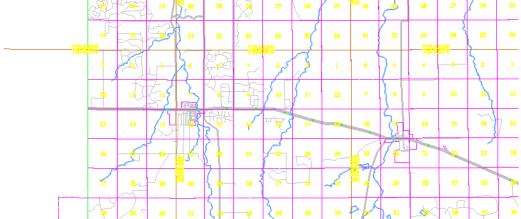
Note: CDOT GIS maps are designed based on a 1-mile insertions scale (1 inch = 1 mile) for graphics. The linestyle and text scale factors are also based on this scale.

6. Select **OK**.

The outline of the saved view reference is attached to your cursor.

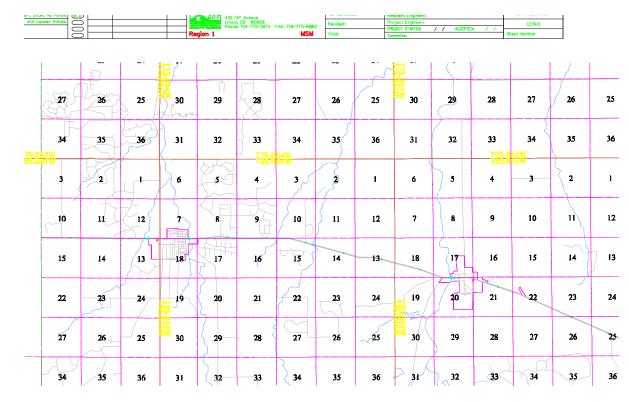
- 7. **<D>** anywhere underneath the plan sheet to attach the reference.
- 8. Select the MicroStation Fit command





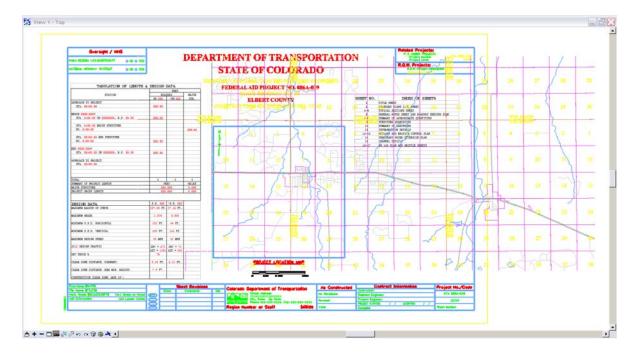
Move the reference file to align with the title sheet

1. In the **References** dialog box, select **Tools > Move**.



2. When prompted to enter a point to move from, **<D>** on section 13 on the vicinity reference.

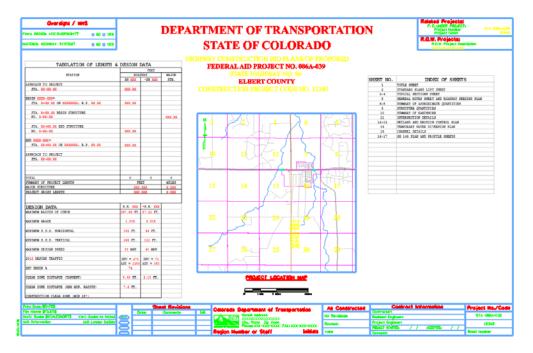
3. **<D>** approximately in the center of the project location map block for the move to point.



- 4. Continue to use the **Move Reference** command as needed to position the reference as shown.
- 5. **<R>** when done.

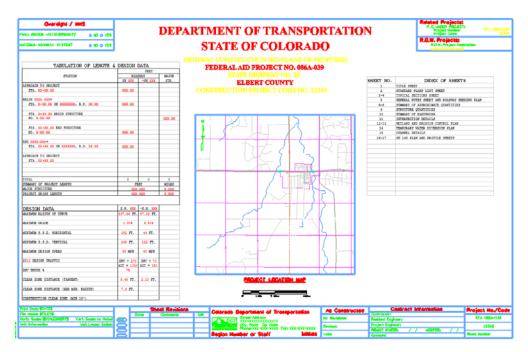
Clip the vicinity map reference

- 1. In the **Reference** dialog, highlight the **Vicinity** reference
- 2. Select Tools > Clip Boundary from the Reference File dialog.
- 3. In the Tool Settings box, set Method to Element.
- 4. MicroStation prompts 'Select clipping element'
- 5. **<D>** on the shape representing the limits of the project location map.
- 6. **<D>** to accept.



7. Open Level Display and turn off the GIS_Sections-Text and GIS_Township-Text.

8. Fit the view.



- 9. Save Settings.
- 10. Exit MicroStation.

LAB 20 - Annotate the Intersection Plan/Profile Sheet

In this lab, you'll annotate the plan/profile sheet with text, notes, and custom text strings using the CDOT Menu.

Chapter Objectives:

After completing this exercise you will know how to:

- Set the active angle for placing text
- Place Text using the CDOT Menu
- Rotate text
- Place notes with leader lines and a line terminator
- Create and place custom text strings for utility lines using the CDOT Menu

Lab 20.1 - Open Project Plan/Profile Sheet

Start MicroStation

1. Start MicroStation and open **12345DES_PnP19.dgn** from the **C:\Proj**ects\12345\Design\Drawings folder.



Check Text Annotation Scale

1. Select **Models** from the *Primary* toolbar.

2. In the *Model* box, select Edit Model Properties.

Primary Tools	≅ ▼ 🐳 🗊 - 🎋 - 🎯
Type 2D/3D	Name Description
	Model Properties
	Update Fields Automatically Cell Properties Can be placed as a cell Cell Type: Graphic Can be placed as an annotation cell QK Cancel

3. Note that the *Text Annotation Scale* is set to **1"=100'** (the default setting from the seed file).

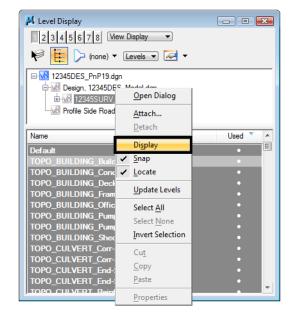
Note: The **Text Annotation Scale** matches the border scale, which matches the scale for plotting – 1"=100'.

- 4. Cancel the *Model Properties* box.
- 5. Close the *Models* box.

Work with sheet levels and references

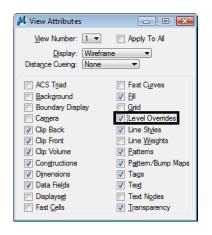
The plan limits cell placed along the mainline alignment in the Design model file appears in the sheet. This is on a No Plot level. However, if you don't want to see it, you can turn it off.

1. Open Level Display and turn off the DRAFT_INFO_No_Plot level in the *Design* reference.



2. In Level Display, turn off the **Survey/Topo** reference.

3. Select Settings > View Attributes, toggle on Level Overrides.



This applies the Symbology Overrides set in the CDOT level libraries for "graying out" the existing contour levels.

Edit the bar scale text

- 1. **Window** in on the bar scale cell in the lower left portion of the plan view.
- 2. Use the **Edit Text** command to edit the text as shown for a 100 scale plot.



Label the Intersection Alignments

Set the active angle for placing the county road text

- 1. On the *CDOT Menu*, select **Settings**.
- 2. Set the Active Angle to *O*, Apply and then Close the box.

🙀 Active Settin		
Active Scale:	100.00	Apply
Active Angle:	0.00	Close

Set the text attributes using the CDOT Menu

- 1. On the *CDOT Menu* Explorer, select **Droffing**. Set the category to **Text** and set the following options:
 - Filter: Standard (S)
 - Justification: Center Center
 - Item: .07" 100% Standard

🛄 CDOT Menu		
CDOT Groups CDOT Tools	Options Help	
Draiting Bridge Construction Design Geometry Hydraulics	Status Existing Drafting	Proposed
Landscape Environmental Materials Geotechnical ROW Survey ⊕ Traffic ITS Utilities	Border Border RE Dimensions Linework Patteming Symbols	Justification: Center Center
Settings	Text	✓ ^A .07" 100% Place Note A .07" 100% Standard A .07" 100% Standard Mono

This sets the active level to **DRAFT_Text-3** and automatically selects the **Place Text** command.

2. In the Word Processor box, key in County Road 101.

- 3. $\langle D \rangle$ to the left of the intersection as shown to label the road.

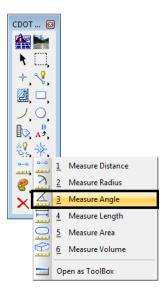
4. **<R>** out of the *Place Text* command when done.

Set the active angle for the main alignment text

- 1. Select Settings > Design File > Working Units.
- 2. Set the **Options** as shown for **Conventional Angle Mode**, **Decimal Degrees**.

DGN File Settings	
Category Active Angle Active Scale Axis Color Element Attributes	Modify Working Unit Settings Linear Units Master Unit: Sub Unit: Sub Unit: Survey Inc. ▼ Label: *
Fence Grid Isometric Locks Rendering Snaps	Advanced Settings Resolution: 12000 per Distance Survey Foot Working Area: 1.42159E+008 Miles Solids Accuracy: 8.33333E-006 Survey Feet Edit
Stream Views Working Units	Angles Format: DD.DDDD Mode: Conventiona Accuracy: 0.12 Focus item Description Select category to view.
	Solot Category to New.

3. Select the Measure Angle command from the Measure toolbar.



- 4. **<D>** on the centerline of the side road.
- 5. **<D>** on the centerline of SH 86.

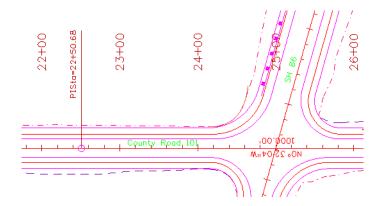
The angle reads out at 74.14 degrees.

6. From the CDOT Menu, select **Settings** and set the **Active Angle** to **74.14**, **Apply** and then **Close**.

🚆 Active Settir	- • •	
Active Scale:	100.00	Apply
Active Angle:	74.14	Close
		Close

Place the SH 86 text at the active angle

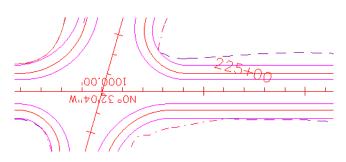
- 1. On the *CDOT Menu* select **Drafting > Text** and select .07 again.
- 2. In the Word Processor box, key in SH 86.
- 3. **<D>** when shown to label the road.



4. **<R>** out of the *Place Text* command when done.

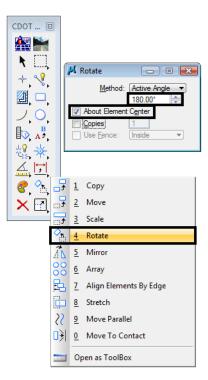
Lab 20.2 - Rotate the InRoads alignment text

1. Window in at the intersection as shown.

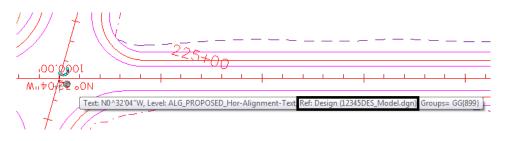


2. Select the **Rotate** command from the *Manipulate* toolbar.

3. Set the Method to Active Angle, set the Angle to *180* and toggle On About Element Center.



4. **<D>** on the bearing text.



You can't rotate the text because it's in a reference.

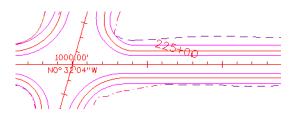
Important! If you're in the Design group and "own" the Design reference, you can "exchange" to that reference to make modifications. Otherwise, contact Design.

5. Select File > Save Settings.

6. On the *References* dialog, select the Design reference and then select **Tools > Exchange**.

Tools Settings	
<u>A</u> ttach <u>D</u> etach Detach All	Image: Sold File Name Description Image: Sold File Name Description Image: Sold File Name Image: Sold Fi
Reload Reload A <u>ll</u> Exchange	1 12345DES_Model.dgn Proposed Intersection √ √ 2 12345DES_Prof03.dgn Proposed profile for side road √ √
Open in New Session	Scale 1.000000 : 1.000000 Orientation Top Botation 0*
<u>C</u> opy <u>S</u> cale <u>R</u> otate	Offset X -178956.971 Y -178956.971 Z -178956.971 Image: Config Config Variable ▼ Image: Config Variable ♥ <
Merge <u>I</u> nto Master Make Direct Attachme <u>n</u> t	
Mirror <u>H</u> orizontal Mirror <u>V</u> ertical	
Clip <u>B</u> oundary Clip Mas <u>k</u>	
Delete Clip Clip <u>F</u> ront	
Cli <u>p</u> Back	

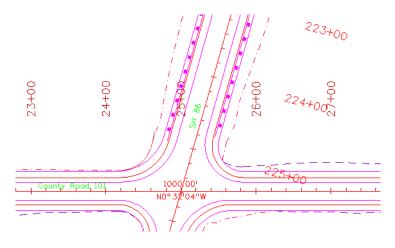
7. Select the **Rotate** command, **<D>** on the bearing text and then **<D>** to accept.



8. Select the **File** pull-down menu and open the sheet file from the list of last open files.

Lab 20.3 - Place Notes

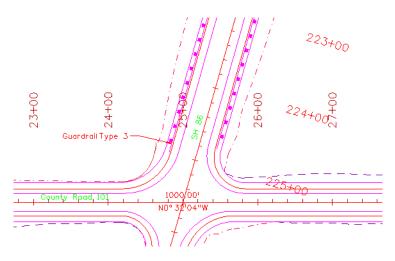
1. Window in above the intersection to view the guardrail as shown.



2. On the CDOT Menu Explorer, select Drafting > Text and select the .07" 100% Place Note item.

CDOT Menu		- • •
CDOT Groups CDOT Tools	Options Help	
Bridge Construction Design	Status Existing	Proposed
 Geometry Hydraulics Landscape Environmental Materials Geotechnical 	Drafting	
Watenals Geotechnical ROW Survey Traffic ITS	Border Border RE	Justification:
Utilities	Dimensions	A .05" 80% Standard A .05" 80% Standard Mono
	Linework Patteming	A .05" 100% Standard A .05" 100% Standard Mono A .07" 80% Standard
	Symbols Text	A .07" 80% Standard Mono ✓ ⁴ .07" 100% Place Note
	Text	A .07" 100% Standard A .07" 100% Standard Mono
Settings		

- 3. Click inside the Word Processor box and key in *Guardrail Type 3*.
- 4. **<D>** on the guardrail as shown to define the start point of the note (note terminator).
- 5. Drag the cursor to the location shown and **<D>** to place the note leader.



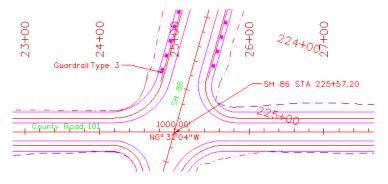
- 6. *IMPORTANT:* With your cursor on the *LEFT SIDE* of the leader line, *<R>* to place the text.
 - **Note:** If your cursor is on the right side of the leader when you reset, your note will be placed on the right side.

- 7. With the *Place Note* command still active, click in the **Word Processor** box and key in *SH 86 STA 225+57.20*.
- 8. On the *Snap Mode* toolbar select the Intersection Snap.

Note: You can also click in **AccuDraw** and press *I* on the keyboard.

Acci	Draw	×
X:	2.000	
Y:	48.322	
Z:	I Intersect Snap	

- 9. AccuSnap to the intersection of the two centerlines as shown for the note terminator.
- 10. Drag your cursor out and **<D>** to place the leader line.



11. With our cursor on the *RIGHT* side of the leader, **<R>** to place the note.

Lab 20.4 - Attach and Annotate Utility Lines

Next, you'll annotate proposed utility lines using the CDOT menu. However, the Utility model was not attached to plan sheet when it was created. Therefore, you must attach the Utility model after-the-fact in order to reference the utility lines for annotation.

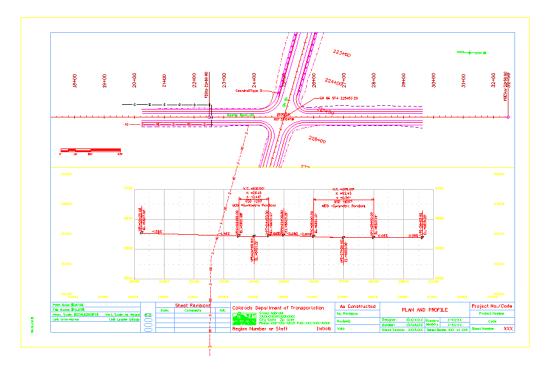
Reference the proposed Utility model

- 1. **Fit** the view.
- 2. Open the **References** dialog box.

3. Attach the *12345UTIL_Model.dgn* file from project's \Utilities\Drawings\Reference_Files folder. Be sure to attach Coincident-World at a *1:1* scale with No Nesting.

Reference Attachment	Settings for 12345UTIL_Model.dgn
Full Path:\Dr	5UTIL_Model.dgn awings\Reference_Files\12345UTIL_Model.dgn F Default
Logical Name: Description: Globa	al Origin aligned with Master File
Orientation:	
View	Description
Coincident	Aligned with Master File
Coincident - World	Global Origin aligned with Master File
Saved Views (none) Named Fences (nor	ie)
Scale (Master:Ref) Named Grougy Revision: Clip Boundary Element: Level: <u>N</u> ested Attachments: Display Overrides: New, Level Display:	v v Copy To Master v No Nesting v Allow
Global LineStyle Scale:	
	<u>QK</u> Cancel

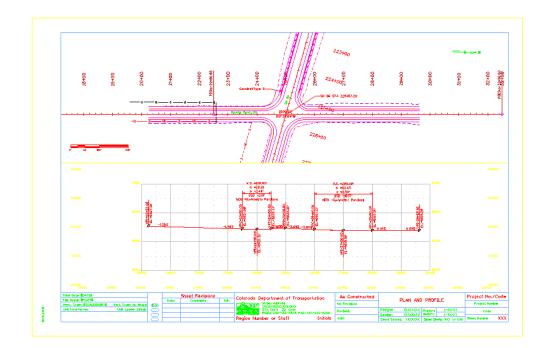
The Utility model is reference, but needs clipping.



4. On the *References* toolbar, select the Utility reference and then select **Tools > Clip Boundary**.

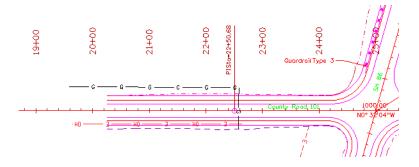
References (4 of 4 unique, 3 displayed	
Tools Settings	
🤃 - 🖹 🙀 📥 🌾	🖻 🔁 🏠 🐔 🚰 🕮 🕲 🗙 Hitte Mode: None 🔍
Hierarchy Clip Reference	Slot File Name Description 🗊 🚽 🦎 🍋
⊕ 12345DES_PnP19.dgn	1 12345DES_Model.dgn Proposed Intersection ✓ ✓ 2 12345DES Prof03.dgn Proposed profile for side road ✓ ✓ 3 12345UTIL Model.dgn Global Origin aligned with M ✓ ✓
	Sgale 1.000000 : 1.000000 Orientation Top Botation 0° Offset X -178956.971 Y -178956.971 Z -178956.971 Image: I

5. **<D>** on the clip boundary block and then **<D>** to accept.



Annotate the gas line

1. Window in on the plan sheet area shown.



- 2. From the *CDOT Menu* Explorer, select **Group Display > Utilities** and set the following options:
 - Set Status to Proposed
 - Set the Category to Gas
 - Set **Filters** to **All** (or Text)
 - Select the item <New Text String>

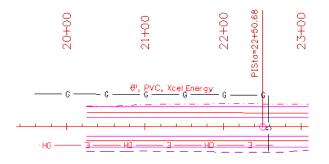
Drafting Bridge Construction	Status	Proposed
Design Geometry Hydraulics	Utilities	
Landscape Environmental Materials Geotechnical ROW Survey	Electric	Gas Line
⊡ · Traffic ITS ··· Utilities	Fiber Optic	A <new string="" text=""></new>
Childos	Gas	-≫ Valve
	Sanitary Sewer	☆ Vault ☆ Vent-Pipe
	Telephone	
• III •	Television	
	Water	

- 3. In the **Create Text String** dialog box set the following from the drop down options:
 - ♦ Set Size to 6"
 - Set Material to PVC

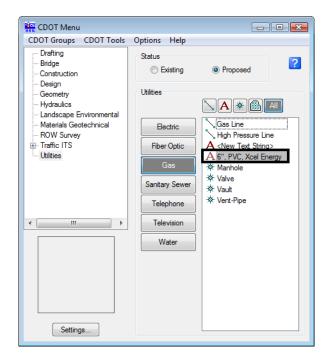
• For **Owner**, key in *Xcel Energy*

Create Text	String	- • • ×
Size:	6"	- 🖉 🛛 ОК
Material:	PVC	▼ Cancel
Owner:	Xcel Energy	• 2
👂 Indicates	that you can enter your own	values in this field

- 4. Select OK.
- 5. When prompted to *Identify Element*, **<D>** on the proposed gas line.
- 6. **<D>** above the line to accept the text placement.



Note: Your custom text 6", PVC, Xcel Energy is saved as an item in the Gas category for placement again.



You can right-click on a custom text string and either edit or delete it.

Annotate the fiber optic line

1. Create a custom text string (6", Qwest) for the fiber optic line and annotate as shown.

CDOT Menu			• •		
CDOT Groups CDOT Tools Drafting Bridge Construction Design Geometry Hydraulics Landscape Environmental Material Geotechnical ROW Survey Traffic ITS Utilities	Options Help Status Status Existing Utilities Electric Gas Sanitary Sewer Telephone Television Water	Proposed Proposed			
20+00 21+00	00766	PISta=22+50.68	00407 G	00 4+7 uardrail Type	3
G G 0', G	VC, Xcel Energy G (- 1/1

Note: Be sure to **<D>** near the bottom of the line to fit the annotation.

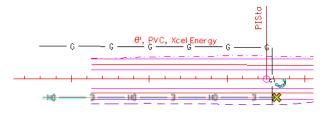
Lab 20.5 - Measure Graphics

Since you referenced your plan view graphics at a 1:1 scale, they are the actual size in the sheet file. Therefore, you can measure plan graphics in the sheet file and get the same results as measuring in the model file. Make sure that Locate is turned on for the reference before using the measuring tools on reference graphics.

Measure Distance

Between points

- 1. Measure the OH Electrical Line with the CDOT custom add-on tool.
 - From the CDOT Menu select CDOT Tools > Measure XY Distance
 - In the XY Distance Dialog box, set Measurement Option to Between points
 - AccuSnap on the *two* endpoints of the proposed Overhead electrical line as shown (snap to tie-in at power pole symbols – see arrows below)

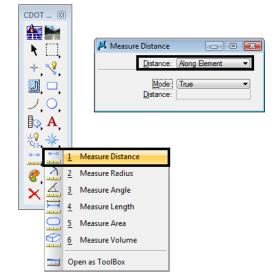


- ♦ <**R**> when done
- Your results should match the dialog box

XY Distance		
Measurement Options		
Getween points		
C From point on element		
C Perpendicular from element		
$\ensuremath{\mathbb{C}}$ Perpendicular from point on element		
C Tangent from element		
$\ensuremath{\mathbb{C}}$ Tangent from point on element		
Calculated Values		
Delta X: -3.344		
Delta Y: 299.183'		
Delta Z: 0'		
Slope: 0%		
Angle: 90° 38' 25.66"		
Horiz. Distance: 299.202'		
Slope Distance: 299.202'		
☑ Use Reference Attachment Scale		
Restart Exit		

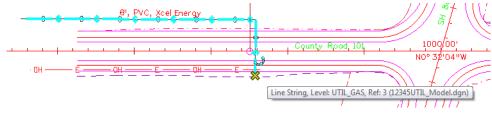
Along element

1. Measure the Gas Line with standard MicroStation tools.



• Select the **Measure Distance** command from the **Measure** toolbar.

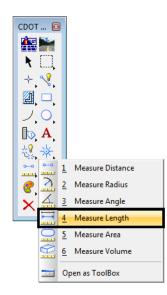
- Set the *Method* to Along Element
- AccuSnap on the start and end points of proposed 6" gas line as shown (see arrows).



• Record your results: ______ft.

Note: Individual results will vary based on how the line was originally drawn.

2. Select the **Measure Length** command.



- ♦ <D> on the gas line.
- Record your results: ______ft.

Your results should be the same as in step 2. With this command, you only have to select the element with a data point to get its entire length.

3. Use **Measure Length** to measure the length of the OH Electrical line.

📕 Measure Le	ngth 👝 🗉 💌
Tolerance (%):	1.000000
	Mass Properties
	Display Centroid
Mode:	True
Length:	299.202'
Angle Of Line:	270°38'25.66"
_	

Your results should be the same as step 1 where you measure with the CDOT custom **XY Distance** tool.

Note: When measuring a straight line with this method, you also get the angle of the line.

Measure perpendicular

1. In the **Design** Model reference, turn **Off** the level **DRAFT_LC-Center_WT-3**.

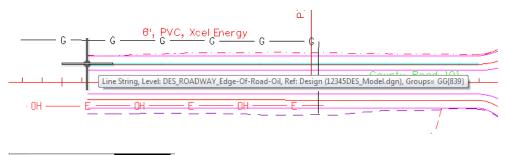
This element (a blue dashed line) is a coincident to the alignment centerline. Since you will only be working with the alignment, turn this level off and leave the **ALG_PROPOSED_Hor-Alignment** turned on.

- 2. Turn Depth lock Off.
- 3. **<T>** on the side road horizontal alignment and note the Z value.

3279671.701, 1555884.034, 0.000 KeyPt

Horizontal Alignments, like this one, are typically placed at elevation 0.

4. **<T>** on the red upper edge of oil line at the beginning of the alignment and note the Z value.



3279656.098, 1555658.860, 6626.647 KeyPt

The edge of oil line is placed at the correct elevation.

- XY Distance

 Measurement Options

 G Between points

 G From point on element

 Perpendicular from element

 G Perpendicular from point on element

 G Tangent from element

 G Tangent from point on element
- 5. In the XY Distance dialog box, set the Option to Perpendicular from element.

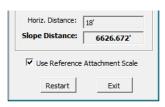
6. **<D>** on the side road horizontal alignment.

MicroStation displays a horizontal tracking line.

7. AccuSnap on the end of the upper edge of oil line.



8. Review your results:



Note that even though the two elements are at different elevations, the CDOT custom **XY Distance** tool provides both the **Horizontal Distance** of 18 feet along with the true 3D slope measurement (or **Total Distance**) of 6626.672 feet.

LAB 21 - Annotate the Bridge General Layout Sheet

In this lab, you'll annotate the bridge general layout sheet with text, notes and dimensions.

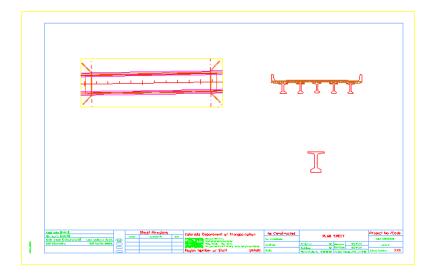
Chapter Objectives:

After completing this exercise you will know how to:

- Set and change the **Text Annotation Scale** to match the drawing scale.
- Place dimensions using the following methods:
 - ♦ Element
 - ♦ Linear
 - ♦ Angle between lines
 - Bearing and Distance
- Edit dimension text.
- Place notes with curved leaders.

Lab 21.1 - Open Project Plan Sheet

- 1. Start MicroStation
- Start MicroStation and open 12345BRDG_Plan01.dgn from the C:\Projects\12345\Bridge\Drawings folder.



Lab 21.2 - Place Text

Label the different part of the general layout sheet (plan, typical section, etc.)

Set text attributes

- 1. On the *CDOT Menu Explorer*, select **Drafting > Text** and set the following options:
 - Filter: Title (T)
 - Justification: Center Center
 - Item: .30" 100% Title

CDOT Menu		
CDOT Groups CDOT Tools	Options Help	
Drafting Bindge Construction	Status Existing	Proposed
Design Geometry Hydraulics Landscape Environmental	Drafting	S T M AI
Materials Geotechnical ROW Survey	Border	Justification:
	Border RE	Center Center 🔻
	Dimensions	
	Linework	A .14" 100% Title Mono A .30" 80% Title
	Patteming	A.30" 80% TitleMono
	Symbols	A .30" 100% Title
Settings	Text	A.30" 100% Title Mono ←

Note: This sets the active level to **DRAFT_Text-2** and automatically selects the **Place Text** command.

- 2. In the Word Processor box, key in Plan
- 3. Drag your cursor into the view.
- 4. **<D>** to place the text as shown.

Plan I	
Ţ	
Anterination State Readings Capable Department of Languardian An Constrained Public States Part States Anterination	Noject Hav/Co

Note: The text is extremely large implying the text annotation scale is obviously wrong.

5. **<R>** out of the **Place Text** command.

Change the Text Annotation Scale

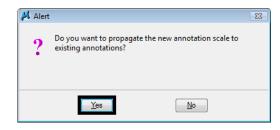
- 1. Select **Models** from the **Primary** toolbar.
- 2. In the Model box, select Edit Model Properties.
- 3. The **Text Annotation Scale** is set to **1:100** (the default setting from the seed file).

Note: This is a 40-scale drawing (the border was placed at a 40 scale around the graphics). Scaling the text 100 times results is text that is the wrong size.

4. Change the Text Annotation Scale to 1:40 and select OK.

📕 Model Properties 🛛 🕅		
Type: Design		
Name: CDOT Default		
Description: Master Model		
<u>R</u> ef Logical:		
<u></u>		
Line Style Scale: Annotation Scale		
Update Fields Automatically		
Cell Properties		
<u>C</u> an be placed as a cell Cell Type: Graphic		
<u>C</u> an be placed as an annotation cell		
OK Cancel		

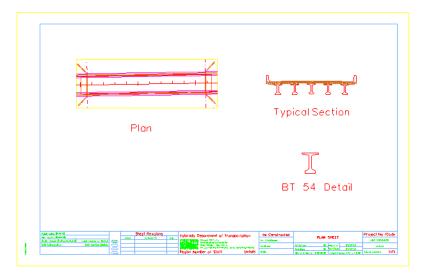
5. In the **Alert** box, select **Yes** to propagate the new settings to existing text.



6. The text "Plan" is automatically resized for a 40-scale drawing and will now measure correctly when plotted.

Plan	
	I

- 7. Close the *Models* box.
- 8. Select **File > Save Settings** to save the new settings.
- 9. Using the same text attribute settings, place the following text in the locations shown:
 - Typical Section
 - BT 54 Detail
- 10. Use the **Move** command to move the text to the desired location, if necessary.

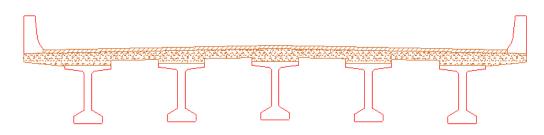


Lab 21.3 - Dimension the Bridge Typical Section

Use the CDOT Menu to dimension the bridge typical section.

Dimension the travel lanes and shoulder by element

1. **Window** around the typical section.



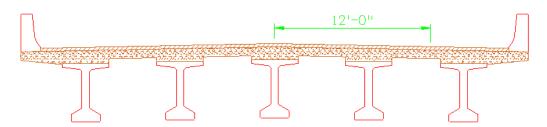
- 2. On the **CDOT Menu Explorer**, select **Drafting** and set the following options:
 - Category: Dimensions
 - ♦ Filter: x'-x"
 - Item: Dimension Element

🙀 CDOT Menu			- • •
CDOT Groups CDOT Tools	Options Help		
Drafting Bridge Construction	Status Existing	Proposed	?
Design Geometry Hydraulics Landscape Environmental	Drafting	.xx' B .xx' .xxxx'	x'-x " x '
Materials Geotechnical ROW Survey	Border	Dimension Linear Size	
₽ Traffic ITS	Border RE Dimensions	Dimension Anale Size Dimension Element Abel Line	
	Linework		
	Patterning Symbols		
Settings	Text		

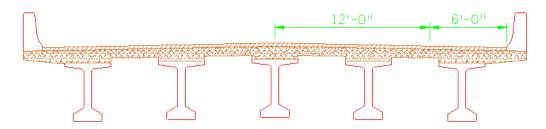
Note: The Dimension Element command is automatically selected.

- 3. When prompted to select the element to dimension, **<D>** on the top pavement to the right of the centerline.
 - *Note:* This should select the 12 ft **SmartLine** segment which represents the travel lane, if not, **<R>** until you select the correct element.

4. Move your cursor up to establish the length of the extension line and **<D>** to place the dimension.



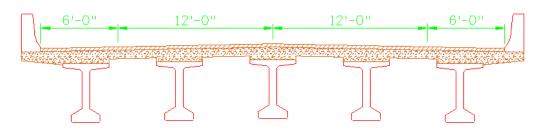
5. Repeat for the 6 ft. right-shoulder segment. **<D>** on the segment near the extension line and then **AccuSnap** on the 12 ft. dimension's terminator to place the dimension.



Note: The elements dimension actual size even though the bridge typical section was scaled up 4 times (40: 10 or 1:10 at a 40-scale). This is because Reference Scale is turned on in the Units tab of the dimension style. The units for dimensioning are, therefore, read from the model file instead of the sheet file. Reference Scale is on by default in all CDOT dimension styles.

Dimension Sty	/les - CDOT 3	
<u>Style V</u> iew		
E - ¹	🛛 👆 🔽 🗅 🗳 送 🔀	
Dimension Styles	Geometry Units Text Symbology Advance	ed
Style:(none)	Primary Units	Secondary Units
	Use Working Units	Show Secondary Units
CDOT 1	Label Format: MU label-SU label 🔻	Label Format MU 💌
CDOT 3	Master Units: Survey Feet 🔻	Master Units: Meters
CDOT 4	Sub Units: Survey Inches 🔻 📃	Su <u>b</u> Units: (Meters 💌)
S CDOT 5	Accuracy: 1/8	Accuracy: 0.1234
	Main Prefix: Main Suffix:	
	Upper Prefix: Upper Suffix:	Lower Prefix: Lower Suffix:
	Leading Zero	✓ Leading Zero
	Attemate Label Settings 🔻	Alternate Label Settings
	Scale	Angle Format
	Reference Scale	Units: Angle
	Scale Factor: 1.000000	Display: DD^MM'SS'' ▼
		Accuracy: 0
	Metric Format	Leading Zero
	Use Comma for Decimal	
	Units Separator: 1234.56	
	.14'-0''. 60	о°о′о′′′ Ххх Үуу Ххххх Үуууу
		Xx Yy Think

6. Repeat for the left side of the road. Be sure to **AccuSnap** on the adjacent dimension's terminator to line up the dimensions.



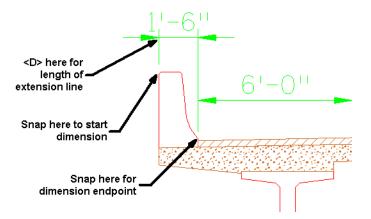
Dimension the bridge rail curb using linear dimensions

1. On the CDOT Menu Explorer, change the Item to Dimension Linear Size

CDOT Menu CDOT Groups CDOT Tools	Options Help		
Construction Co	Status Status Status Drafting Border Border RE Dimensions Linework Patterning Symbols Text	Proposed Ixx' B .xx' .xx Dimension Linear Size Dimension Angle Bett Dimension Angle Size T-1 Dimension Bement Add Line	e ween
Settings		-	

- 2. Following your prompts, **AccuSnap** on the end of the back of the rail for the start of the dimension.
- 3. Move your cursor up to the approximate location shown and **<D>** to define the length of the extension line.

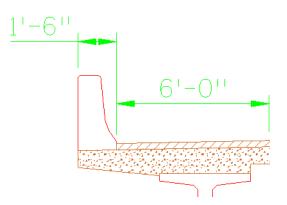
4. **AccuSnap** on the face of the curb as shown to define the end of the dimension.



- *Note:* The dimension text is too large for the dimension when placed inside the extension lines. You can **Modify** the text to solve this problem.
- 5. Select the **Modify** tool from the **Modify** toolbar.



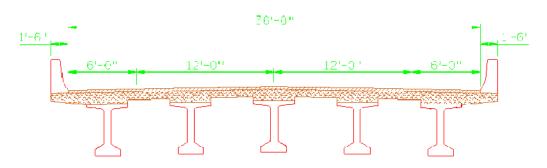
- 6. **<D>** on the 1'-6" curb dimension text.
- 7. Lock your cursor on **AccuDraw X** axis and move the text to the left as shown.



- 8. **<R>** when done.
- 9. Repeat the above steps and dimension the curb on the right side.

Place additional linear dimensions

1. Using the **Linear Dimension** command, place additional dimensions for the width of the section as shown.



Measure the typical section

- 1. Select the Measure Distance command and set the method to Between Points.
- 2. AccuSnap on the left outside curb line.
- 3. AccuSnap on the right outside curb line.
- 4. Review your results.

The typical section measures 144 ft, which is 4 times the actual size since the detail was scaled up on the drawing. While dimension commands can read reference units (via the **Reference Scale** option in the dimension style), measuring command can not. You should only use **Measuring** command in sheet files where the graphics have been referenced 1:1 (like plan view graphics). If graphics have been scaled in the sheet, you must return to the model file for true measurements.

Edit dimensions

Edit the dimension style

You can change the dimension style to show secondary units below the dimension line. While this is intended for dual dimensioning in metric, you can edit this text to add descriptions to your dimensions.

1. Select Element > Dimension Styles.

The **Dimension Styles** box opens. This is where all the CDOT standard dimension attributes are set. Typically, you will not need to change these settings for most dimensions.

2. Select the CDOT 3 style and then select the Unit category and toggle on Show Secondary Units

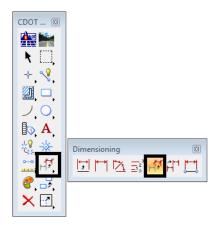
🔁 Dimension Sty	/les - CDOT 3	
<u>S</u> tyle <u>V</u> iew		
Dimension Styles	Geometry Units Text Symbology Advance	ed
Style:(none)	Primary Units	Secondary Units
© CDOT 1 © CDOT 2 CDOT 2 CDOT 3 © CDOT 4 © CDOT 5	Use Working Units Label Format: MU label-SU label Master Units: Survey Feet Sub Units: Survey Inches Accuracy: 1/8 Main Prefix: Upper Prefix: Upper Suffix: Leading Zero Trailing Zeros	Show Secondary Units Label Format Master Units: Master Units: Sub Units: Sub Units: Survey Feet Accuracy: 0.1234 Lower Prefix: Leading Zero Trailing Zeros
	 Alternate Label Settings ▼ Scale ☑ Beference Scale Scale_Factor: 1.000000 Metric Format ☑ Use Comma for Decimal Units Separator: 1234.56 ▼ 	Angle Format Units: Angle Units: Angle Display: DD^MM'SS" Accuracy: Leading Zero Irailing Zeros
	14'-0" 6.2672	Xxx Yyy Xxxxx Yyyyy Xxxxx Yyyyy

Note: Do not select the **save** icon.

3. Close the **Dimension Styles** box.

Change dimensions

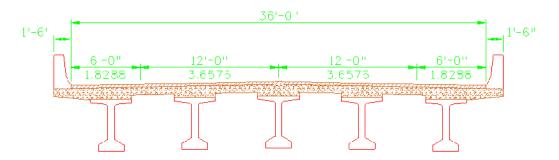
1. From the **Dimension** toolbar, select **Change Dimension**.



2. **<D>** on the 12 ft travel lane dimension and then **<D>** to accept.

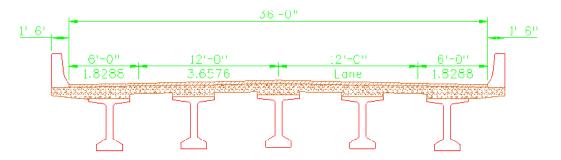
The dimension is updated to show the secondary units.

3. Repeat for the other dimensions as shown.



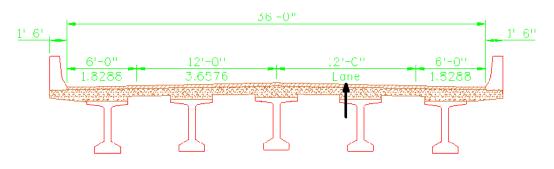
Change dimension text

- 1. Select the Edit Text command from the Text toolbar.
- 2. **<D>** on the 12 ft lane metric text.
 - **Note:** In the **Text Editor**, the dimension text appears as an asterisk (*) to denote that it is associative text.
- 3. Change the text to **Lane**.
- 4. **<D>** to accept.



The text is updated on the dimension.

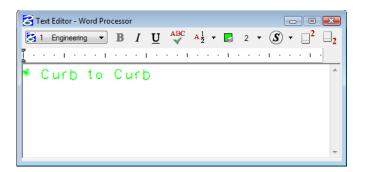
5. Repeat for the other travel lane and the shoulders as shown.



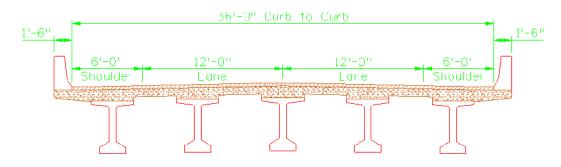
Edit dimension text

1. Using the **Edit Text** command, **<D>** on the 36 ft text.

- 2. In the **Text Editor**, click to the right of the asterisk to get a blinking cursor.
- 3. **Space** once and key in **Curb** to **Curb**.



4. **<D>** to accept.



Since you did not delete the asterisk, the text is still associated with the element. You just added text to the associated dimensions.

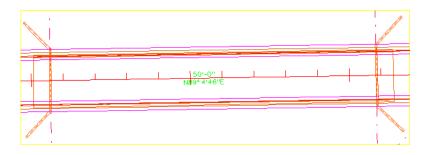
Dimension the Plan

Dimension the bearing of the centerline

1. On the CDOT menu, select Label Line.

🛄 CDOT Menu			
CDOT Groups CDOT Tools	Options Help		
Drafting Bridge Construction Design	Status O Existing	Proposed	2
Geometry	Drafting		
Hydraulics		.xx' B .xx'	xxx' x'-x" x'
Landscape Environmental Materials Geotechnical ROW Survey Praffic ITS	Border Border RE Dimensions Linework Patterning Symbols	H Dimension Linear S Dimension Angle B Dimension Angle B H Dimension Angle S Label Line	ize etween ze
Settings	Text		

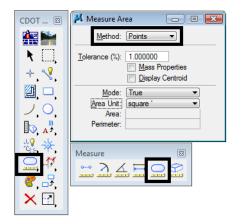
2. **<D>** on the SH 86 centerline.



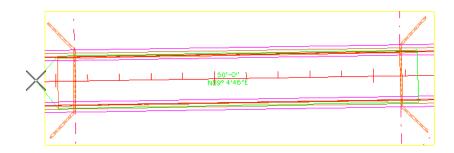
Note: Both Bearing and Distance are placed. If you do not want one of the dimensions, you can drop the dimension, turn off the **Graphic Group** lock and then delete the dimension.

Measure the bridge area

- 1. Turn Depth lock on.
- 2. Turn AccuSnap off.
- 3. Select the **Measure Area** command from the Measure toolbar.
- 4. Set the **Method** to **Points**.



5. Snap to the four corners of the bridge as shown (see arrows) to dynamically draw a shape to measure.



6. Reset **<R>** to close the shape to compute the area (do not loop back and snap on the first point).

📕 Measure Ar	ea 🗖 🗖 💌
<u>M</u> ethod:	Points
Tolerance (%):	1.000000 <u>M</u> ass Properties <u>D</u> isplay Centroid
<u>M</u> ode: <u>Area</u> Unit: Area: Perimeter:	square '

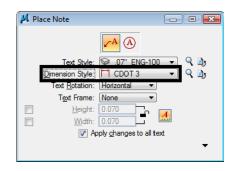
Note: The Points method is the only method that gives you a planar area with Depth lock turned on.

Place a note with a curved leader

1. From the CDOT Menu, set the text options as shown.

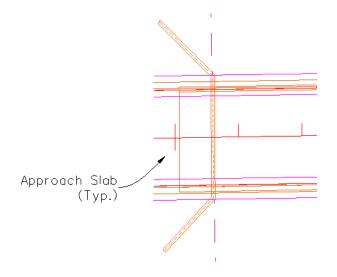
🛄 CDOT Menu			- • •
CDOT Groups CDOT Tools	Options Help		
Drafting 	Status O Existing	Proposed	?
Geometry 	Drafting	S T M AI	
Materials Geotechnical	Border	Justification:	
ROW Survey	Border RE	Right Center	-
	Dimensions	A .05" 80% Standar ✓ ^A .05" 100% Place N	lote
	Linework	A .05" 100% Standa A .05" 100% Standa	
	Patterning	A .07" 80% Standar A .07" 80% Standar	d
	Symbols	✓ ⁴ .07" 100% Place N	
Settings	Text	A .0/" 100% Standa	rd v

- 2. Select the **Place Note** command.
- 3. In the Tool Settings box, set the Dimension Style to CDOT 3.



Note: The **Place Note** command uses a dimension style for the leader and terminator as well as a text style. The CDOT 3 style will place a curved leader without an in-line leader.

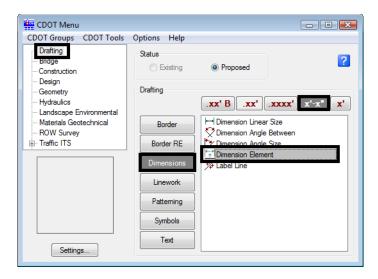
4. Place the note as shown.

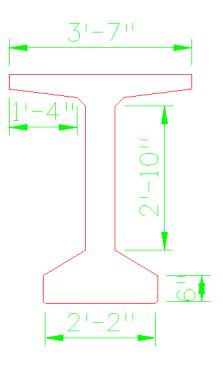


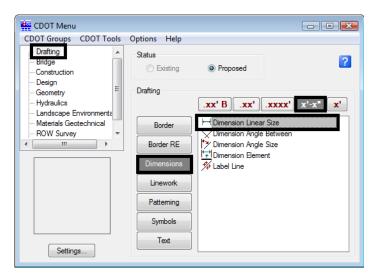
Note: Since this style does not use an in-line leader, you can place the text with a data point instead of a reset point on the side of the leader.

Dimension the Girder Detail

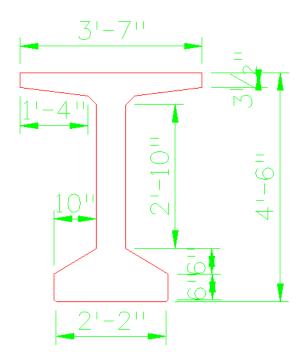
1. Use the **Element** method to dimension the girder as shown.

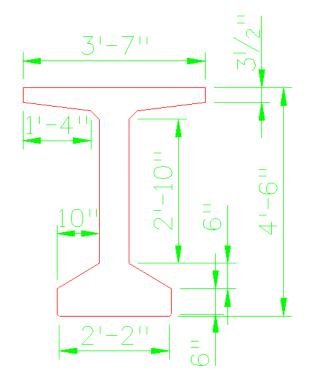






2. Use the **Linear** method to finish placing dimensions.





3. Use the **Modify** command to move the dimension text as shown.

- 4. **Fit** the view.
- 5. Save Settings.
- 6. **Exit** MicroStation.

LAB 22 - Printing to a Printer

In this lab, you'll plot a single sheet to the classroom 11 x 17 printer.

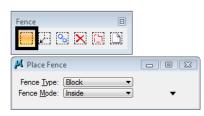
Chapter Objectives:

After completing this exercise you will know how to:

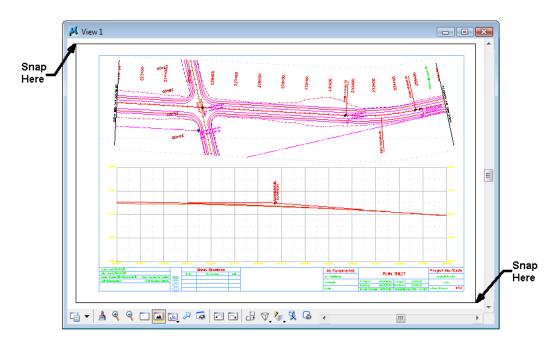
- Prepare a single sheet for printing.
- Print an 11x17 sheet to a printer.

Lab 22.1 - Prepare the sheet for plotting

- 1. Start MicroStation and open **12345PDES_PnP9.dgn** from the project's ...**Design\Drawings** folder.
- 2. **Fit** the view.
- 3. Use the Edit Text command and edit the border text to add your initials as the Designer.
- 4. Select Place Fence and set the Fence Type to Block and Fence Mode to Inside.



5. **Snap** (**<T>**, then **<D>**) to the corners of the outer-most shape that goes all the way around the plan and profile sheet to place the fence.



Lab 22.2 - Print the sheet (classroom printer)

1. Select **File > Print** or choose the **Print** icon from the **Standard** toolbar.



- 2. From the Print dialog box, select File > Select Windows Printer and double-click on the Denver-HP1700 printer.
- 3. Set the dialog as shown here. Be sure to set the **Print Scale** to **100**.

🔁 Print \\a-co-print\Denver-HP1700 (CDOT-DefaultPrinter_XM.pltcfg) 🛛 💼 🖭
<u>File</u> <u>C</u> onfiguration <u>Settings</u> <u>P</u> enTable
General Settings
Area: Fence Rasterized
View: View 1 🔻
Color: True Color Copies: 1
Pen table: CDOT-Pen Table.tbl
Printer and Paper Size
Windows driver
Paper: 11" x 17"
Total area: 17x 11 in.
Landscape Send to printer Show design in preview
Print Scale and Position
Scale: 100.000 Q 1 in. (paper) to 100.000 ' (design)
Size: 17.000 11.000 in. + Maximize <u>R</u> otation: None ▼
<u>O</u> rigin: 0.000 0.000 in.

4. Select the **Print** icon or **File > Print**.

The file is printed to the 11x17classroom plotter.

- *Note:* For tips on printing raster references (e.g. aerial photos), see the workflow **Printing Raster Images**.
- 5. Do not exit. Keep MicroStation open for the final plotting exercise.

Lab 22.3 - Print the sheet (CDOT workflow)

1. Select **File > Print** or choose the **Print** icon from the **Standard** toolbar.



2. If prompted, select **CDOT-DefaultPrinter_XM.pltcfg** for the print driver, and then select **OK**.

File Configuration Settings PenTable
General Settings
Area: Fence Rasterized
<u>Mew:</u> <u>Wew 1</u>
Color: True Color Copies: 1
Pen table: CDOT-PenTable.tbl
Printer and Paper Size
Windows driver 🗸 🔥 🖉 Full
Paper: 17x11
Total area: 17 x 11 in.
Landscape Send to printer Show design in preview
Print Scale and Position
Scale: 100.000 Q 1 in. (paper) to 100.000 ' (design)
Size: 17.000 11.000 in. +++ Maximize Rotation: None
<u>Or</u> igin: 0.000 0.000 in.

3. Set the dialog as shown here. Be sure to set the **Print Scale** to **100**.

4. Select the **Print** icon or **File > Print**.

Note: For tips on printing raster references (e.g. aerial photos), see the workflow **Printing Raster Images**.

5. Do not exit. You'll keep MicroStation open for the final plotting exercise.

Optional Exercise

- 1. Open the **12345BRDG_Plan01.dgn** file from the project's ...**Bridge****Drawings** folder.
- 2. Plot the sheet to the classroom printer. Be sure to set the **Print Scale** to **40**.
- 3. Do not exit. You'll keep MicroStation open for the final plotting exercise.

LAB 23 - Batch Printing to PDF

In this lab, you'll use **Batch Printing** to print multiple files at one time. Instead of printing to a printer, you'll print to PDF for the reproduction department (i.e. a plot set for a milestone submittals).

Note: To batch print to a printer, see the workflow CDOT Batch Printing.

Chapter Objectives:

After completing this exercise you will know how to:

- Select files to batch print.
- Set and change batch process specifications.
- Create a batch process job file (*.job).
- Batch print to PDF files.

Lab 23.1 - Select Files to Batch Print

1. Select **Batch Print** in MicroStation from the file pull down menu.

	l] - Batch Print		
<u>File</u> <u>E</u> dit	Spe <u>c</u> ifications		
11 📂	🖯 🌭 🖧 🖊 🖪	🔁 💅 🕒	
Specification	ns Controlling Printing		
Printer:	11x17 Printer		
	SHEET_Plot-Boundary		
	Maximize		
Display:	As-Is Display		
# ^ File		Model	Description
•	III		F.

Note: You can be in any MicroStation file when you run the Batch Print process.

2. In the **Batch Print** dialog box, select **Edit > Add Files**.

Note: Add Active File adds the design file that is open in MicroStation.

- 3. Navigate to the C:**Projects****12345****Design****Drawings** folder. Select the following files to add to the batch process (you can hold down the **Ctrl** or **Shift** key to select multiple files):
 - 12345DES_GenNote.dgn
 - 12345DES_PnP01.dgn 12345DES_PnP19.dgn
 - 12345DES_StdPlanList.dgn
 - ♦ 12345DES_TitleSheet.dgn
 - 12345DES_TyplSect01.dgn

4. Select Add.

In 12345DES_PhP18.3gn 1/18/2008 7:02 AM DGN File In 12345DES_PhP##.dgn 1/18/2008 7:02 AM DGN File In 12345DES_Prof##.dgn 1/18/2008 7:02 AM DGN File In 12345DES_SAQ01.dgn 1/18/2008 7:02 AM DGN File In 12345DES_SAQ##.dgn 1/18/2008 7:02 AM DGN File In 12345DES_TabConc##.dgn 1/18/2008 7:02 AM DGN File In 12345DES_TabMisc01.dgn 9/24/2007 12:15 PM DGN File In 12345DES_TabMisc##.dgn 1/18/2008 7:02 AM DGN File In 12345DES_TabRem##.dgn 1/18/2008 7:02 AM DGN File In 12345DES_TabRem##.dgn 1/18/2008 7:02 AM DGN File In 12345DES_TabRem##.dgn 1/18/2008 7:02 AM DGN File	ok in:	📗 Drawings		- 0	🌶 🖻 🖽	• 🔁	*
Places # 12345DES_PnP18.dgn 1/18/2008 7:02 AM DGN File # 12345DES_PnP##.dgn 1/18/2008 7:01 AM DGN File # 12345DES_Prof##.dgn 1/18/2008 7:02 AM DGN File # 12345DES_SAQ01.dgn 1/18/2008 7:02 AM DGN File # 12345DES_SAQ01.dgn 1/18/2008 7:02 AM DGN File # 12345DES_SAQ01.dgn 1/18/2008 7:02 AM DGN File # 12345DES_StdPlanList.dgn 11/5/2009 1:41 PM DGN File # 12345DES_StdPlanList.dgn 1/26/2007 7:20 AM DGN File # 12345DES_TabConc##.dgn 1/18/2008 7:02 AM DGN File # 12345DES_TabMisc01.dgn 9/24/2007 12:15 PM DGN File # 12345DES_TabRem##.dgn 1/18/2008 7:02 AM DGN File # 12345DES_TabRem##.dgn 1/18/2008 7:02 AM DGN File # 12345DES_TabRem##.dgn 1/18/2008 7:02 AM DGN File # 12345DES_TitleSht.dan 1/18/20		Name		Date modified	Тур	e	•
Image: Second State Sta	1	12345DES_P	nP17.dgn	1/18/2008 7:02	AM DGN	l File	
Image: Section 1/18/2008 7:02 AM DGN File Image: Section 2 Image: Section 2 Image: Section 2 Image: Section 2 Image: Section 2 Image: Section 2 Image: Section 2 Image: Section 2 Image: Section 2 Image: Section 2 Image: Section 2 Image: Section 2 Image: Section 2 Image: Sect	ent Places	12345DES_P	nP18.dgn	1/18/2008 7:02	2 AM DGN	l File	
esktop I 12345DES_SAQ01.dgn 1/18/2008 7:02 AM DGN File I 12345DES_SAQ##.dgn 1/18/2008 7:02 AM DGN File I 12345DES_SAQ##.dgn 1/18/2008 7:02 AM DGN File I 12345DES_StdPlanList.dgn 11/5/2009 1:41 PM DGN File I 12345DES_StdPlanList.dgn 10/26/2007 7:20 AM DGN File I 12345DES_TabConc##.dgn 1/18/2008 7:02 AM DGN File I 12345DES_TabMisc01.dgn 9/24/2007 12:15 PM DGN File I 12345DES_TabMisc##.dgn 1/18/2008 7:02 AM DGN File I 12345DES_TabMisc##.dgn 1/18/2008 7:02 AM DGN File I 12345DES_TabMisc##.dgn 1/18/2008 7:02 AM DGN File I 12345DES_TabList.don 1/18/2008 7:02 AM DGN File I 12345DES_TabList.don 1/18/2008 7:02 AM DGN File I 12345DES_TabList.don 1/18/2008 7:02 AM DGN File I 12345DES_TitleSht.don 1/18/2008 7:02 AM DGN File I 12345DES_TitleSht.don 1/18/2008 7:02 AM DGN File I 12345DES_TitleSht.don I/18/2008 7:02 AM DGN File I 12345DES_TitleSht.don I/18/2008 7:02 AM DGN File I 12345DES_TitleSht.don <t< td=""><td></td><td>12345DES_P</td><td>nP##.dgn</td><td>1/18/2008 7:03</td><td>LAM DGN</td><td>l File</td><td></td></t<>		12345DES_P	nP##.dgn	1/18/2008 7:03	LAM DGN	l File	
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Image: Not User Image: Not	esktop	📕 12345DES_S	AQ01.dgn	1/18/2008 7:02	2 AM DGN	l File	
NOT User I 12345DES_SWMP.dgn 10/26/2007 7:20 AM DGN File II 12345DES_TabConc##.dgn 1/18/2008 7:02 AM DGN File DGN File II 12345DES_TabConc##.dgn 1/18/2008 7:02 AM DGN File DGN File II 12345DES_TabMisc01.dgn 9/24/2007 12:15 PM DGN File DGN File II 12345DES_TabMisc##.dgn 1/18/2008 7:02 AM DGN File DGN File II 12345DES_TabRem##.dgn 1/18/2008 7:02 AM DGN File DGN File II 12345DES_TabRem##.dgn 1/18/2008 7:02 AM DGN File III II 12345DES_TabRem##.dgn 1/18/2008 7:02 AM DGN File III II 12345DES_TitleSht.dan 1/18/2008 7:02 AM DGN File III II 12345DES_TitleSht.dan 1/18/2008 7:02 AM DGN File IIII III II	100	🕺 12345DES_S	AQ##.dgn	1/18/2008 7:02	2 AM DGN	l File	
Image: State Stat		A 12345DES_St	dPlanList.dgn	11/5/2009 1:43	L PM DGN	l File	
Image: Second	DOT User	🕺 12345DES_S	WMP.dgn	10/26/2007 7:2	20 AM DGN	l File	
Imputer		A 12345DES_T	abConc##.dgn	1/18/2008 7:02	2 AM DGN	l File	
Implet Implet<		A 12345DES_T	abMisc01.dgn	9/24/2007 12:	L5 PM DGN	l File	=
etwork File name: "12345DES_TitleSht.dan 1/18/2008 7:02 AM DGN File File name: "12345DES_TyplSect01.dgn" "12345DES_Ge Done Files of type: CAD Files (*.dgn,*.dwg,*.dxf) Cancel	Computer	-		1/18/2008 7:02			
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etwork File name: "12345DES_TyplSect01.dgn" "12345DES_Ge ▼ Done Files of type: CAD Files (*.dgn;*.dwg;*.dxf) ▼ Cancel	2	12345DES T		1/18/2008 7:02	2 AM DGN	l File	T
Files of type: CAD Files (".dgn;".dwg;".dxf) Cancel	etwork						
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▲ Options		Files of type:	CAD Files (*.dgn;*.dv	wg;*.dxf)	•	Cance	sl 🛛
						Option	s
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	ojects\123	45\Design\Drawing	s\12345DES_PnP01.0	dgn –	E	Add	
Vrojects/12345/Design/Drawings/12345DES_Typ/Sect01.dgn Vrojects/12345/Design/Drawings/12345DES_GenINote01.dgn Vrojects/12345/Design/Drawings/12345DES_PhP101.dgn						Remov	e
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rojects\12345\Design\Drawings\12345DES_GenINote01.dgn rojects\12345\Design\Drawings\12345DES_PnP01.dgn			s\12345DES_PnP05.c s\12345DES_PnP06.c		-		

Note: If you want to add other sheets to the batch process, you can change folders, select the file(s) and select **Add** again.

5. When finished adding files, select **Done**.

📕 [untitled] - Batch Print	- • •
File Edit Specifications	
1) 📂 🖯 🍓 😘 🗙 🔟 💼 💕 🗈	
Specifications Controlling Printing	
Printer: 11x17 Printer	
Print Area: SHEET_Plot-Boundary	
Layout: Maximize	
Display: As-Is Display	
# ^ File Model	Description A
1 C:\Projects\12\12345DES_TyplSect01.dgn CDOT Default	Master
2 C:\Projects\12\12345DES GenINote01.dgn CDOT Default	Master =
3 C:\Projects\12345\D\12345DES_PnP01.dg CDOT Default	Master
4 C:\Projects\12345\D\12345DES_PnP02.dg CDOT Default	Master
5 C:\Projects\12345\D\12345DES_PnP03.dg CDOT Default	Master
6 C:\Projects\12345\D\12345DES_PnP04.dg CDOT Default	Master
7 C:\Projects\12345\D\12345DES_PnP05.dg CDOT Default	Master
8 C:\Projects\12345\D\12345DES_PnP06.dg CDOT Default	Master
9 C:\Projects\12345\D\12345DES_PnP07.dg CDOT Default	Master
10 C:\Projects\12345\D\12345DES_PnP08.dg CDOT Default	Master 🚽
< III.	+

Lab 23.2 - Set Batch Process Specifications

- 1. The batch process default specifications are:
 - Printer: 11x17 Printer
 - Print Area: SHEET_Plot-Boundary
 - + Layout: Maximize
 - Display: As-Is Display
- 2. Select **Specifications > Manage** to change the default specifications.

Types	pecification Manager	
Printer	11x17 Printer	Properties
Print Area Layout	8.5x11 Printer PDF Printer	<u>R</u> ename
Display		<u>N</u> ew
		<u>C</u> opy
		Delete

- 3. Under Types, select Printer and PDF Printer
 - Select Properties

📕 Batch Print Spec	ification Manager	- • •
Types Printer Print Area	Specifications 11x17 Printer 8 5x11 Printer	Proper <u>t</u> ies
Layout Display	PDF Printer	<u>R</u> ename <u>N</u> ew
		<u>C</u> opy <u>D</u> elete

- Select *Driver* and select CDOT-PDFDraffQuality_XM.pltcfg and select OK
- Toggle off Print document set to single file

PDF Printer Properties	
Printer Driver: river\CDOT-PDFDraftQuality XM.pltcfg Browse	<u>о</u> к
Stop on error	Cancel
Paper Size and Orientation Size: 17x11 As-is	
<u>X</u> : 17.000 (in) (a) Landscape	
<u>Y</u> : 11.000 © Portrait	
Output and Post Processing	
Print to: Eile Device	
Directory: C:\Projects\12345\Plot_Sets\ Browse Print Crnd:	
(Use %f to represent print file)	
Print document set to single file	
Default document set output filename (optional):	
Browse	

• Set the Directory to c:\projects\12345\Plot_Sets\

- *Note:* To print all these sheets to a single PDF, the toggle for **Print document set to** single file must be **ON**
- Select **OK**
- Under Types, select **Print Area** and then select **Properties**.

📕 Batch	Print Speci	fication Manager			
Types		Specifications			
Printer		SHEET_Plot-Boundary		Properties	
Print Area	9			Rename	
Layout					
Display	SHEET_PIO	ot-Boundary Properties			
	Reference View:				<u>O</u> K Cancel
	Print Bou	Indary	Search	n Files	
	Method	Shape 💌	✓ Ma	ster File	
	V Lev	el: SHEET_Plot-Boundary 💌	Ref	ferences	
	Colo	or: 0			
	Styl	e: 0			
	🔲 <u>W</u> e	ight: 0			
	V Pro	cess Multiple Boundary Elements			

Note: The printable area defaults to the outer boundary of the standard CDOT sheet border (the yellow shape on level **SHEET_Plot-Boundary**).

Just Master File is checked ON under Search Files.

If **References** is toggles **ON** and the level **SHEET_Plot-Boundary** is not found in the **Master File** as a cell, it will search for the level in the Reference files associated with the sheet file. This might cause blank sheets to be generated.

4. Cancel the **Properties** box.

5. Under Types, select Layout and then select Maximize.

Types	Specifications	
Printer	Maximize	Properties
Print Area		
Layout		<u>R</u> ename
Display		<u>N</u> ew
		<u>C</u> opy
		Delete

- 6. Under Types, select Display
 - Select As-Is Display
 - Select Properties

As-Is Display Properties	
Print Attributes Constructions: Asis Line Styles: Asis Data Fields: Asis Line Weights: Asis Displayset: Asis Pattems: Asis Displayset: Asis Print Border: Asis Fast Cells: Asis Tags: Asis Fast Curves: Asis Text: Asis Fence Boundary: Asis Transparency: Asis	<u>O</u> K Cancel
Level Symbology: Asis Broken Association Symbol Pen Table Filename: bal\MicroStation\Tables\Pen\CDOT-PenTable.tbl Additional Options Color mode: Not Rasterized Plot to 3D: Asis Output mode:	

Note: The **As-Is Display Specification** sets up the print properties for various elements. The **As-Is** setting reads MicroStation's View Attributes setting for each design file.

The Pen Table defaults to **CDOT-PenTable.tbl**, which is the table used for blackand-white printing.

- 7. Cancel out of the Properties box.
- 8. **Close** the *Batch Print Specification Manager* box by selecting the **X** in the upper-right corner.

Your changes are shown in the main **Batch Print** dialog box.

🕌 [untitled] - Batch Print		
File Edit Specifications		
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Specifications Controlling Printing		
Printer: PDF Printer		
Print Area: SHEET_Plot-Boundary		
Layout: Maximize		
Display: As-Is Display		
# ^ File	Model	Description *
1 C:\Projects\12\12345DES_TyplSect0	1.dgn CDOT Default	Master
2 C:\Projects\12\12345DES_GenINote0)1.dgn CDOT Default	Master =
3 C:\Projects\12345\D\12345DES_PnF	01.dg CDOT Default	Master
4 C:\Projects\12345\D\12345DES_PnF	02.dg CDOT Default	Master
5 C:\Projects\12345\D\12345DES_PnF	03.dg CDOT Default	Master
6 C:\Projects\12345\D\12345DES_PnF	04.dg CDOT Default	Master
7 C:\Projects\12345\D\12345DES_PnF	05.dg CDOT Default	Master
8 C:\Projects\12345\D\12345DES_PnF	06.dg CDOT Default	Master
9 C:\Projects\12345\D\12345DES_PnF	07.dg CDOT Default	Master
10 C:\Projects\12345\D\12345DES_PnF	08.dg CDOT Default	Master 👻

LAB 23 - Save your Specifications to a Job file (*.job)

- 1. From the Batch Print dialog box, select File>Save As...
- 2. Navigate to the project's ... Plot_Sets folder.

Note: You should select one of the subfolders (FIR, FOR, etc.) for the appropriate plot set. For training purposes, you'll plot to the upper level Plot Sets folder.

3. In the Files field, key in 12345 and select OK.

📕 Save Job Set File - C:\Projects\12345\Plot_Sets\							
Save in:	Plot_Sets		•	G 🤌 📂 🛄 🗸	3 🖲		
9	Name AD		Date modified 12/14/2009 3:30 PM	Type File Folder	Size		
Recent Places	JE FIR		8/4/2009 6:49 AM	File Folder			
Desktop	鷆 FOR 鷆 ROWPR		8/4/2009 6:49 AM 8/4/2009 6:49 AM	File Folder File Folder			
CDOT User							
Computer							
Network	• •						
	File name:	12345.job -			Open		
	Save as type:				Cancel		

The job file should be saved to the project in the appropriate folder under the **Plot_Sets**. The file is automatically assigned a .job extension. If you want to process this job again, select **File > Open** from the **Batch Print** dialog box and choose the **12345.job** file.

Lab 23.1 - Create the Batch Prints

1. Select the **Print** icon to open the **Print Batch** dialog box.

📕 12345.job - Batch Print				
File Edit Specifications				
눱 📂 🖯 🌺 🗞 🗙 🗊 🗊 😭 🗈				
Specifications Controlling Printing				

2. In the Print Batch dialog box, set Print Range to All to print all the files selected

Print Batch	
Print Range Image Image Image Image Image Image	
Log File Filename: MS_PLTFILES.batchplt.log	Browse
Clear Log File Before Printing	
Document Set Single File Output Filename:	Browse
<u>O</u> K Can	icel

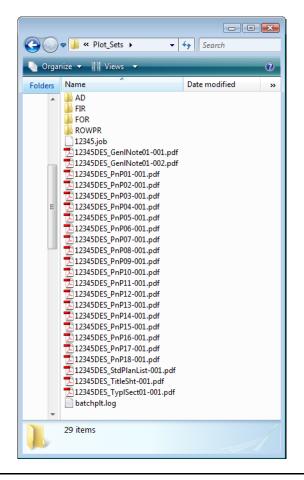
Note: The option **Selection** would print only the files that you highlight in the list.

3. Select OK to start the batch process.

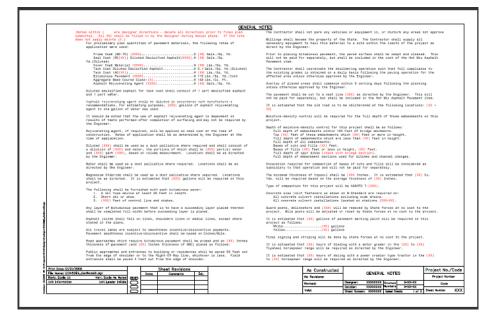
The process will take a few minutes to complete. If errors are encountered, open the error log **batchplt.log** in the C:\Projects\12345\Plot_Sets\ folder for more information.

Lab 23.2 - Review the PDF files

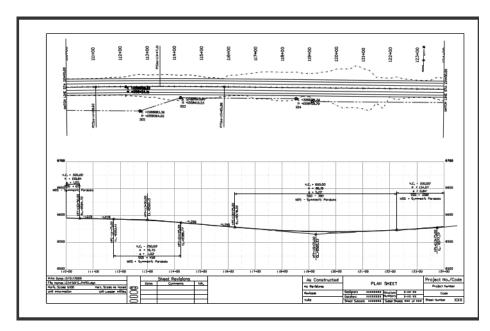
- 1. In Windows, open My Computer.
- 2. Navigate to the C:\Projects\12345\Plot_Sets\ folder.



- *Note:* The folder contains the all the individual pdf file sheets plus the **12345.job** file and batch log file.
- 3. Double-click on one of the **pdf** files to open.



4. Continue opening sheets as desired.



- 5. **Close** My Computer.
- 6. Return to MicroStation and **Exit**.

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