

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_TypISect##.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.

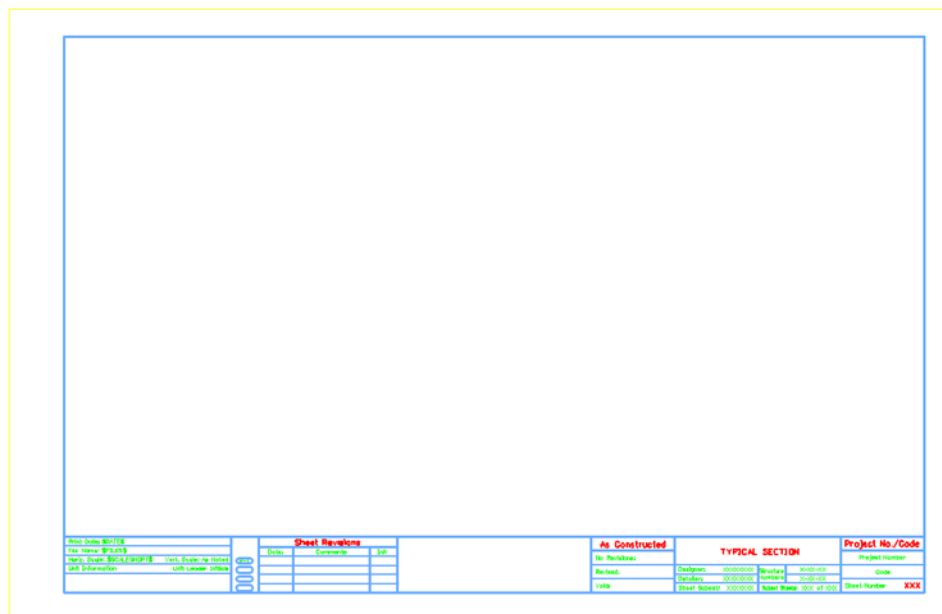
Chapter Objectives:

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_TypISect##.dgn** from the **\12345\Design\Drawings** folder.



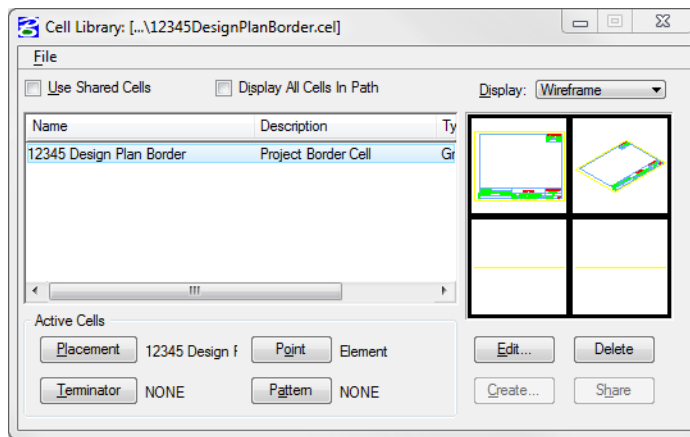
The file opens and contains the generic border.

2. Select **File > Save As...** and rename the file to **12345DES_Typ1Sect01.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.
2. 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.

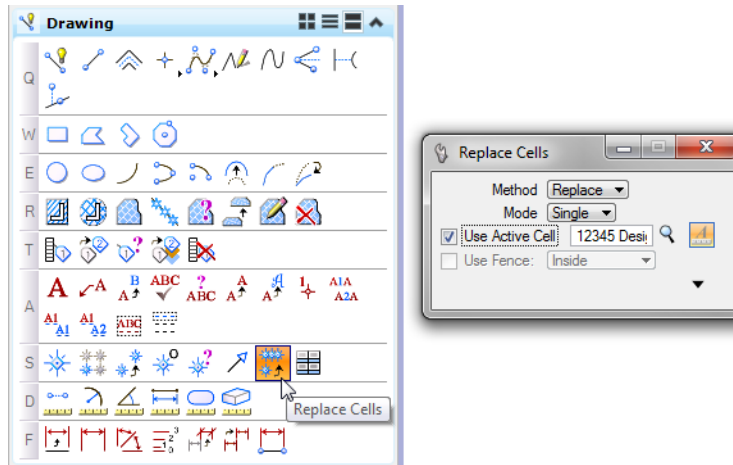


The cell library only has one cell (model) – the **12345 Design Plan Border** that you previously created.

6. Select **Placement** to make the border the active placement cell.
7. **Close** the **Cell Library** dialog box.

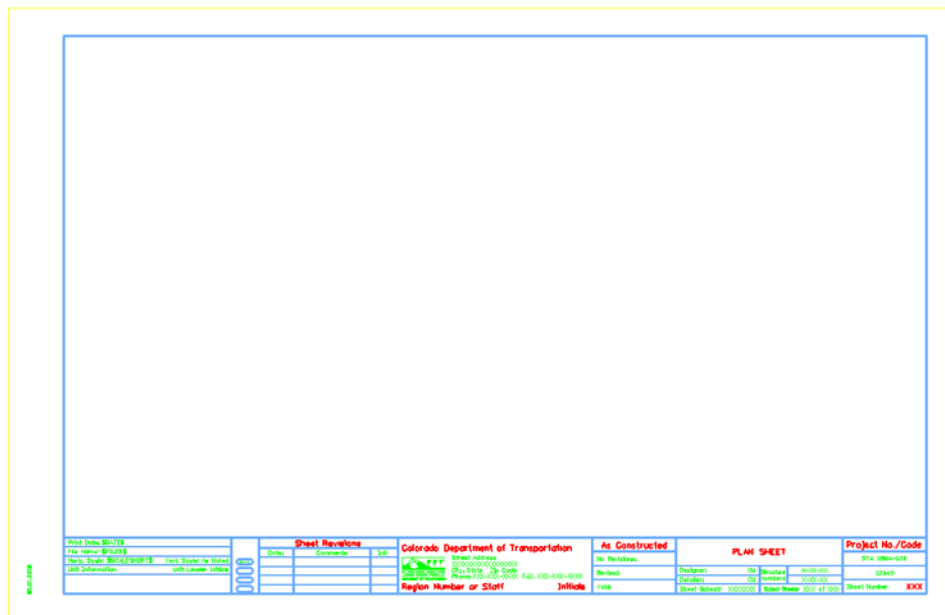
Replace the border

1. Select **Replace Cells** from the **Cells** toolbar under the Drawing task tab.



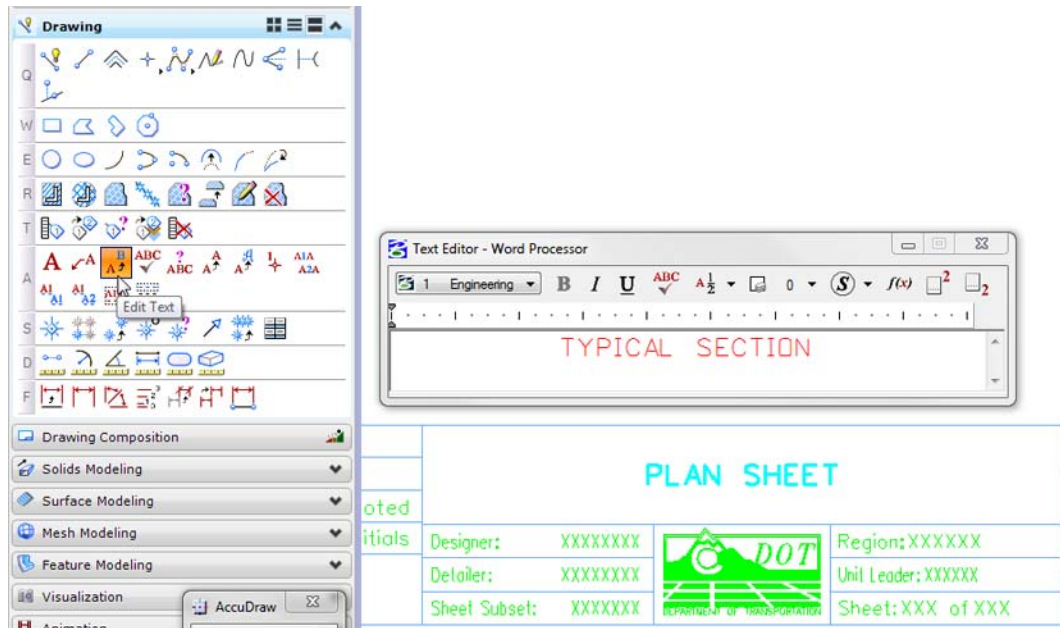
2. In the Tool Settings box
 - ◆ Set Method to Replace
 - ◆ Set Mode to Single
 - ◆ Toggle on Use Active Cell
3. When prompted to **Identify Cell**, <D> on the Typical Section Border.
4. <D> to accept.

The generic border is replaced with the project border.

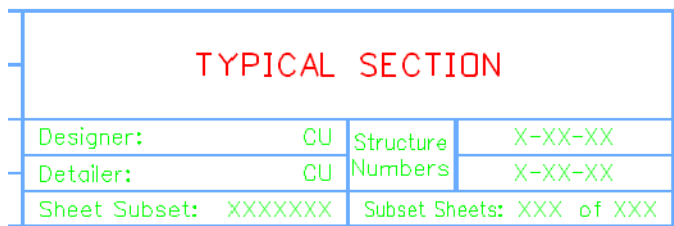


Lab 15.3 - Edit the Border Text for a Typical Section Sheet

1. Select the Edit Text Command from the **Text** toolbar under the **Drawing** task tab.
2. <D> on the Plan Sheet text.
3. Change the text to **Typical Section**.



4. <D> to accept.



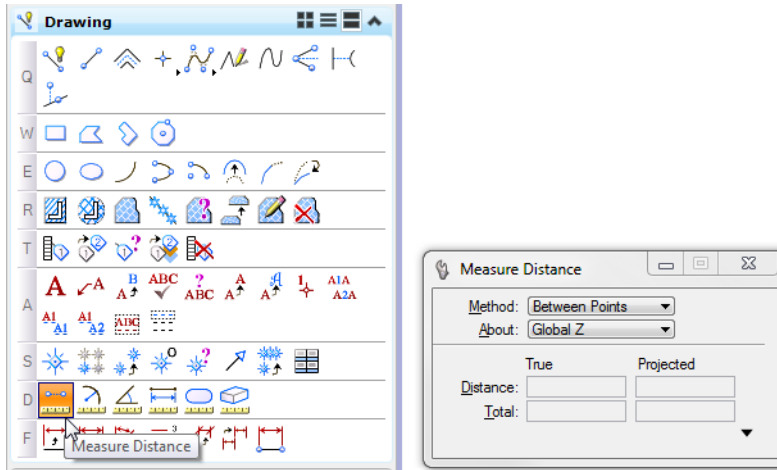
Lab 15.4 - Check Model Properties

1. Select File > Models from the menu (or select the Models icon from Primary Tools).
2. Select the Edit Model Properties icon

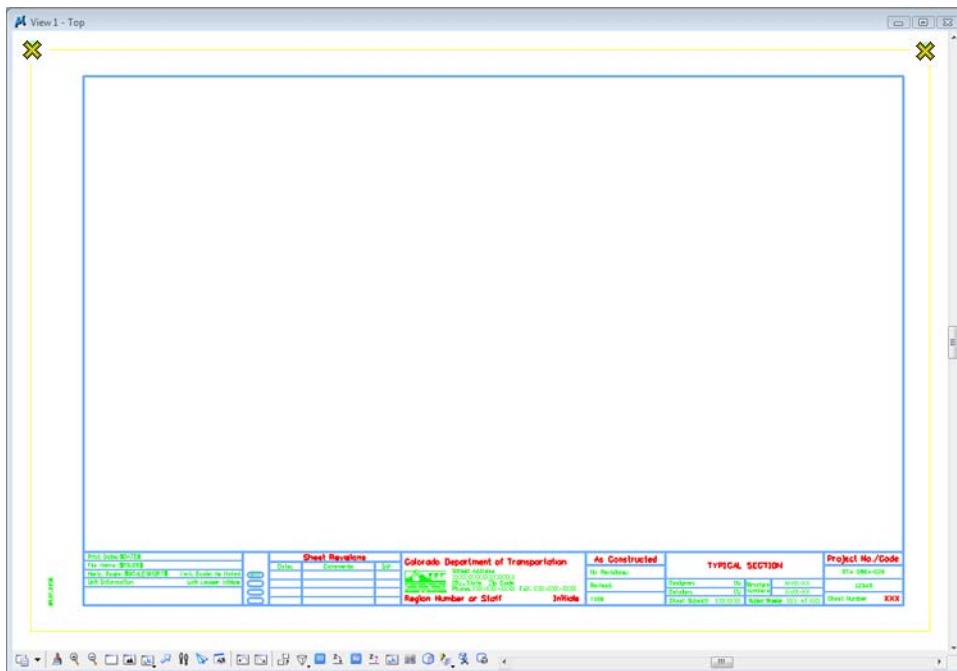
Note that the **Annotation Scale** factor is set to 1:10 for running the CDOT Typical Section Program. The text placed from the program will appear the correct size.

Note: You must change the **Annotation Scale Factor** if you run the **Typical Section Program** in any file other than the JPC#DES_TypISect##.dgn file.

3. Select the **Measure Distance** command and set the **Distance** to **Between Points**.



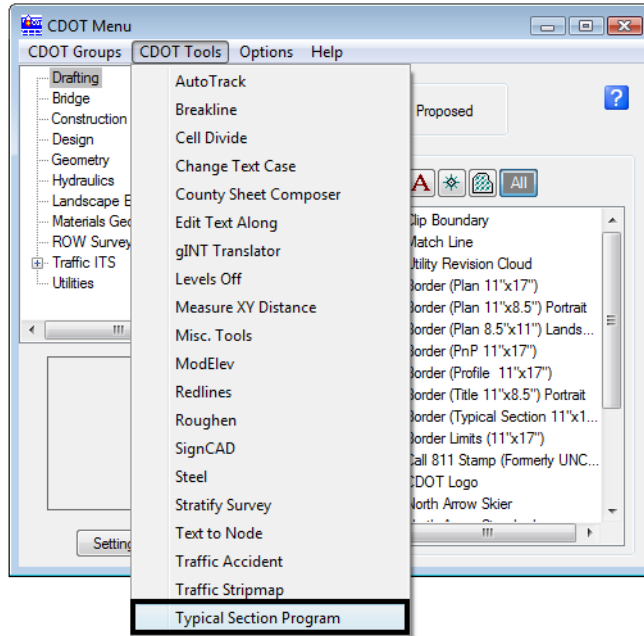
4. Measure the height and length of the border (AccuSnap along the yellow edge).



Note that the border measure 110 x 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.

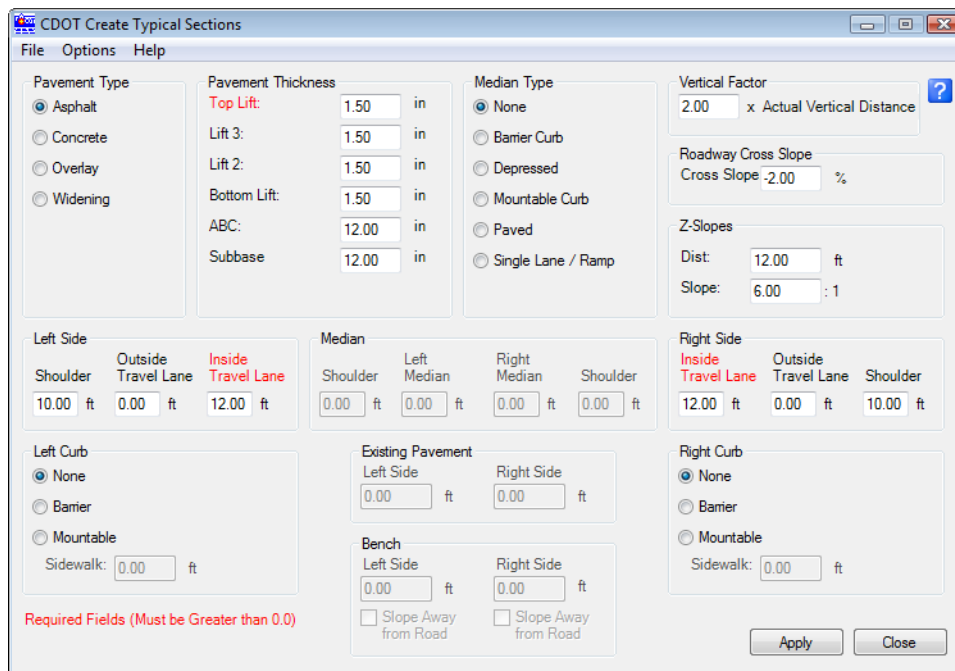
Lab 15.5 - Start the Typical Section Program

1. On the CDOT Menu, select CDOT Tools > 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.

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 check mark).

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 check mark next to **Writelock** indicates that it is on.

2. Set the **Typical Section Program** options as shown.

The screenshot shows the 'CDOT Create Typical Sections' dialog box with the following settings:

- Pavement Type:** Asphalt (selected)
- Pavement Thickness:** Top Lift: 3.00 in, Lift 3: 1.50 in, Lift 2: 0.00 in, Bottom Lift: 0.00 in, ABC: 12.00 in, Subbase: 12.00 in
- Median Type:** None (selected)
- 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: 10.00 ft, Outside Travel Lane: 0.00 ft, Inside Travel Lane: 12.00 ft
- Median:** Shoulder: 0.00 ft, Left Median: 0.00 ft, Right Median: 0.00 ft, Shoulder: 0.00 ft
- Right Side:** Inside Travel Lane: 12.00 ft, Outside Travel Lane: 0.00 ft, Shoulder: 10.00 ft
- Left Curb:** None (selected), Sidewalk: 0.00 ft
- Right Curb:** None (selected), Sidewalk: 0.00 ft
- Existing Pavement:** Left Side: 0.00 ft, Right Side: 0.00 ft
- Bench:** Left Side: 0.00 ft, Right Side: 0.00 ft
- Options:** Slope Away from Road (Left), Slope Away from Road (Right)
- Buttons:** Apply, Close
- Note:** Required Fields (Must be Greater than 0.0)

3. Select **Apply**.

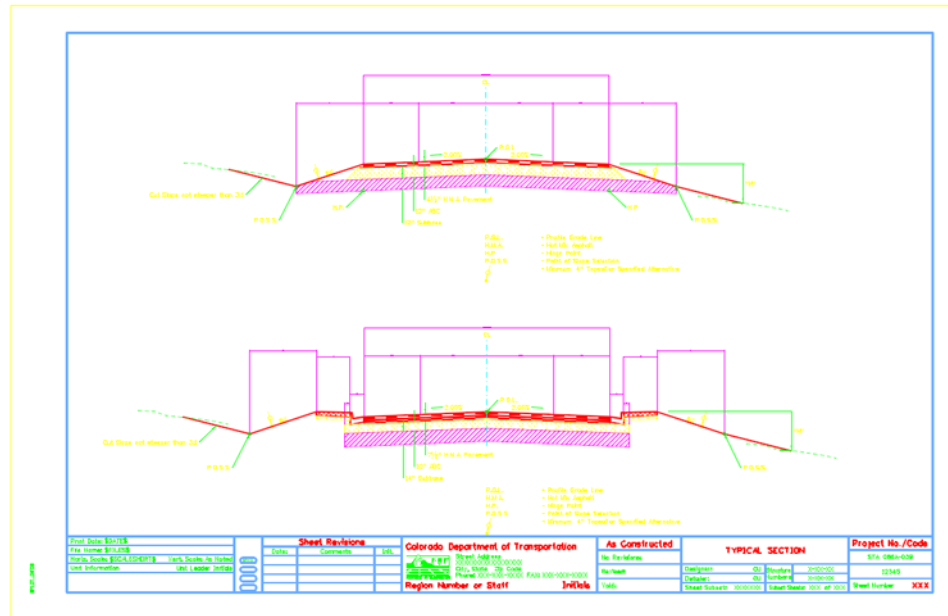
Create a 2-Lane Urban Typical Section

1. Set the Typical Section Program options as shown.

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.

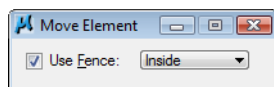
The input file is saved. If you need to generate this typical section again, Select File > Open from the Create Typical Section dialog box and select this text file.

4. Close the Create Typical Section dialog box.

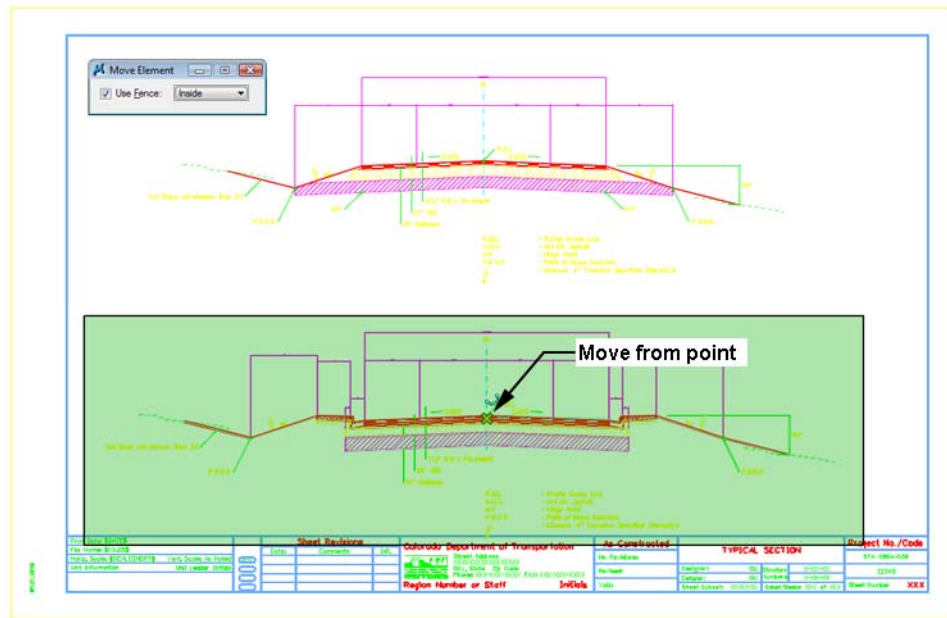
Align the Sections

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.



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.

