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

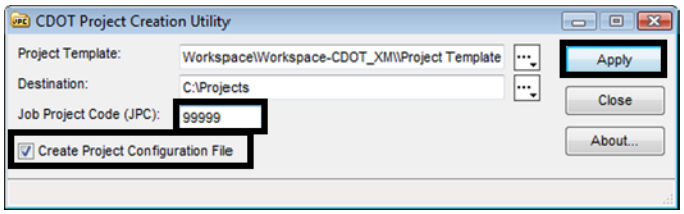
In this example, you are starting your project before a project number has been assigned. You will temporarily assign the project number 99999. Later in this lab, you will learn how to change this project number by updating MicroStation's project configuration file.

1. From the ***Windows Start Menu***, select **Start > All Programs > _CDOT_CADD_Information > V08.09.xx-XM > Create XM Project Directory Structure**.

2. 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***.



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

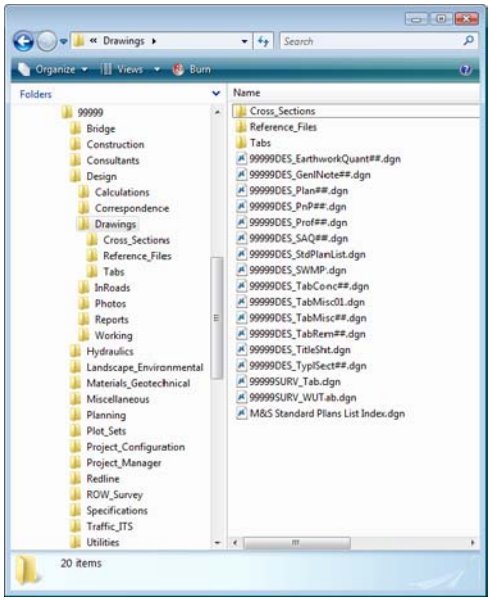
5. Toggle ***on*** **Create Project Configuration File**.

6. Select **Apply**.

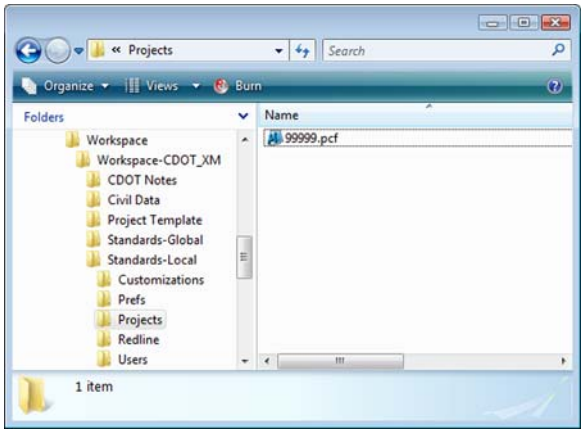
The project directory structure is created in the **C:\Projects** folder and the Project Configuration File (PCF) file is created.

7. **Close** the ***CDOT Project Creation Utility***.

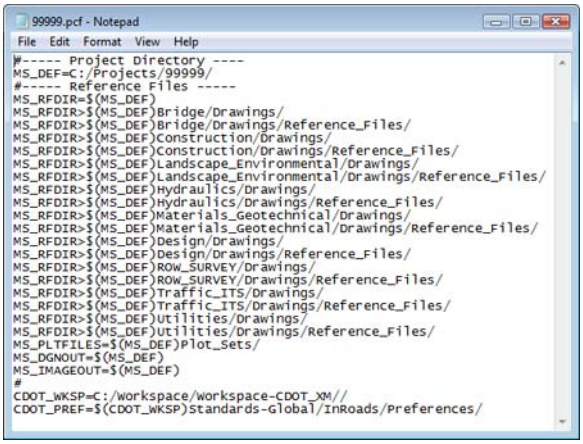
8. Use ***My Computer*** or ***Windows Explorer*** to navigate to the **C:\Projects\99999** folder to review your project directory structure. Note that several generic CDOT files (e.g. ***99999Des_Model.dgn***) have automatically been created.



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**.

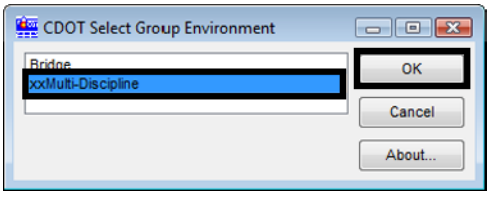
12. Close ***My Computer*** or ***Windows Explorer***.

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.

1. 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**.



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

1. 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.

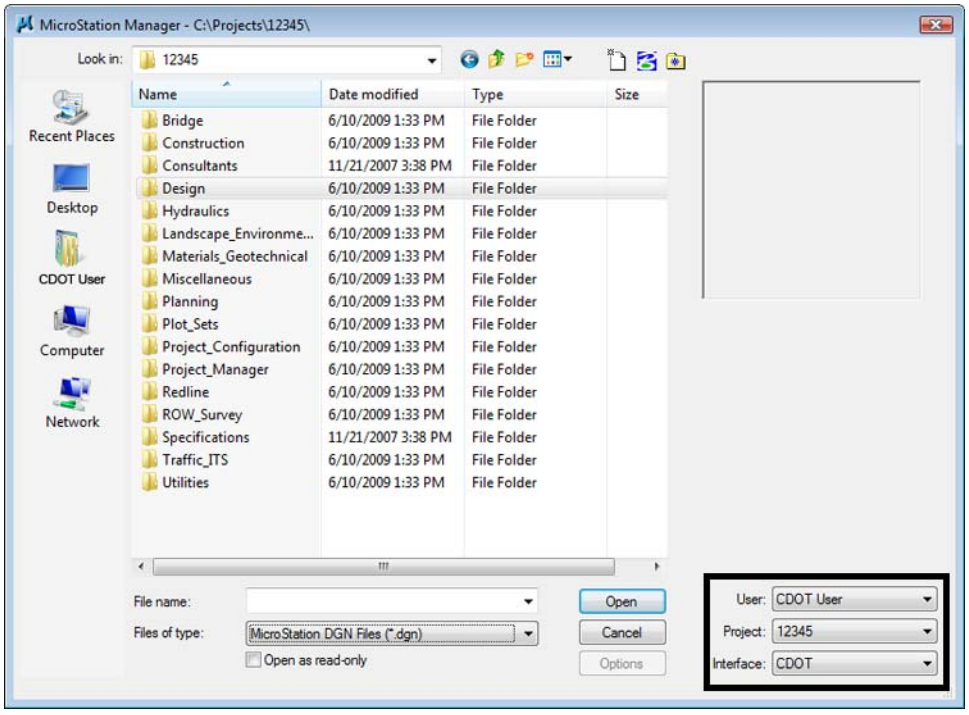
   - Project: **12345**

   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**.

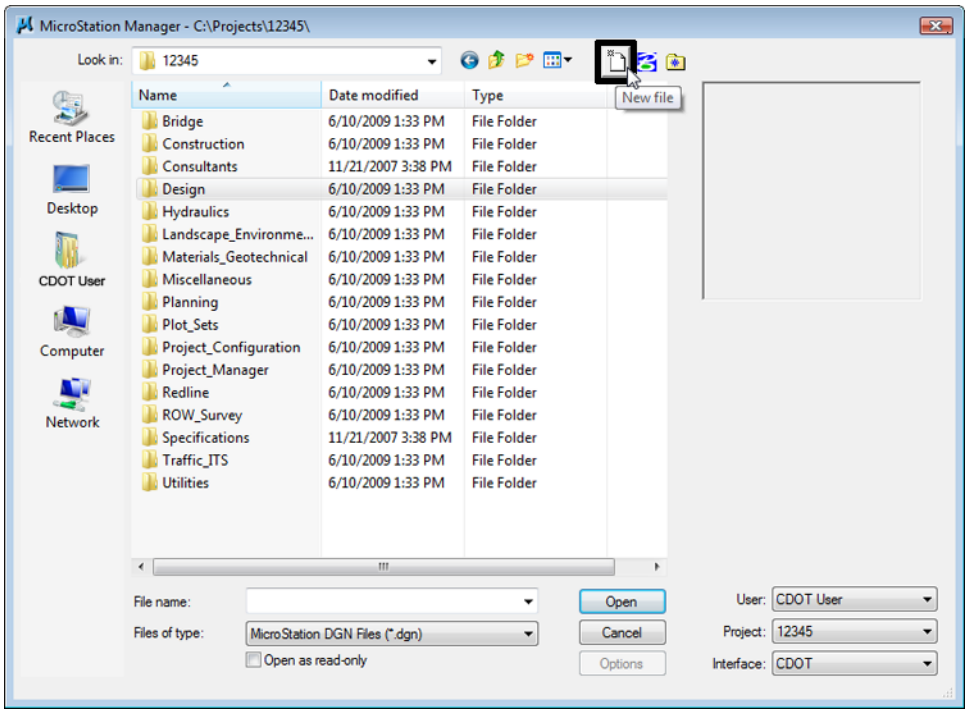


Lab 4.4 - Create a new Design Model File

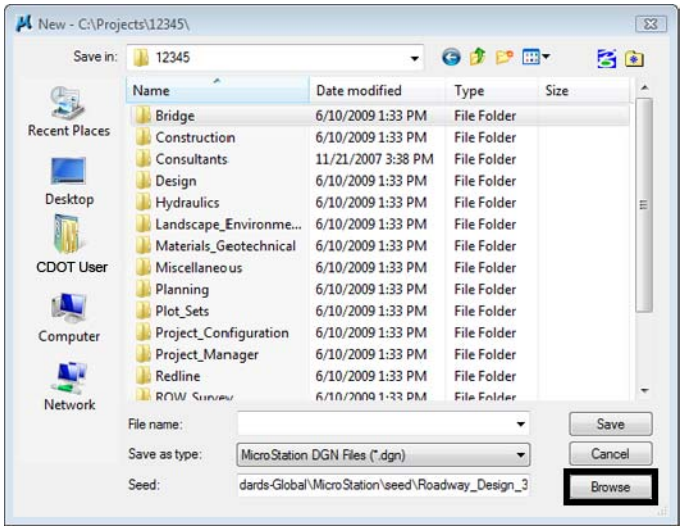
There are two ways you can create a new file: Using a seed file or from a CDOT auto-populated model file. You'll practice both in this session.

Creating a new design file using a CDOT seed file

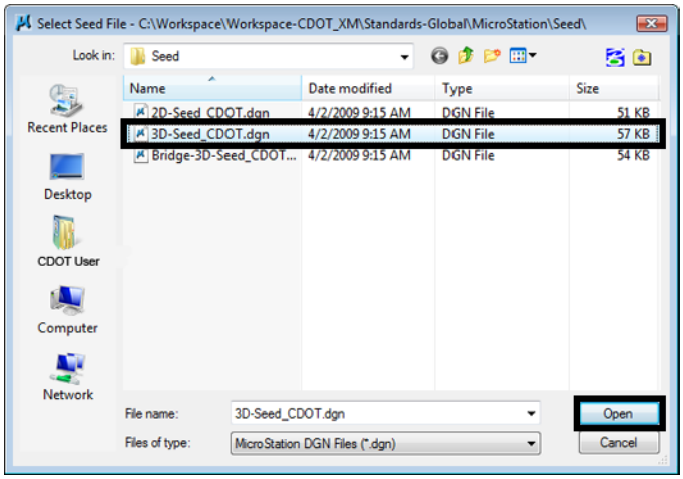
1. From the MicroStation Manager dialog box, select the **New File** icon.



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



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



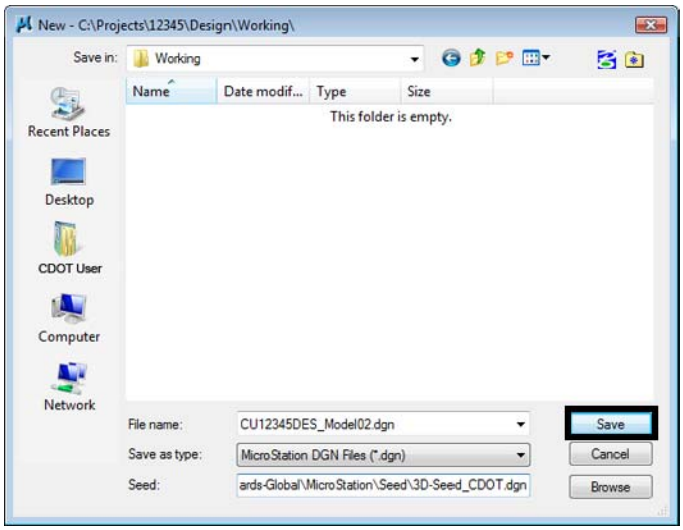
Note: The seed file will copy over all of CDOT's default MicroStation settings when creating the new file.

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**.

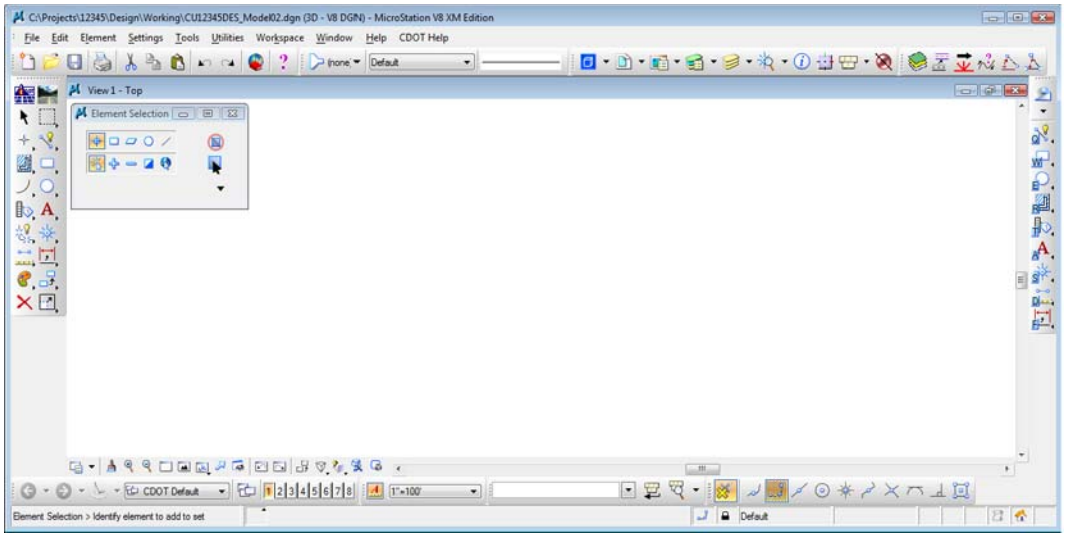
7. Select Save to create the file.



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).

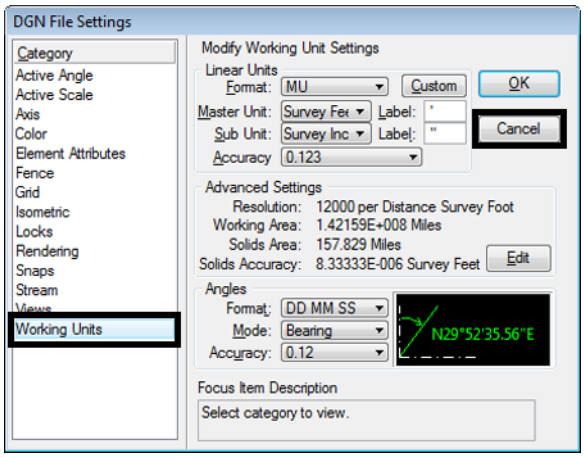
The working folder is for files that you are using for your design process prior to the design being finished. Once complete, you will move the files to the **Reference_Files** folder and take the CU off of the file name.

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



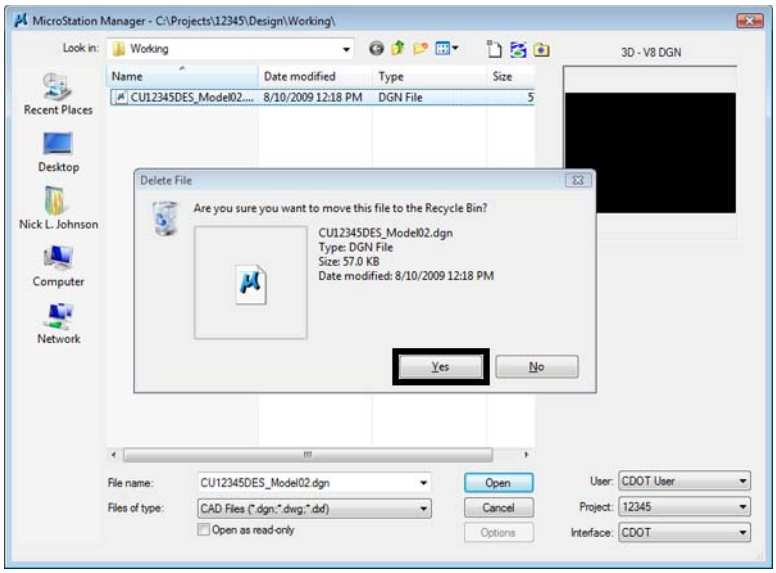
Check settings

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



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

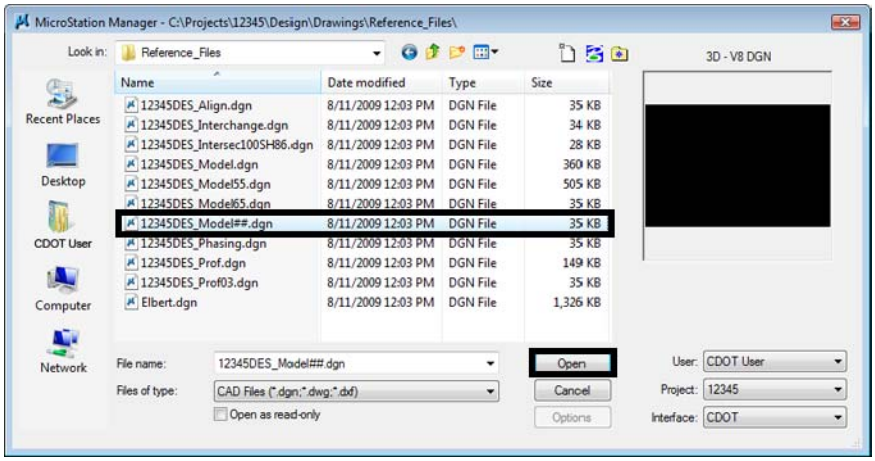
4. From the **MicroStation Manager** select the file and press the **Delete** key on your keyboard and choose **Yes** from teh ***Delete File*** box to delete the file you just created.



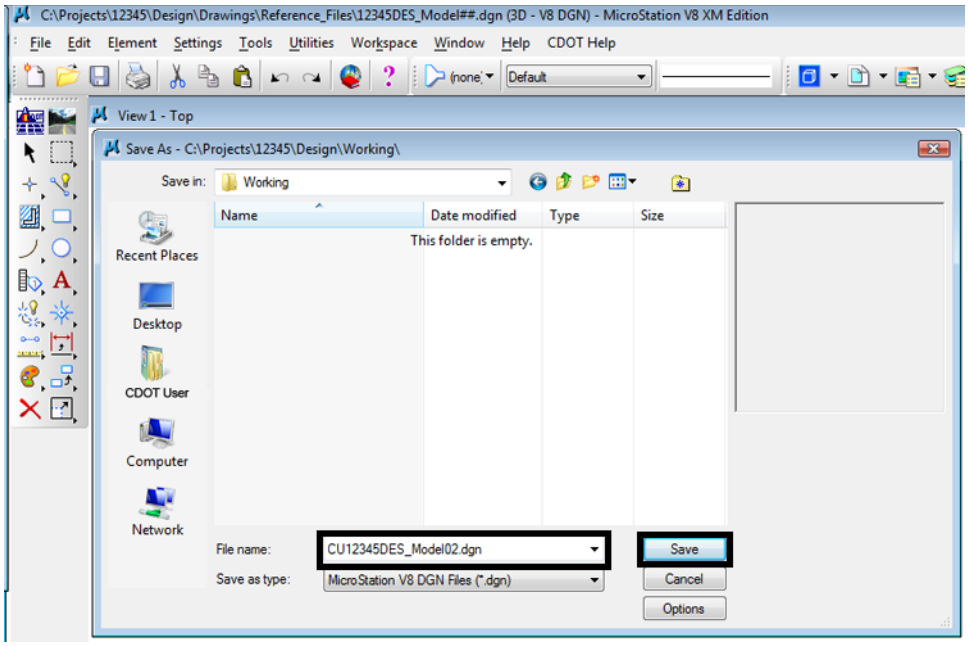
Lab 4.5 - Create a New File by copying an auto-populated model file

1. In the **MicroStation Manager**, navigate to the **\Design\Drawings\Reference_Files** folder.

2. Select **12345DES_Model##.dgn** and choose **Open**.



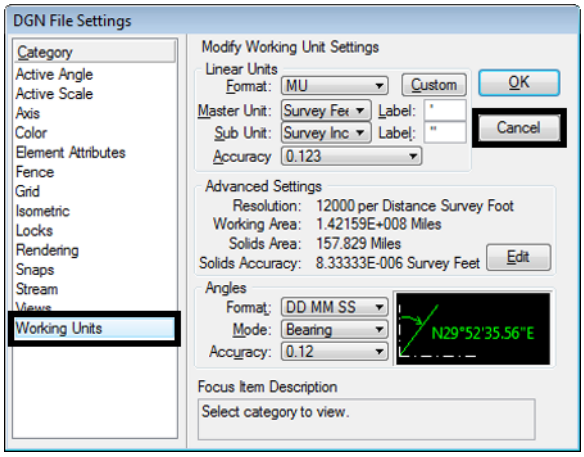
3. After opening the file, select **File > Save As**, navigate to the **\Design\Working** folder key in the name **CU12345DES_Model02.dgn** and select **Save**.



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.



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.

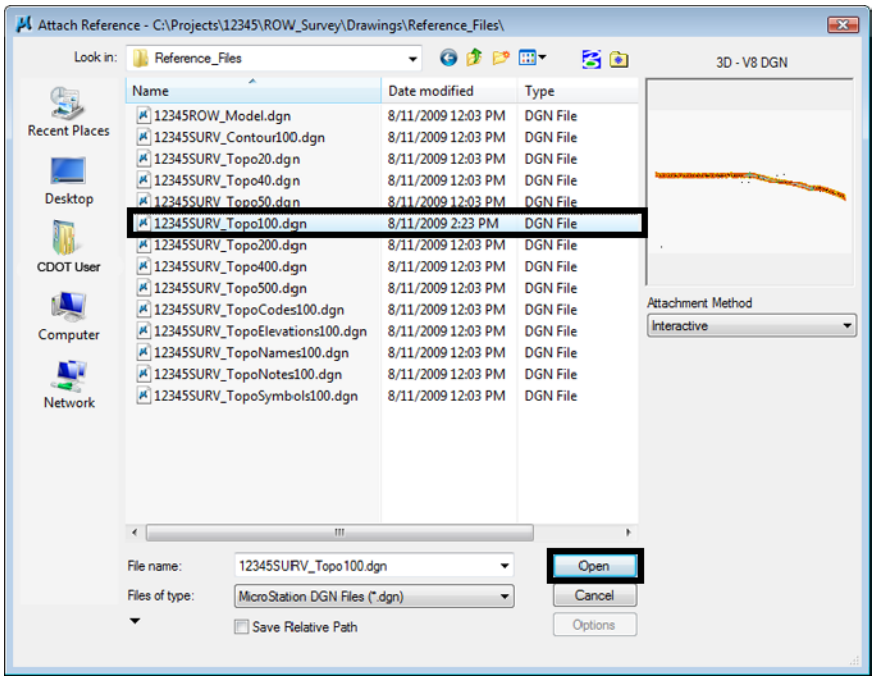
Lab 4.6 - Attach the Survey/Topo reference

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.



6. Set **Attachment Method** to **Interactive** and select **OK**.

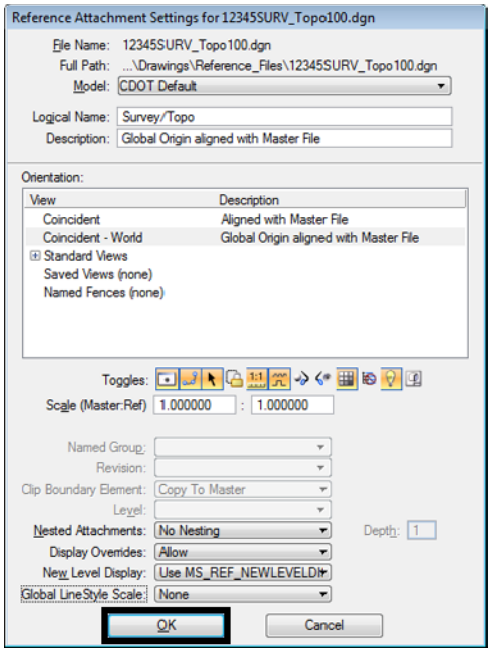
   The Interactive method allows you to supply additional reference settings in the next dialog box.

7. In the **Reference Attachment** settings box, key in a **Logical Name** of ***Survey/Topo*** and set:

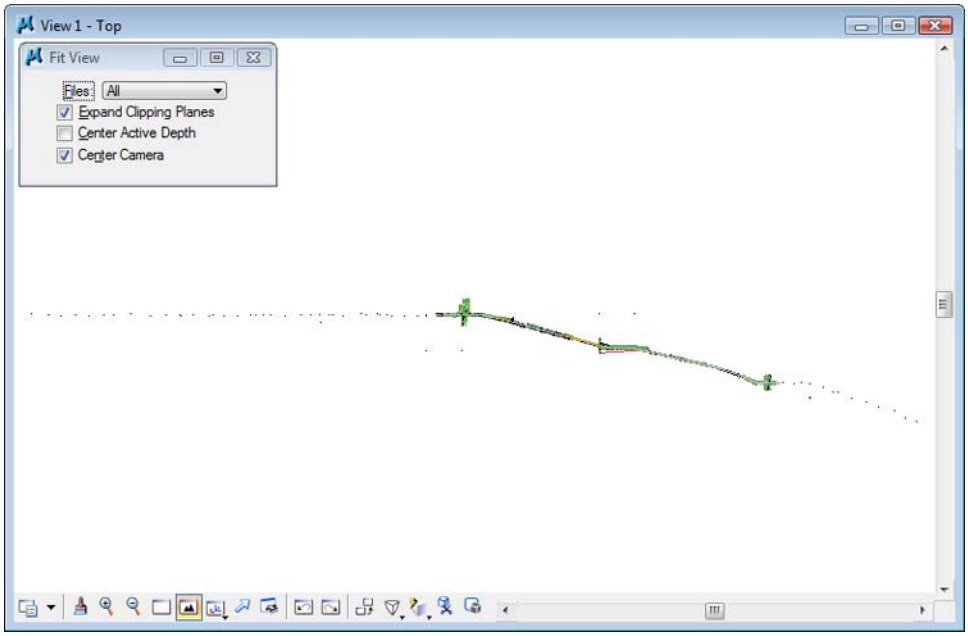
   - **Orientation** to **Coincident World** (to align Master file and Reference file global origins)

- **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**.

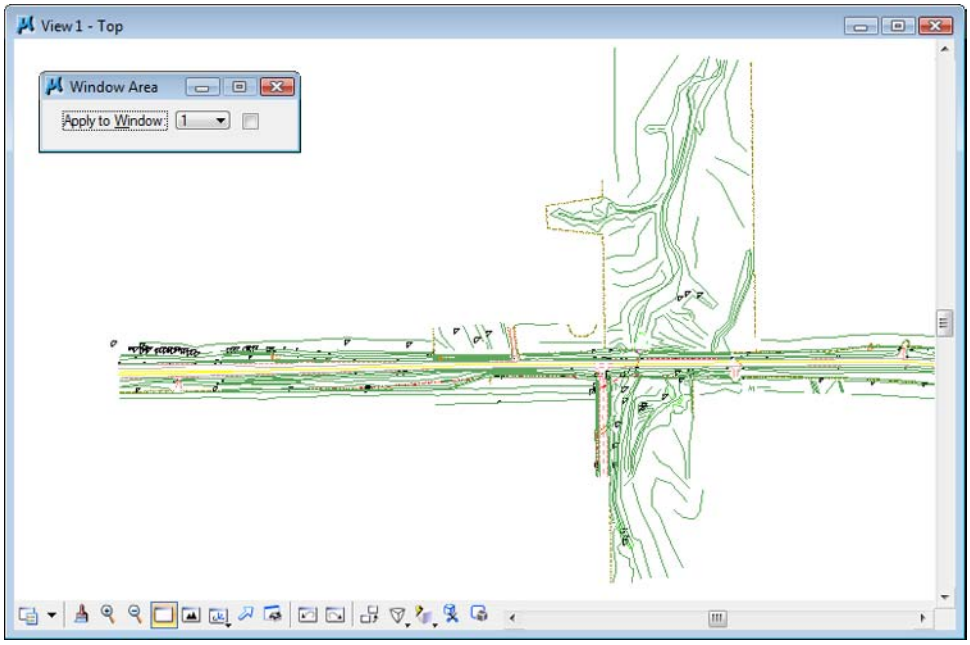


9. **Fit** the view.

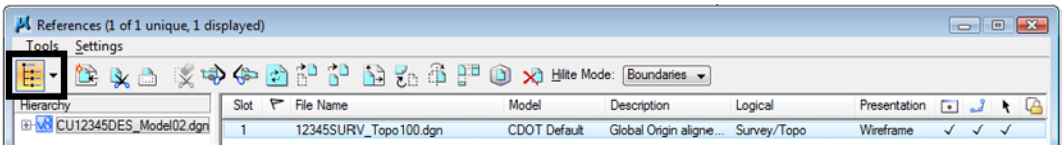


The Survey/Topo reference is attached to the design model master file. The graphics come in at their true coordinates (Coincident-World) and the actual size (1:1 scale).

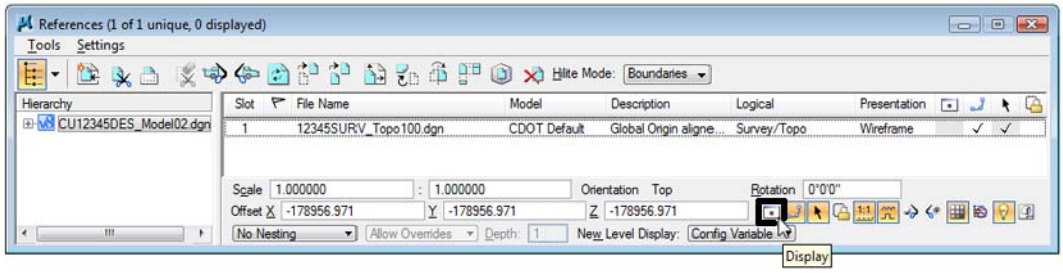
10. Window in on the Survey graphics at the beginning of the project.



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



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



13. **Fit** the view.

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

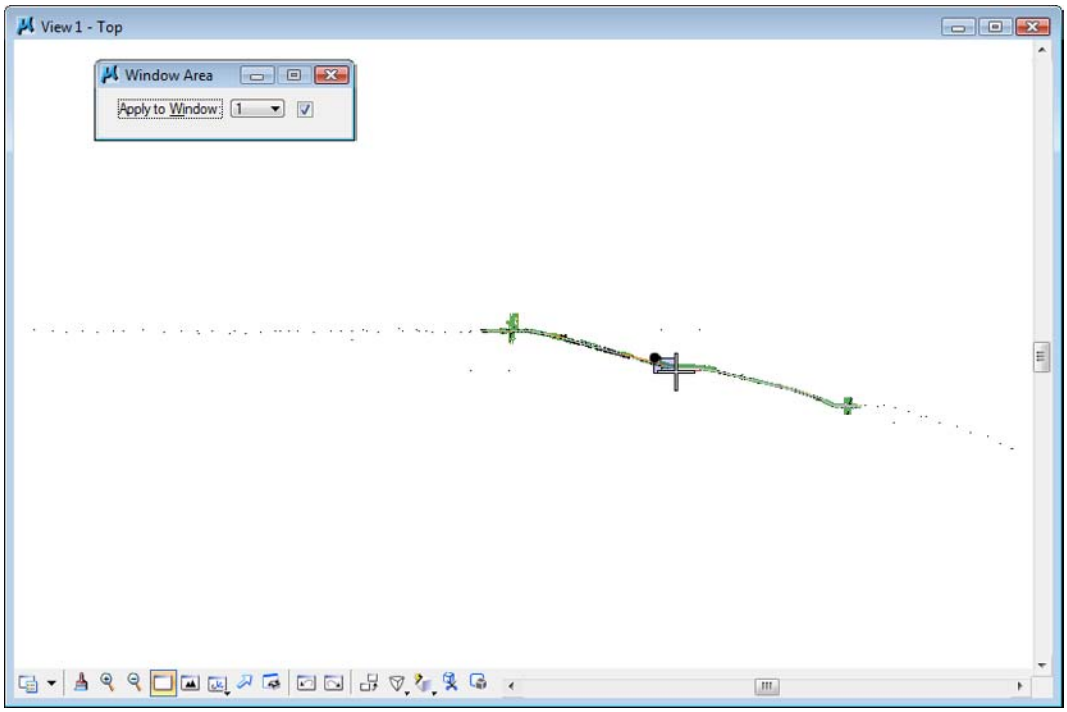
14. Toggle the **Display** option back ***on***.

15. **Fit** the view.

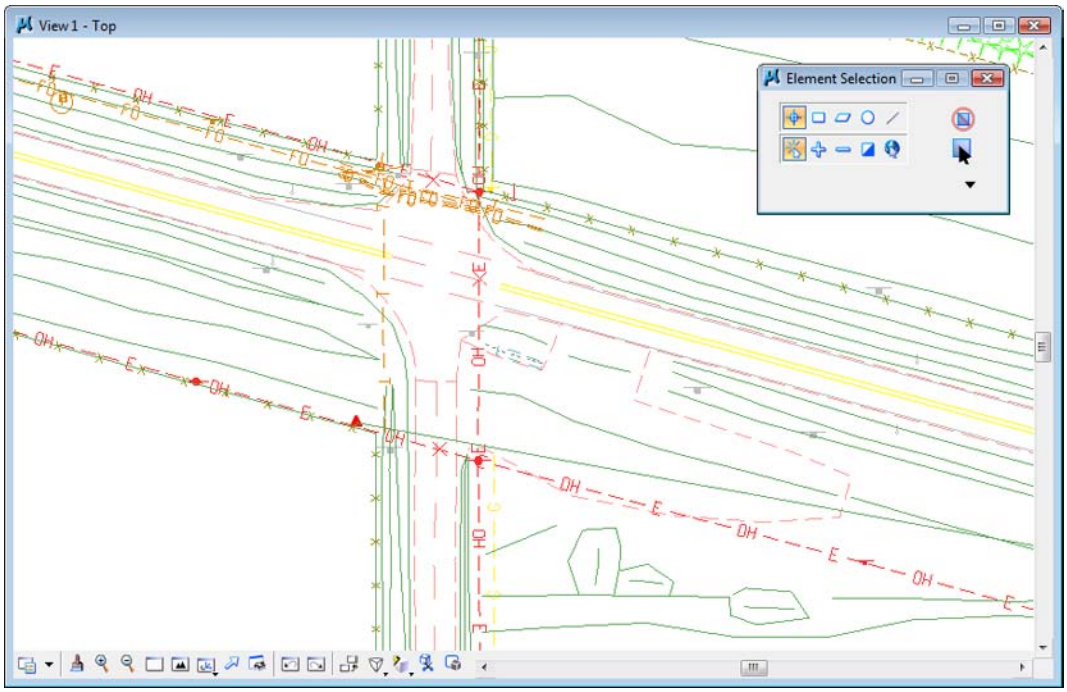
    The design file is now ready to placed proposed graphics with survey and topo graphics referenced for information purposes.

Turn survey levels on/off

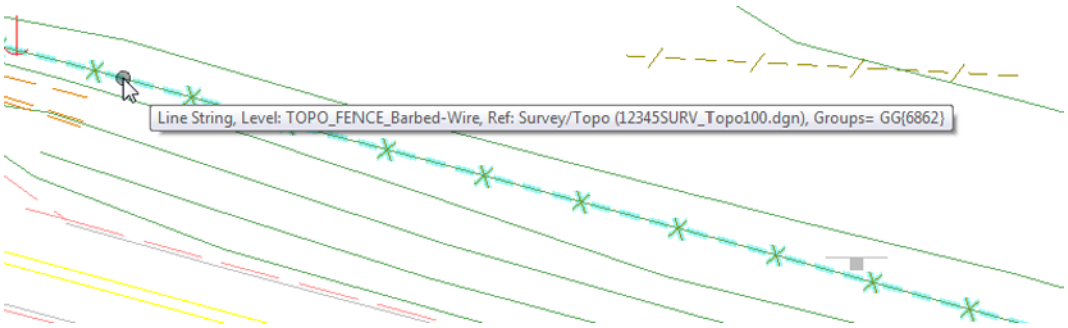
1. Window around the intersection near the center of the project.



2. **Zoom** in as shown.



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

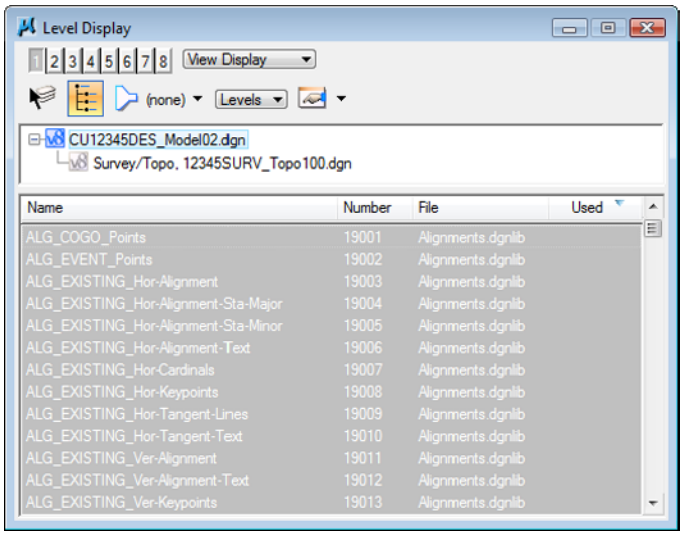


Basic element information "pops up" at your cursor location. MicroStation tells you that the element is on level **TOPO_FENCE_Barbed-Wire** and located in the **Survey/Topo** reference.

4. Open **Level Display** from the **Primary** toolbar.

5. Highlight the master file **CU12345DesignModel02.dgn**.

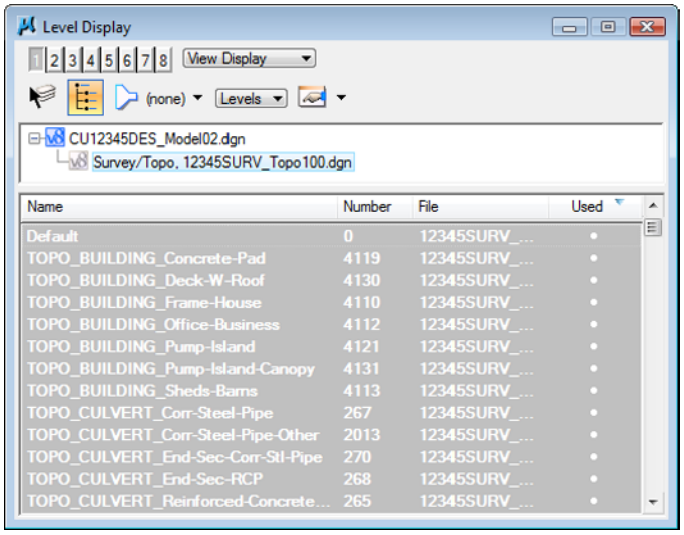
6. Sort on **Used** levels.



Note: That there are no used levels in the master file since there are no graphics in the design model file.

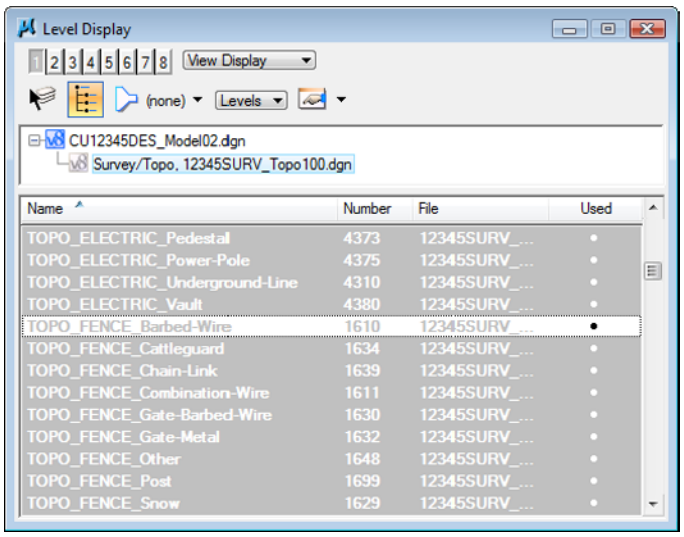
7. Highlight the **Survey/Topo** reference underneath the master file

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

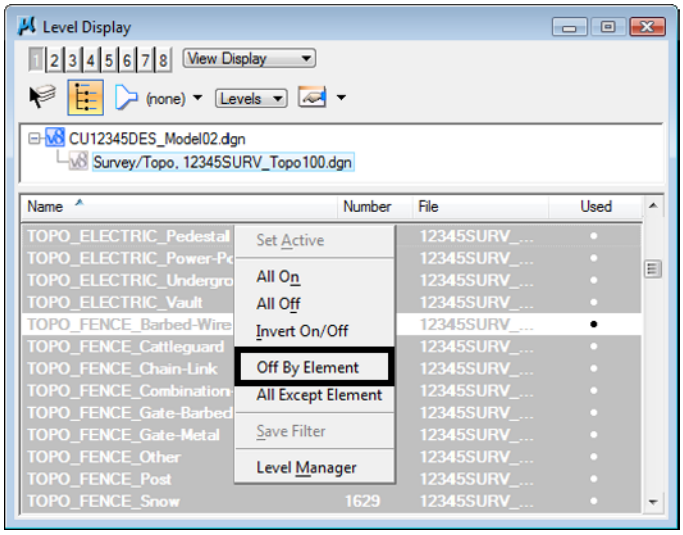


Note: That the reference has several used levels.

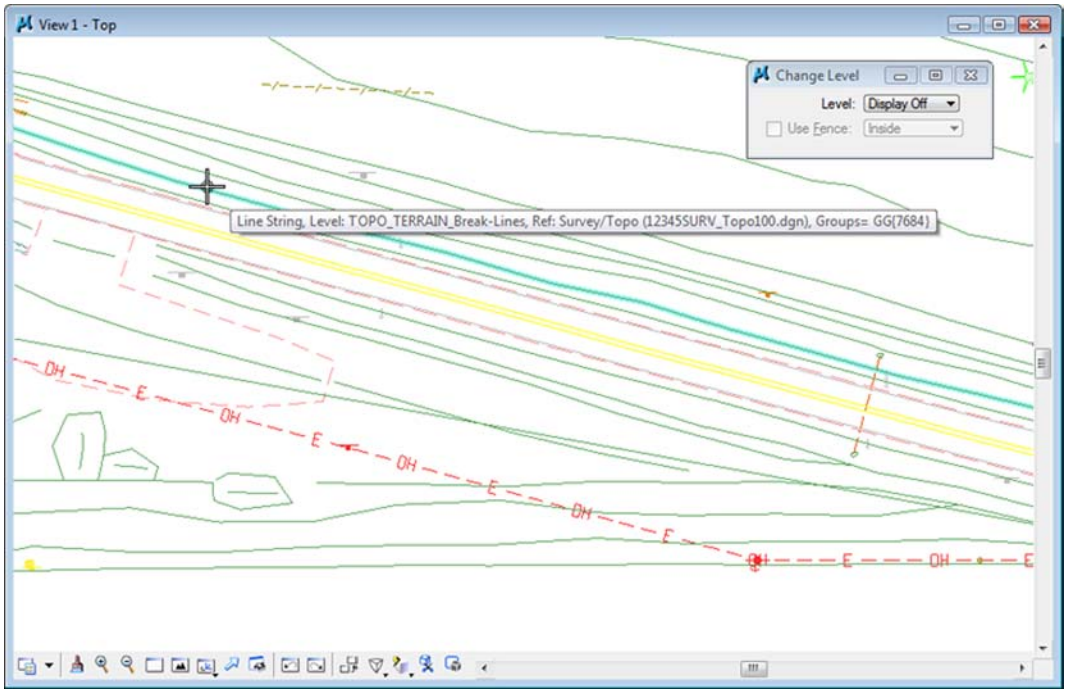
9. Turn ***off*** the level **TOPO_FENCE_Barbed-Wire**.



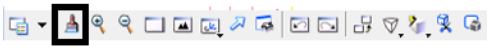
10. Right click in the list of levels and select **Off By Element**.

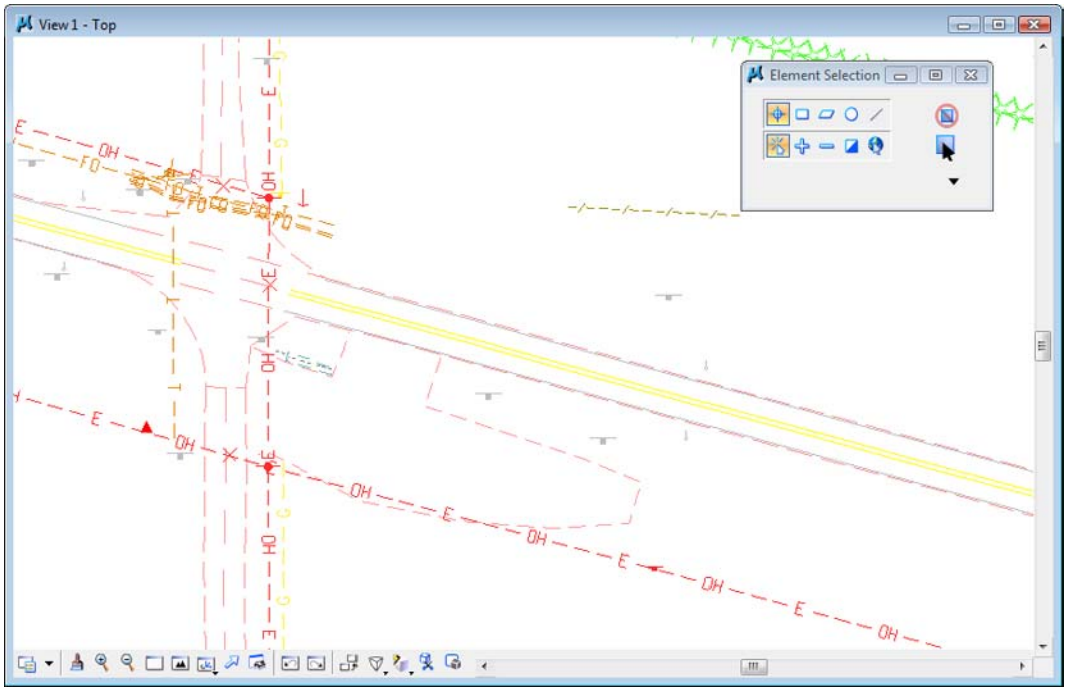


11. **<D>** on one of the green breaklines to turn off the level **TOPO_TERRAIN_Break-Lines.**



12. **Update** the view.





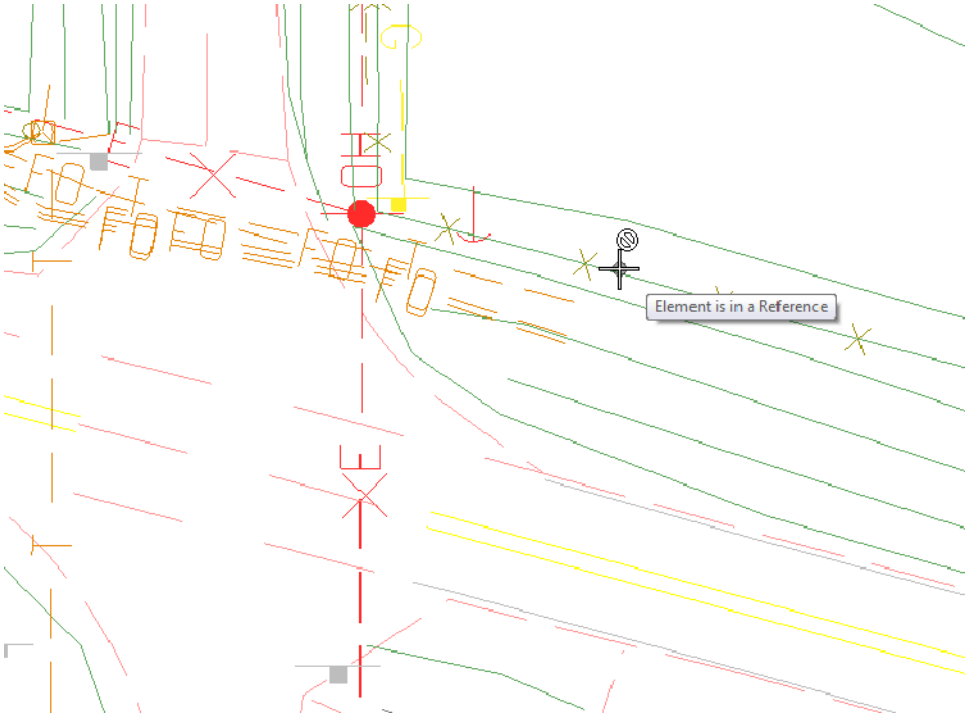
13. Turn other Survey levels on/off as desired.

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

14. Turn all Survey levels back ***on***.

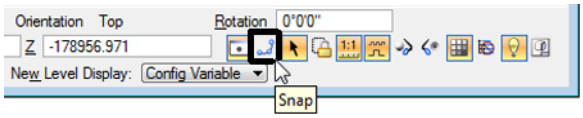
15. From the MicroStation **Main** toolbar, select **Delete Element**.

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.

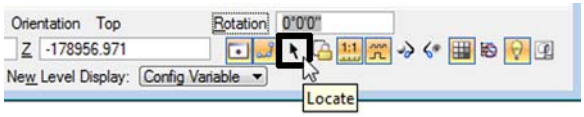
17. In the Reference dialog, turn off **Snap** for the **Survey/Topo** reference.



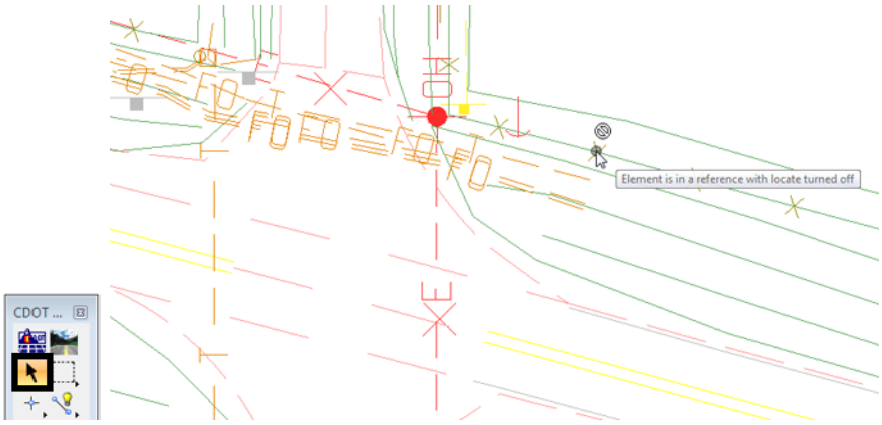
18. Try to tentative snap on some of the Survey graphics.

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.



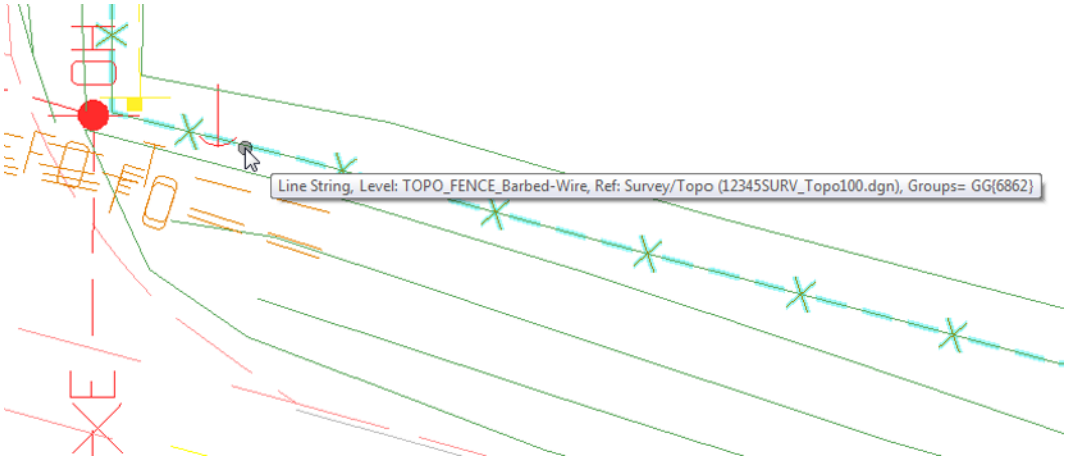
20. On the Main toolbar, choose the **Element Selection** tool and hold your cursor over some of the survey graphics.



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

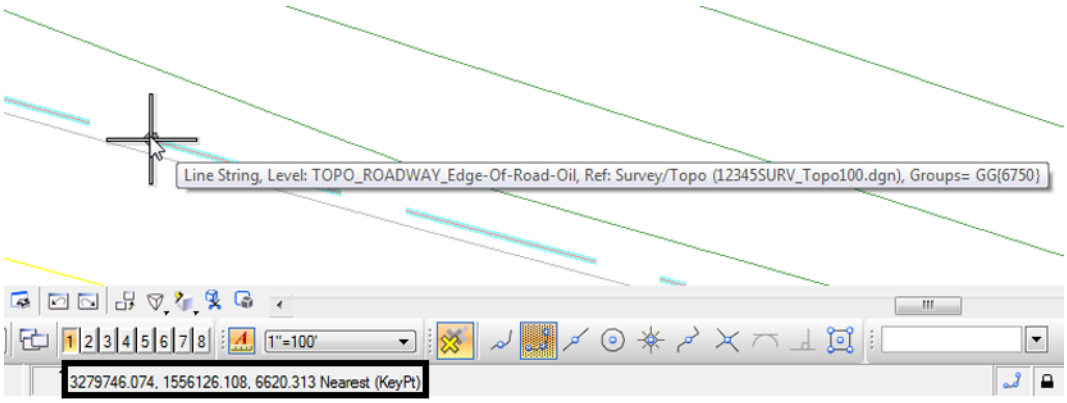
21. In the **References** dialog, turn **Snap** and **Locate** back ***on*** for the Survey/Topo reference.

22. Hold your cursor over some of the reference graphics.



You can now locate the graphics.

23. <T> on some reference graphics.

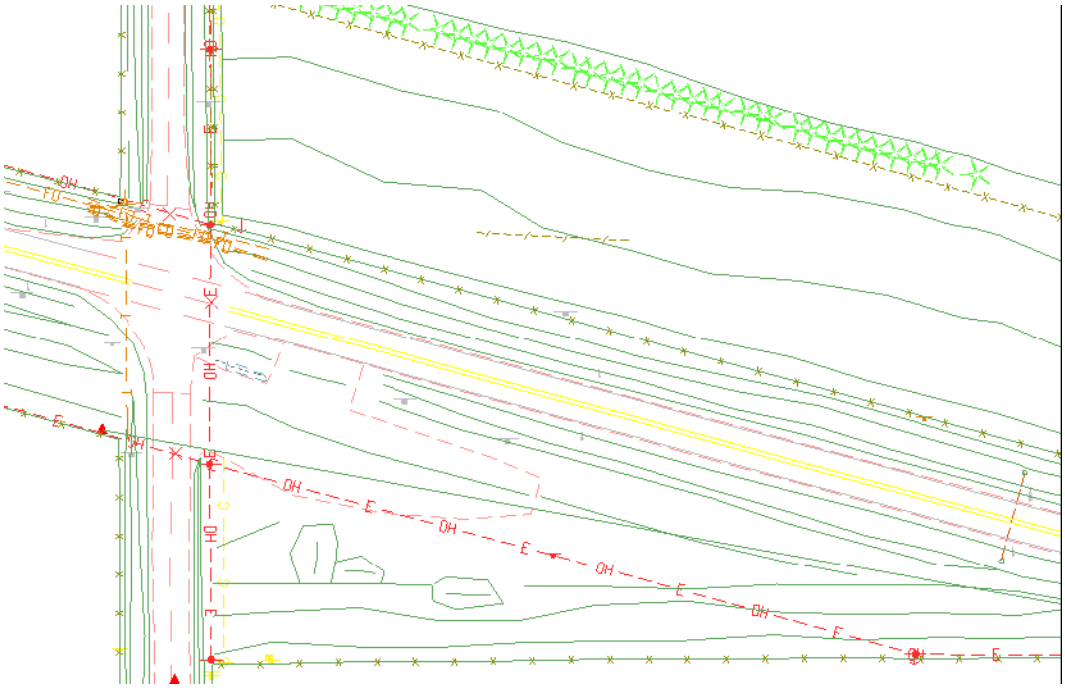


You can now snap to the reference graphics for coordinate information.

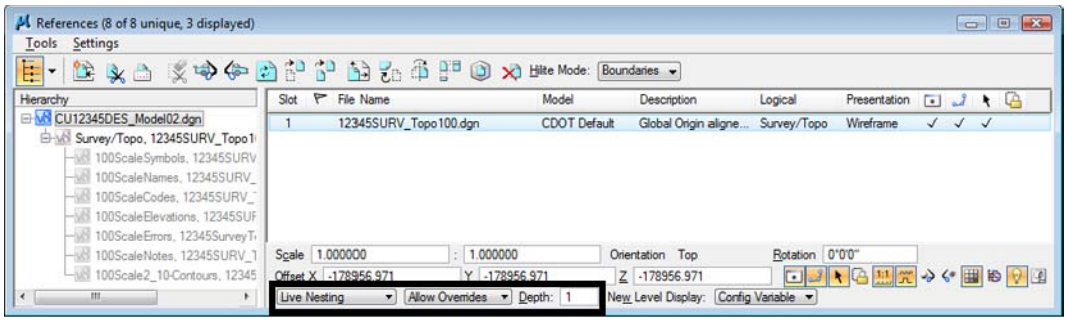
Note: It's often helpful to turn **Snap** off in a reference in dense areas where you don't want to snap to reference graphics. It's useful to turn **Locate** off for a reference if you're copying master file graphics and you don't want to accidentally copy the reference graphics.

Live Nesting

1. Window around the intersection as shown.

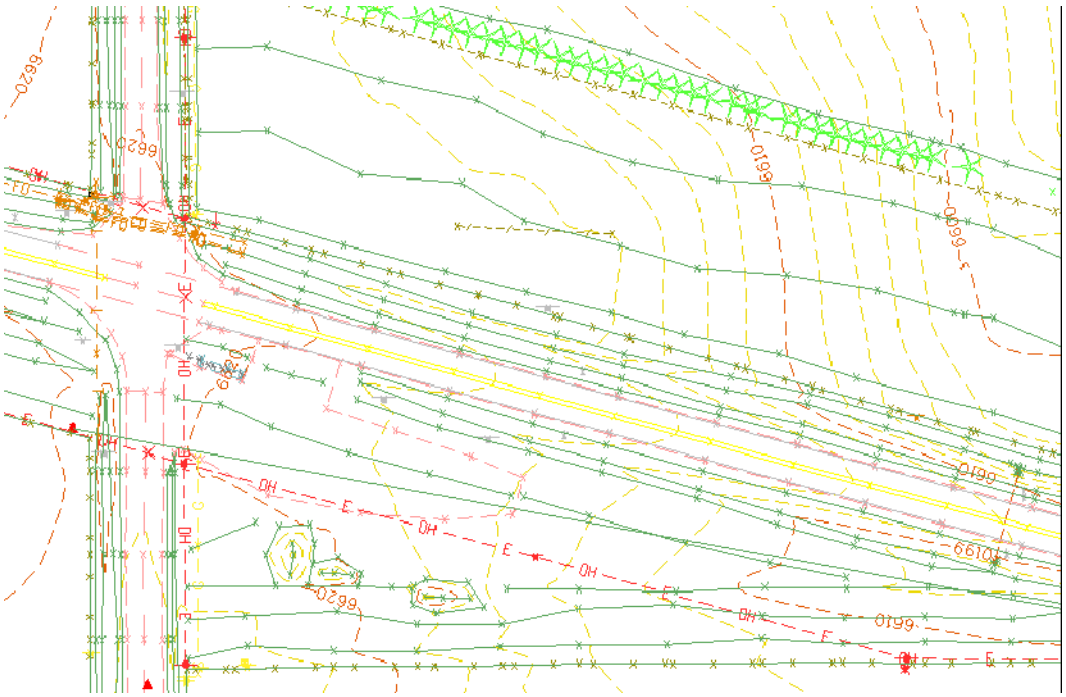


2. In the Reference dialog, change **No Nesting** to **Live Nesting** and set the **Depth** to **1**. Expand the **Hierarchy** list to show all nested references.



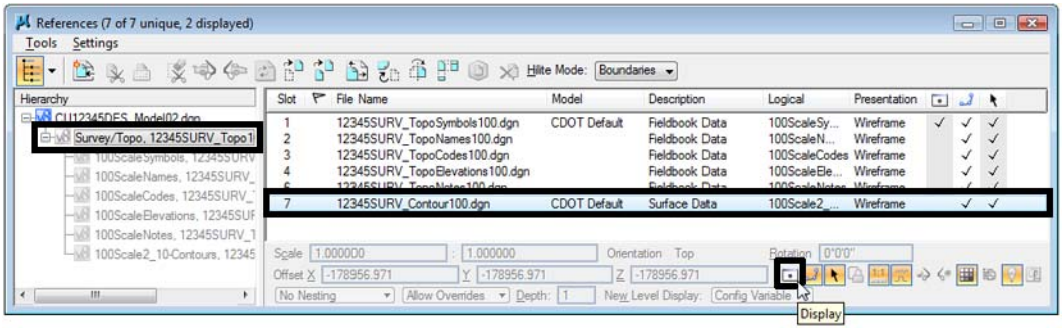
The Survey fieldbook data files, which are referenced to the Survey/Topo model, are now displayed in the file.

3. Review the graphics.

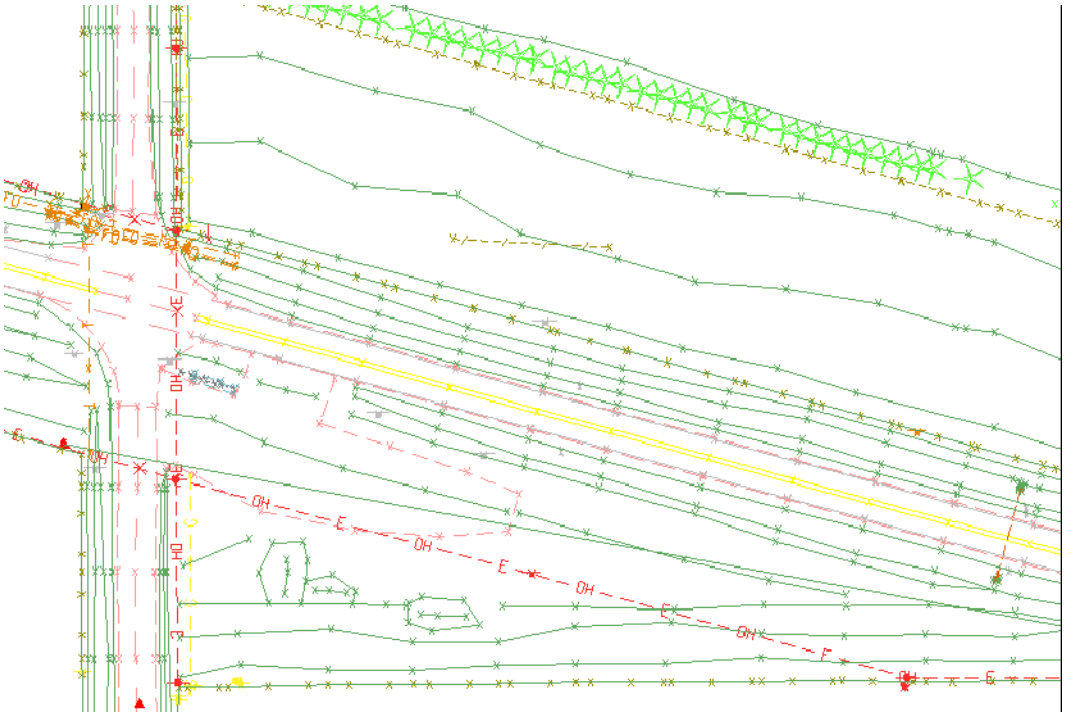


The Nested graphics, including the existing contours are now shown in the file.

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**.

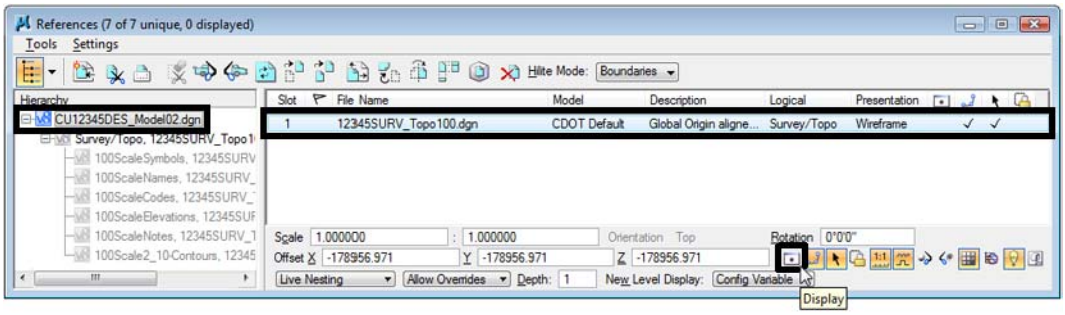


The display of just the nested contour graphics is turned off.



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

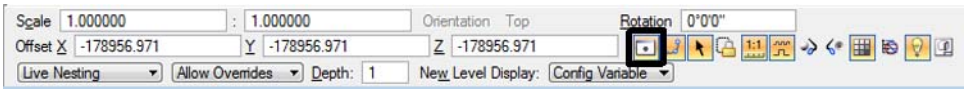
6. On the left side of the **Reference** dialog, highlight the **Design Model** master file. On the right-hand side of the **References** box, highlight the **Survey/Topo** reference and toggle **off** the **Display**.



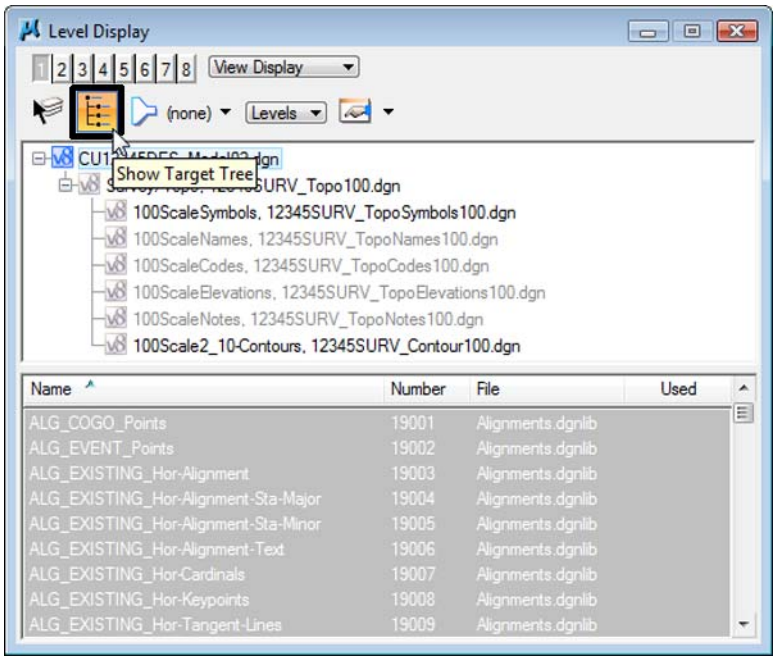
All graphics in the file are turned off.

Note: With a nested reference, when you turn off the display of the upper level reference, all nested references are turned off too.

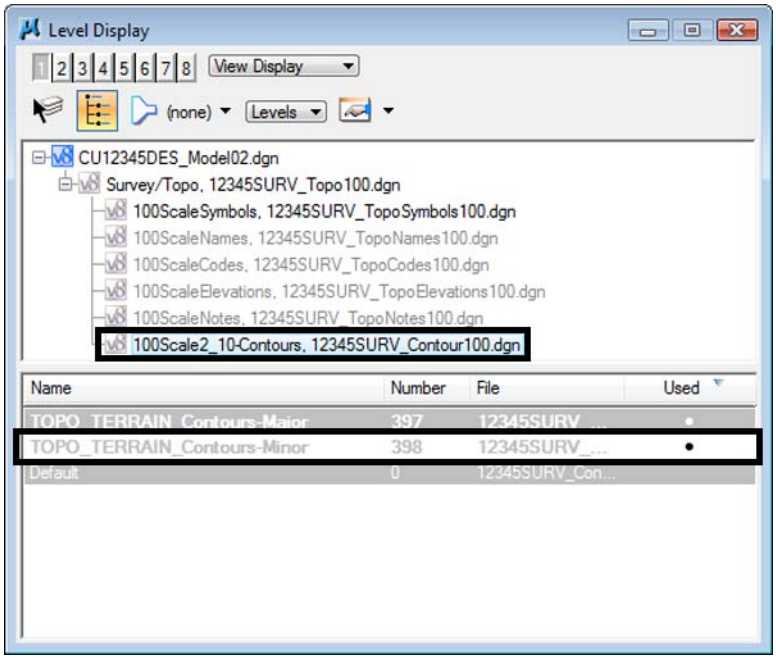
7. Turn the **Survey/Topo** reference display back **on**.

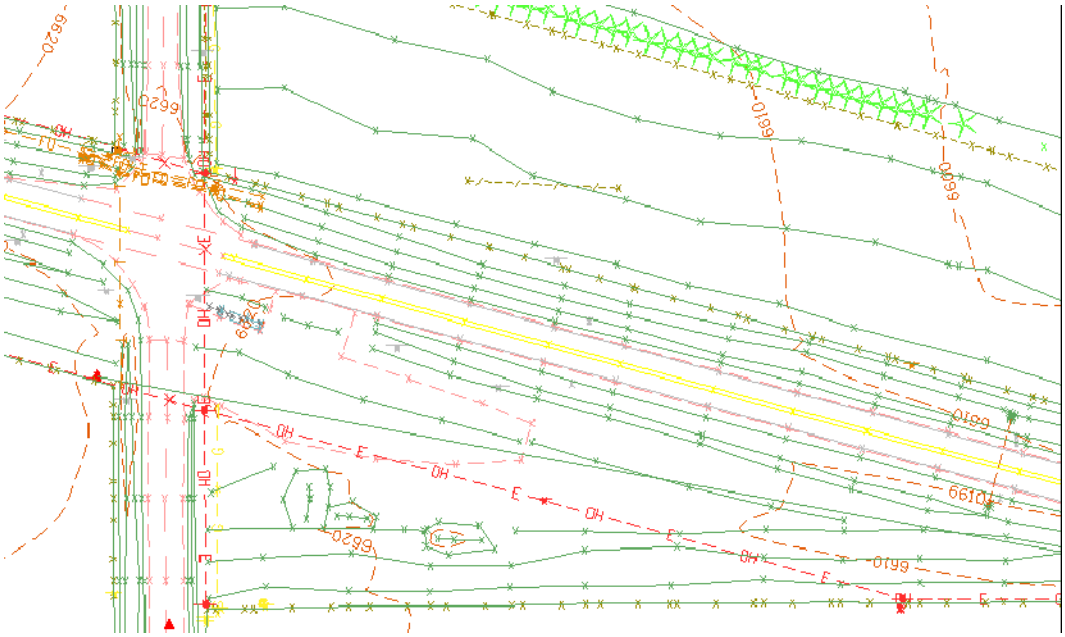


8. Open the Level Display box and expand the **Target Tree** list.



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



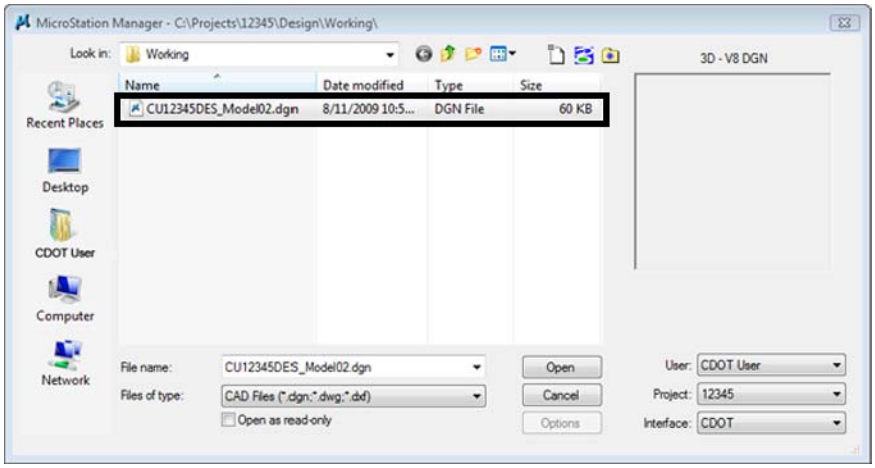


You have control over all nested reference levels via Level Display.

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.

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 Refereence_Files folder.

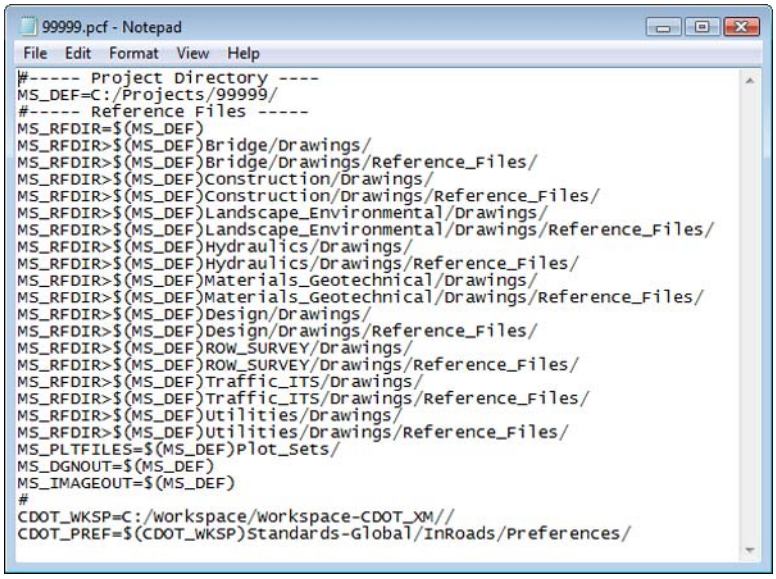
13. Cancel the **MicroStation Manager** box.

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.

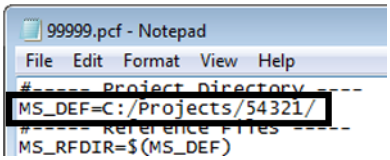
1. Using My Computer or Windows Explorer, navigate to the CDOT workspace (**C:\Workspace\Workspace-CDOT_XM\Standards-Local\Projects**).

2. Double-click on **99999.pcf** to open it with **Notepad**.

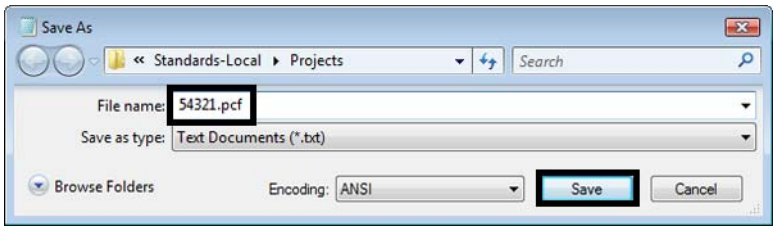


3. On the second line under **Project Directory**, edit it as follows:

MS_DEF=C:/Projects/54321/



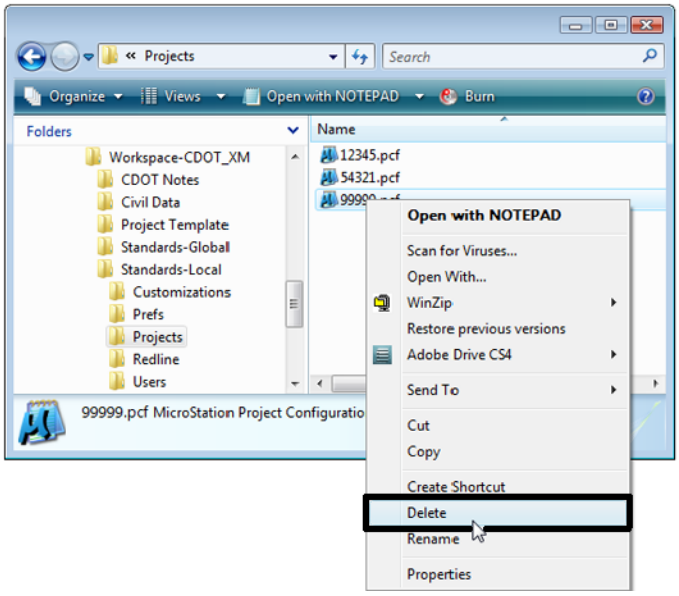
4. Select **File > Save As**, name the file **54321.pcf**. and select **Save**.



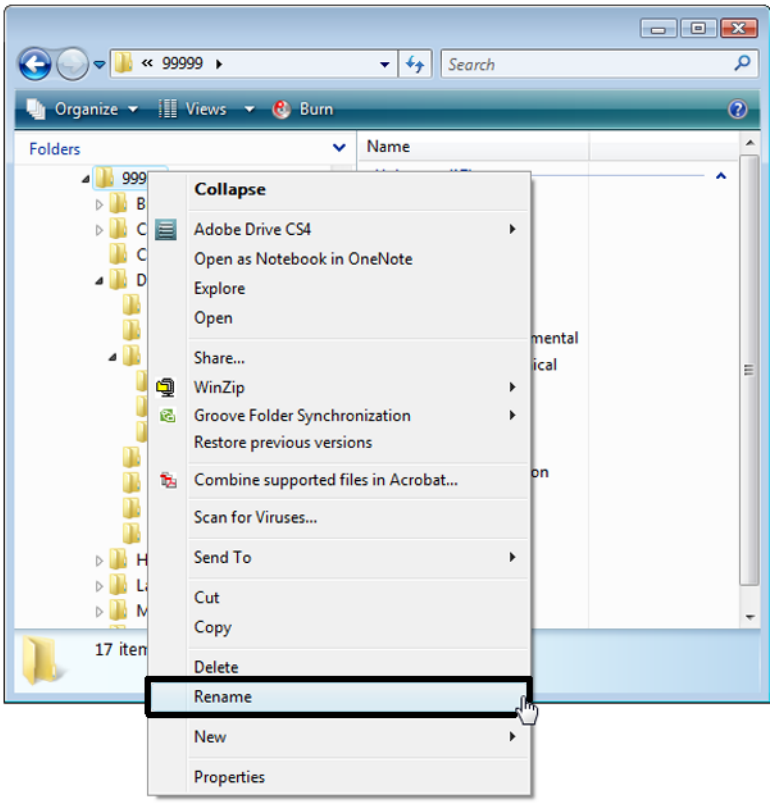
Note: By updating the MS_DEF path, all reference paths are updated as well.

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

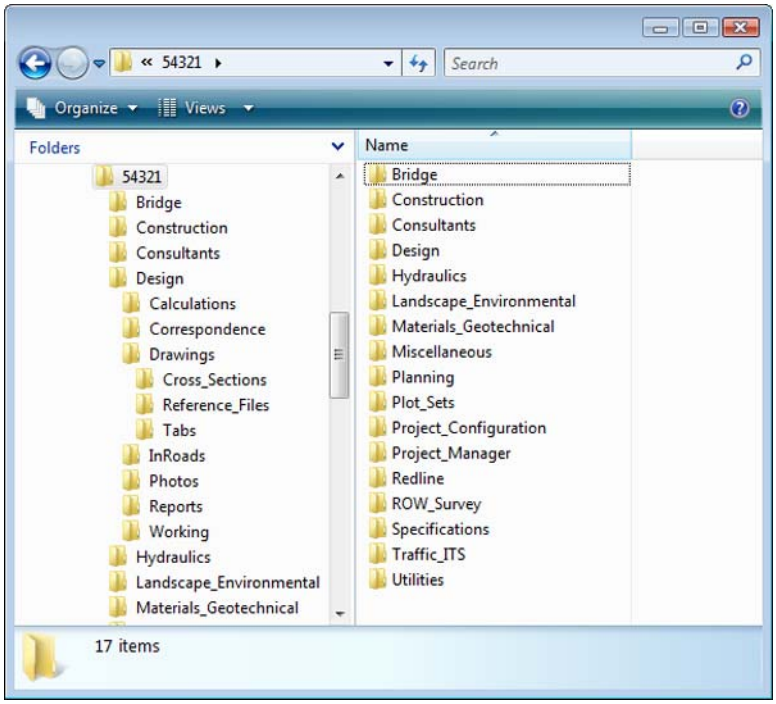
6. Delete the **99999.pcf** file from the **C:\Workspace\Workspace-CDOT_XM\Standards-Local\Projects** folder.



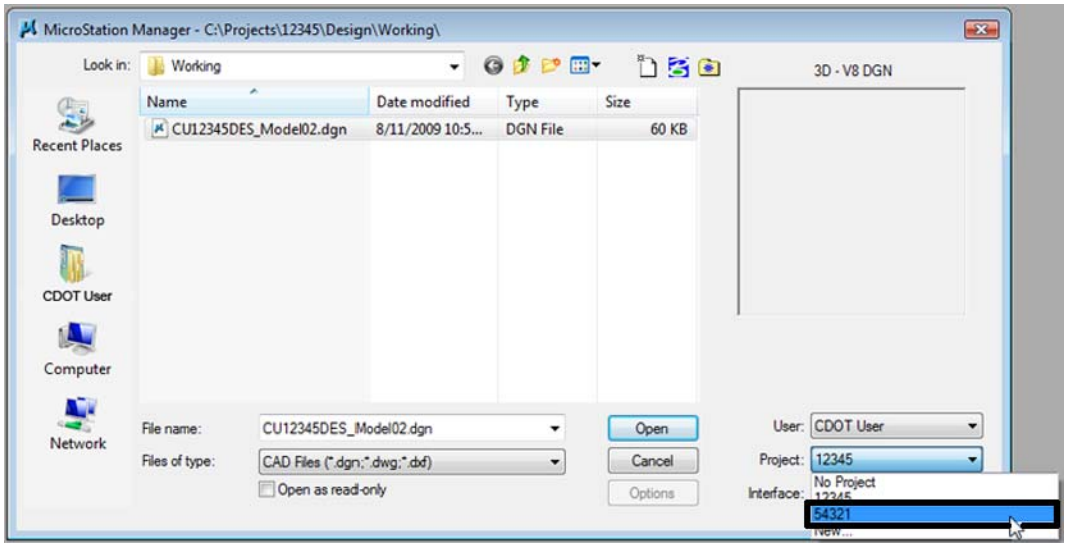
7. Using My Computer or Explorer, navigate to the **C:\Projects\99999** folder.



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

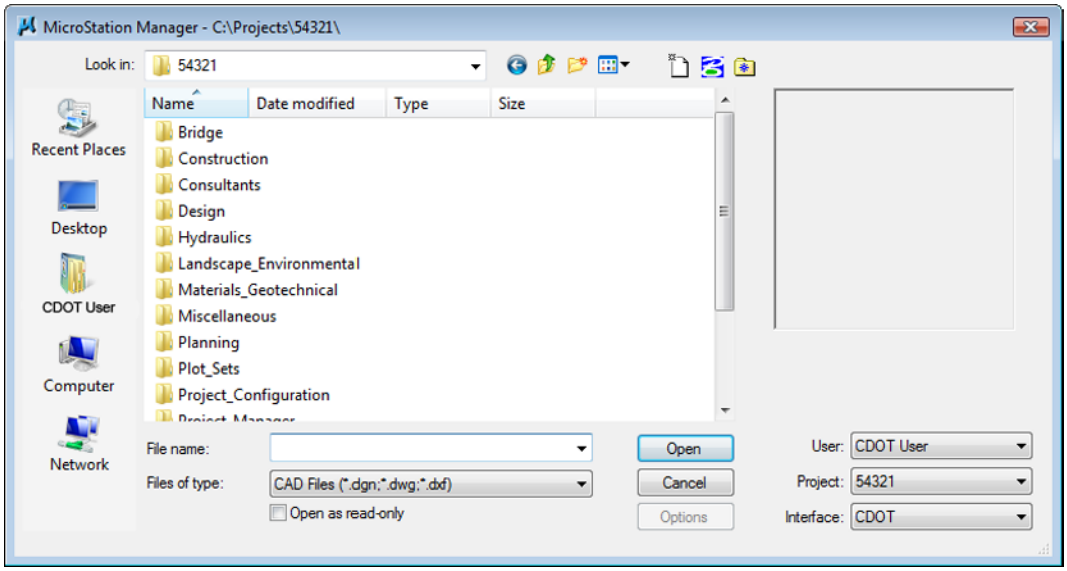


9. Start MicroStation and select the **Project** drop-down



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

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



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**.