20. D&C Manager – Additional Functions

In this exercise we will demonstrate other ways to use D&C Manager, to control graphics displayed, cell access and quantity calculation from graphics.

I.) Display Control

1) **Open** the MicroStation file

C:\Projects\Roane\SR95PoplarCr\ROSR95Proposed.dgn

2) **Go to File → References** and **turn on** the display of the Survey topo and Alignments DGN files. **Fit the view** so that all graphics are showing.

3) **Access the D&C Manager**.

Select the item **Drafting Standards → Roadway Linework → EOP Prop**

4) **Set Display** mode in Design and Computation Manager. In the expanded dialog, **click on** the Display icon (computer screen view divisions) which will open up the Display control tool box.

NOTE:
In D&C Manager's tool box mode the Display control icons are shown always and you can pick them as needed.

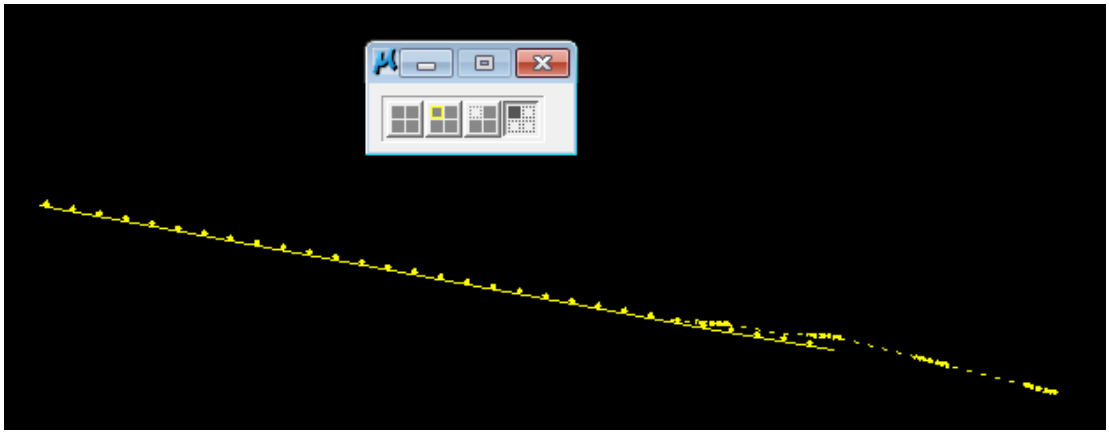
5) The different display control icons change display for a D&C Manager item or items as follows:

Normal Display	all graphics are shown
Highlight Selection	items are highlighted
Hide Selection	items are turned off
Display only Selection	only items are shown

Try the different modes out while you have **EOP Prop** selected**.** You may need to zoom in on the plan view graphics.

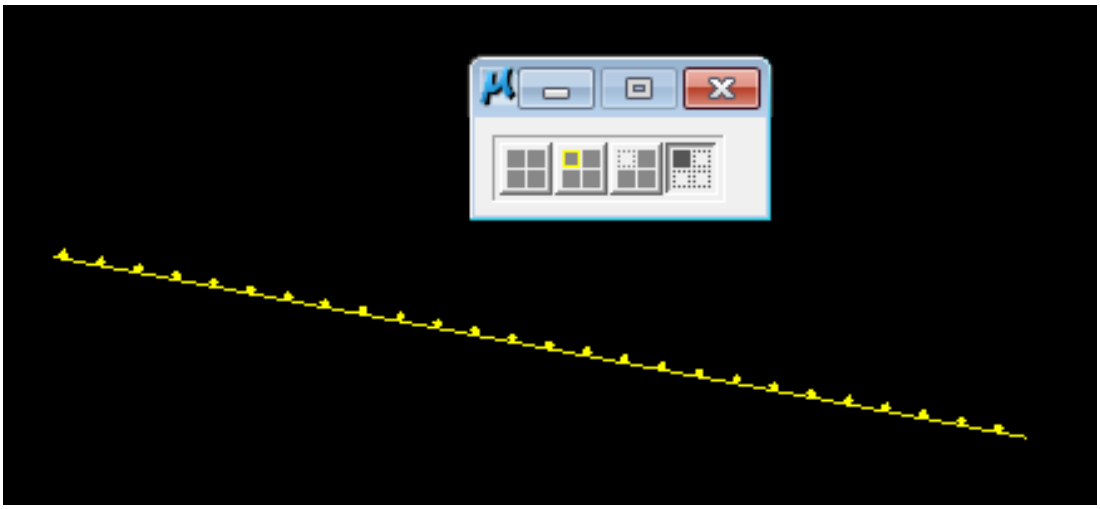
NOTE:
One of the best uses for the Display functions are to check graphics such as pavement lines or guardrail items when they are not being reflected in cross section runs. The Display controls can show you immediately if graphics are not set at the correct level or symbology.

6) Back in D&C Manager, **select** the category **Drafting Standards → Guardrail. Select** the last display icon, **Display only Selection**.



Now only the guardrail items placed previously are showing.

7) **Select** the item **Drafting Standards → Guardrail →GR Single Prop.**

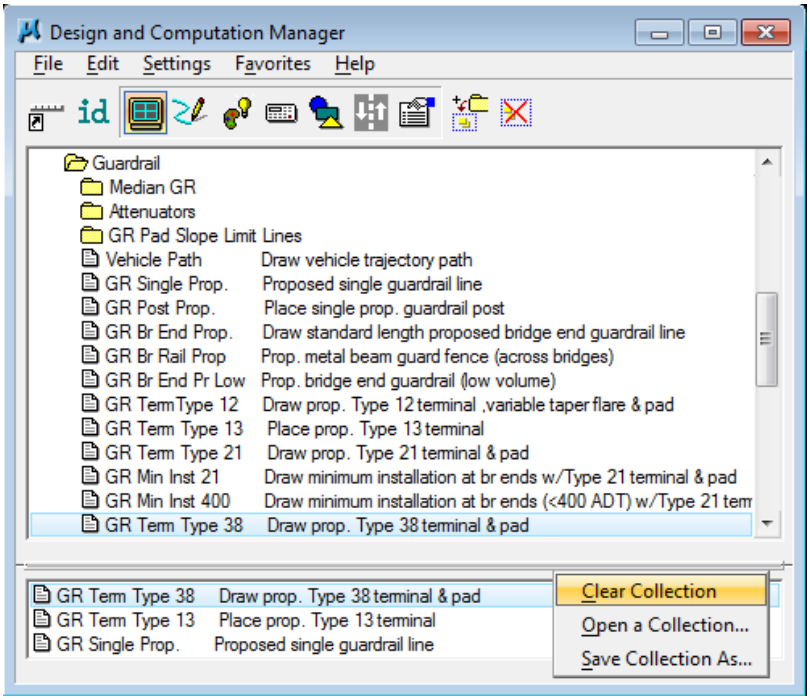


Now only that guardrail item should be showing.

In case you haven't discovered this by accident, if you **double click** on an item in D&C Manager's expanded mode then it is added to a collection box at the bottom.

This way you can pick several different items for the Display functions to work on. If you right click in the collection area then you will get options to **Clear** the collection, **Save** it or **Open** one saved previously.

8) Try adding different items under guardrail to the collection box and experiment with the Display controls to check the results.



9) **Right click** in the collection area at the bottom of D&C Manager and **pick Clear Collection**. **Select** the **Normal Display** mode so that all graphics are showing again.

II.) Cell Access

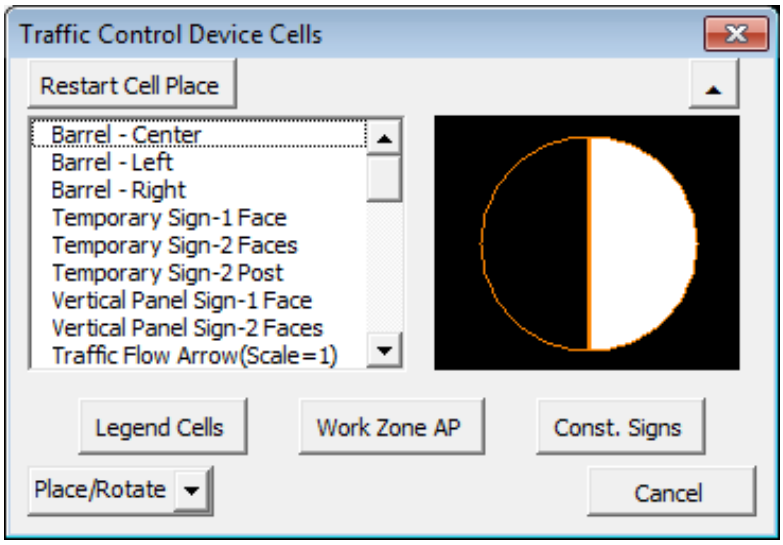
The T.D.O.T. Roadway Design Division cell libraries provide over 1200 standard cells. Although GEOPAK does provide tools for placing individual cells defined as items in D&C Manager, it is just not feasible to set up so many that way. Instead we have MicroStation visual basic applications called from D&C Manager which access groups of cells.

In this exercise we will look at the cell access dialog for Traffic Control Device Cells to illustrate how these cell dialogs function.

1) **Access D&C Manager** and **set** mode to **Design**.

2) **Double click** on item
Drafting Standards → Traffic Control (Temporary) → TC Device Cells

The **Traffic Control Device Cells** dialog is opened.



All cell dialogs are in this same basic format, a cell pick list by description on the left with a viewing window on the right.

At the bottom left of the dialog is the **Cell Placement Type** option.

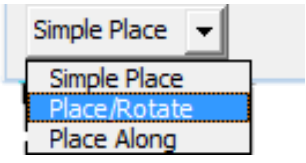
A **"window shade"** minimize button is located on the upper right.

The **Restart Cell Place** command button at the upper left can be used anytime other MicroStation commands have been used and you wish to go back to placing the currently selected cell.

Also included at the bottom are other special programs that might be needed or used in conjunction with these cells. In most cases the special tool options on cell dialogs are also accessible from D&C Manager directly.

3) When a cell is chosen from the list, the cell is made active and placement is started. The method of cell placement depends on the **Cell Placement Type** which is set at the lower left. The default value for this option varies and is set to the most common one needed for the cells from the dialog.

Click on the Cell Placement Type button and review the options which are described here:

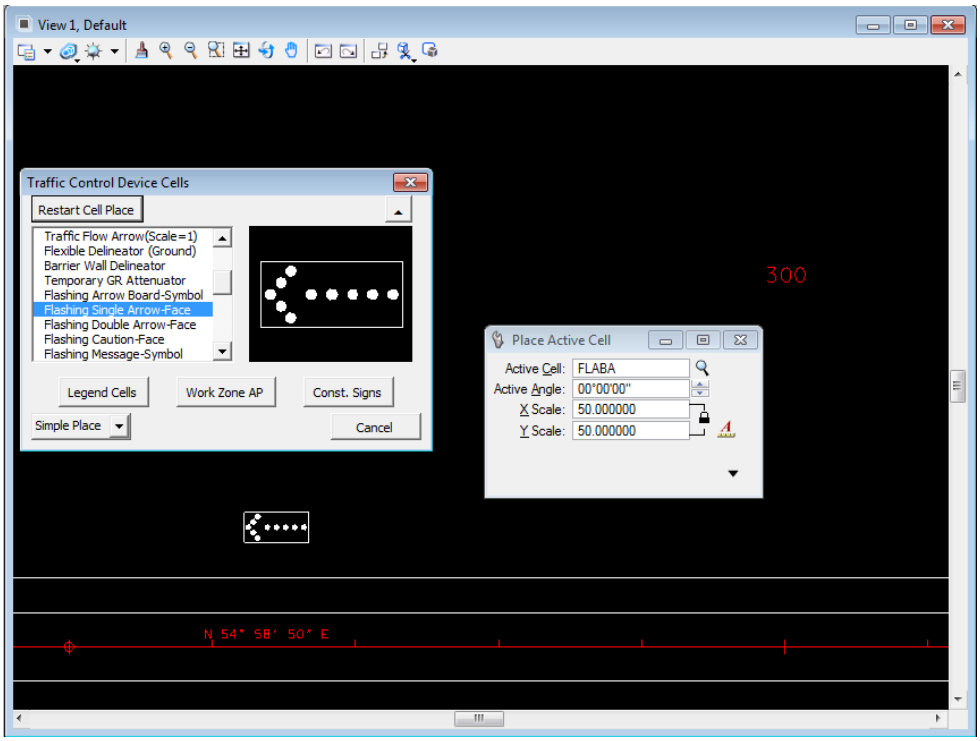


Simple Place places cell with MicroStation's Place Cell command with settings for angle and scale

Place/Rotate	places cell by data point with dynamic rotation and setting for scale
Place Along	places cells along an element with settings for spacing, scale and angle
Place Sign With …	available on the sign cell dialogs, includes placement of sign face with text label, leader line and sign symbol

The Traffic Control dialog defaults to Place/Rotate but instead of using that method click on the option button and set it to **Simple Place**.

4) Scroll down the cell list and pick any cell. MicroStation's Place Cell command is started. Adjustments can be made for angle and scale prior to placing cell as needed using these basic controls.

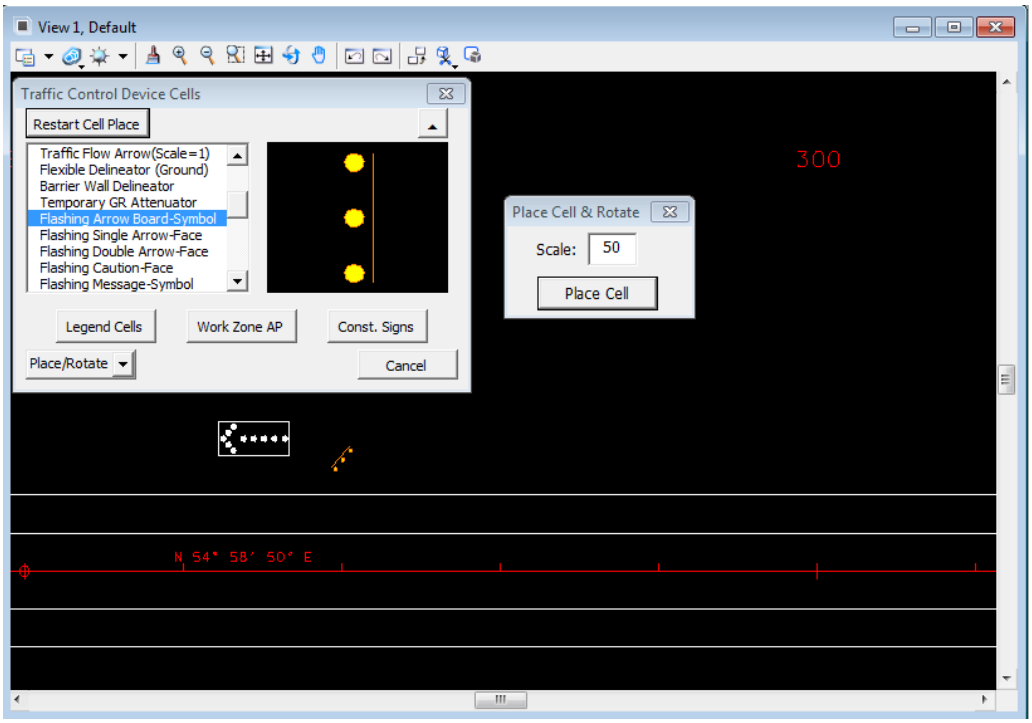


Data Point to place the cell. You may need to turn on level, **DESIGN - TRAFFIC CONTROL TEMPORARY – Devices,** to see the cell.

5) **Click on** the Cell Placement Type button and **set** it to **Place/Rotate**.

Pick another cell from the list. The **Place Cell & Rotate** dialog opens where you can adjust the scale as needed.

Data point in graphics at a location for the cell. Rotation is started so that the angle can be set dynamically.



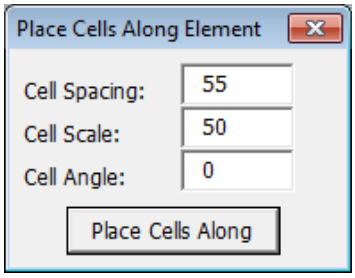
Data point to set the angle and place the cell.

The **Place Cell** command button on the Place Cell & Rotate dialog can be used anytime other MicroStation commands have been used and you wish to go back to placing the active cell with dynamic rotation

6) **Click on** the Cell Placement Type button and **set** it to **Place Along**.

Scroll back up in the cell list and pick the cell **Barrel – Left**. The **Place Cells Along Element** dialog opens where you can make control settings as needed.

Set the control settings as shown below: **Spacing 55, Scale 50 & Angle 0**.

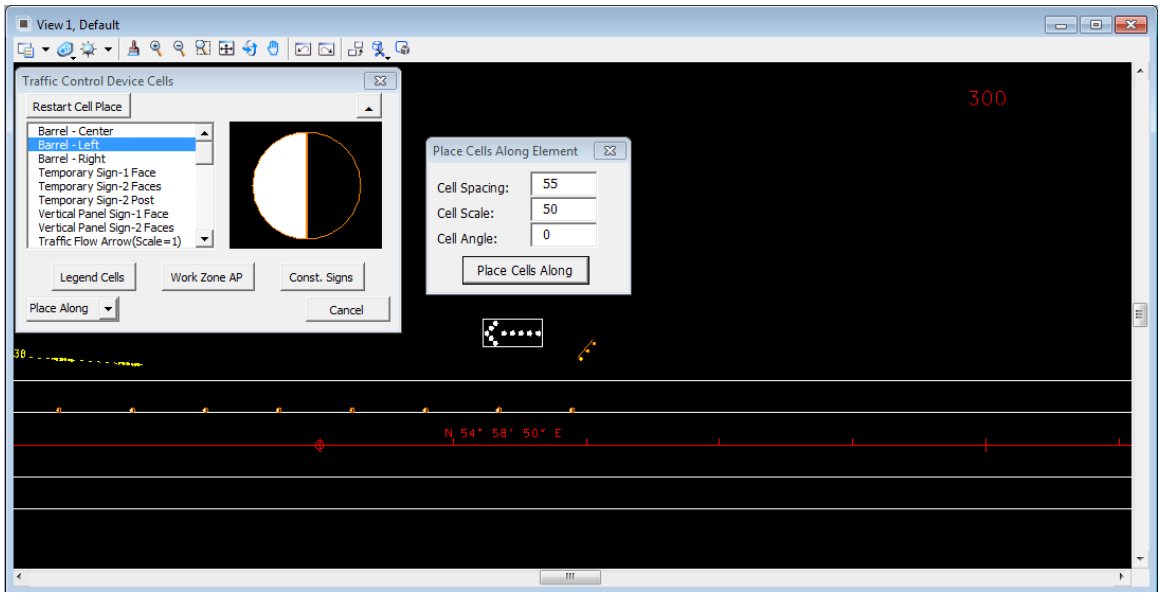


Click the **Place Cells Along** command button.

In the prompt field of the MicroStation status bar, we are being prompted to **Identify Element at beginning location**. **Data point** anywhere along our inside edge of pavement on the right side of the roadway.

Once the line is identified, we are prompted to **Accept/Reject ...Identify direction\end**. Accept the pavement line element to the right.

Barrel cells are placed on the 55' spacing along this line between the points given.

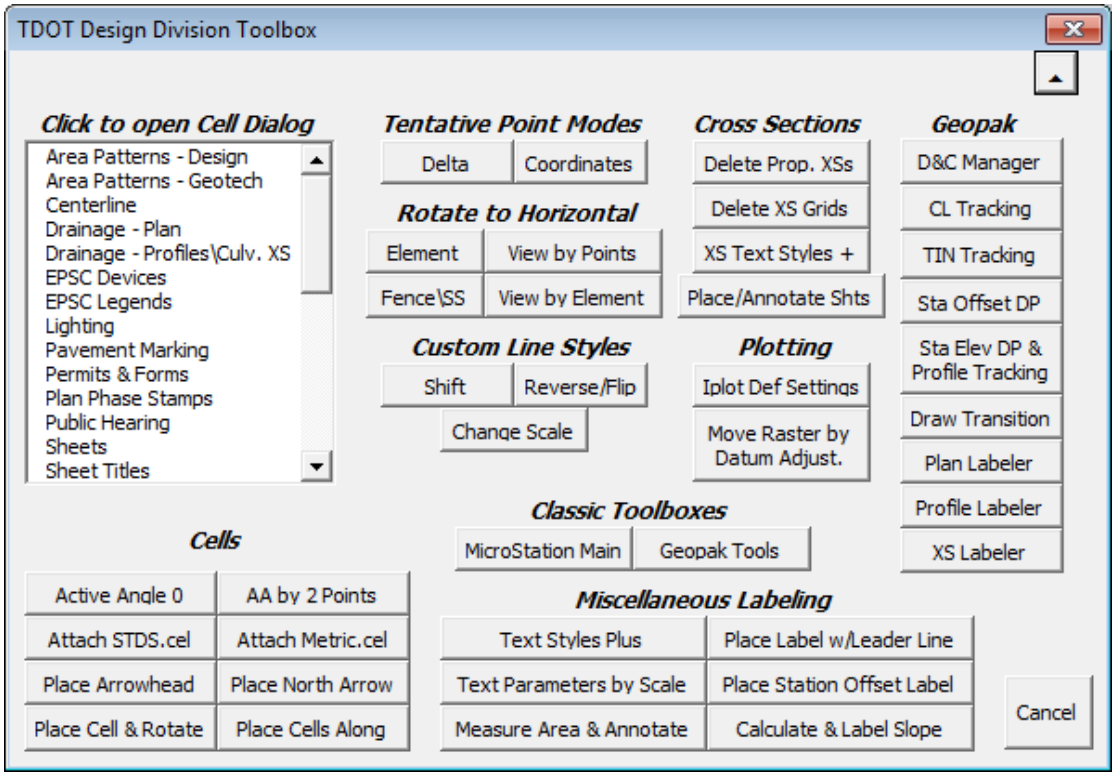


NOTE:
For the user's convenience all cell dialogs are available through the following locations:

D&C Manager items	as illustrated in this exercise
T.D.O.T. drop down menu	from the MicroStation menu bar with TDOT interface active
TDOT Design Division Tool Box	special tool box with many commonly used functions including GEOPAK & MicroStation tools as well as customized T.D.O.T. Roadway Design Division tools.

The TDOT Design Division Tool Box is available from MicroStation menu bar at
T.D.O.T. → Tools → Design Division Tool Box

or from GEOPAK's D&C Manager at
Drafting Standards → Tools → Design Toolbox



III.) Quantities

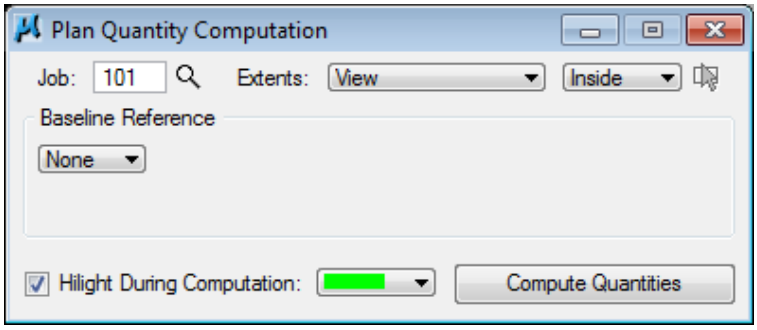
1) **Access** the **D&C Manager**.

2) **Select** the category **Pay Items → Guardrail Items**

3) **Set Compute** mode in Design and Computation Manager. In the expanded dialog **click on** the Compute icon (small calculator) which will open up the **Plan Quantity Computation** dialog.

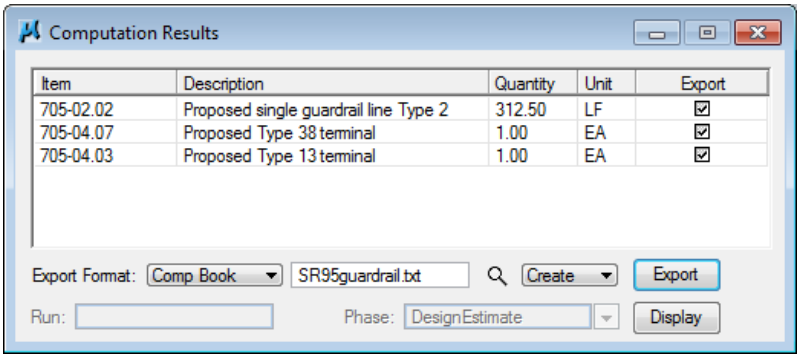
4) Make sure the **Job** is set to **101** and **Extents** is set to **View**.

Set the **Baseline Reference** to **None** and **toggle on** the **Highlight During Computation** option

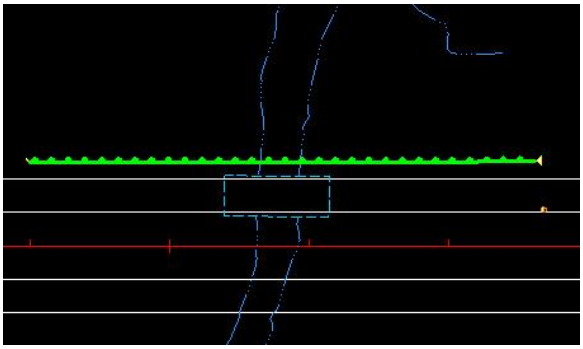


5) **Adjust** your View 1 as needed so that our guardrail is shown there. **Turn on** level **DESIGN - TRANSPORTATION - Roadside Barriers** and refit the view so that you see the guardrail on the left around station 290+00.

6) **Click on Compute Quantities.** The graphics are read and the **Computation Results** dialog is opened with the totals for items under the selected category.



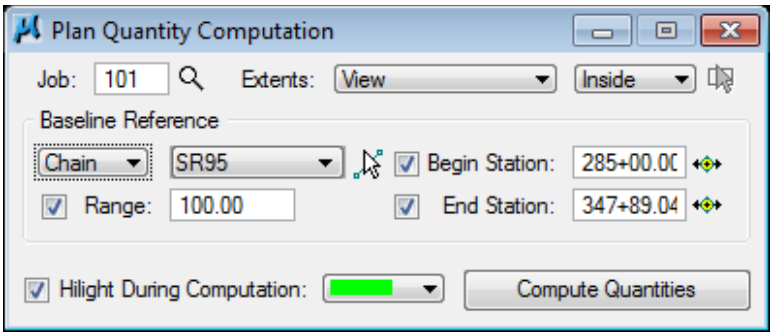
In the MicroStation view, the guardrail items are marked with your highlight color.



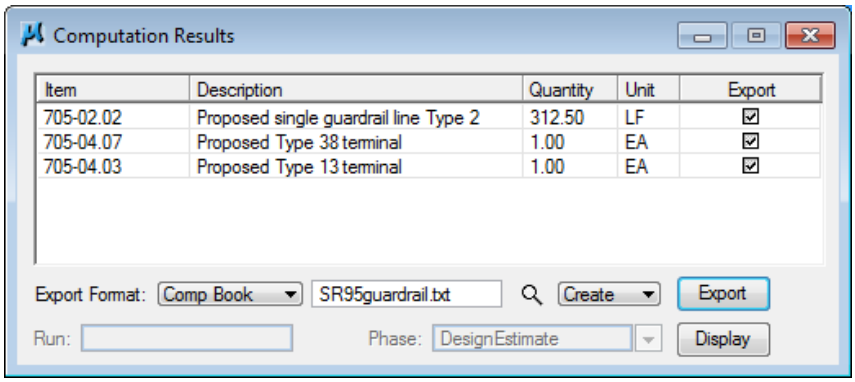
NOTE:

The quantities displayed in the **Computation Results** dialog can be saved to a CSV file (comma separated values) which can then be used to import quantities directly into the Estimated Roadway Quantities Excel worksheet. In the **Computation Results** dialog **set** Export Format to **CSV By Item,** keyin a filename and **click Export.**

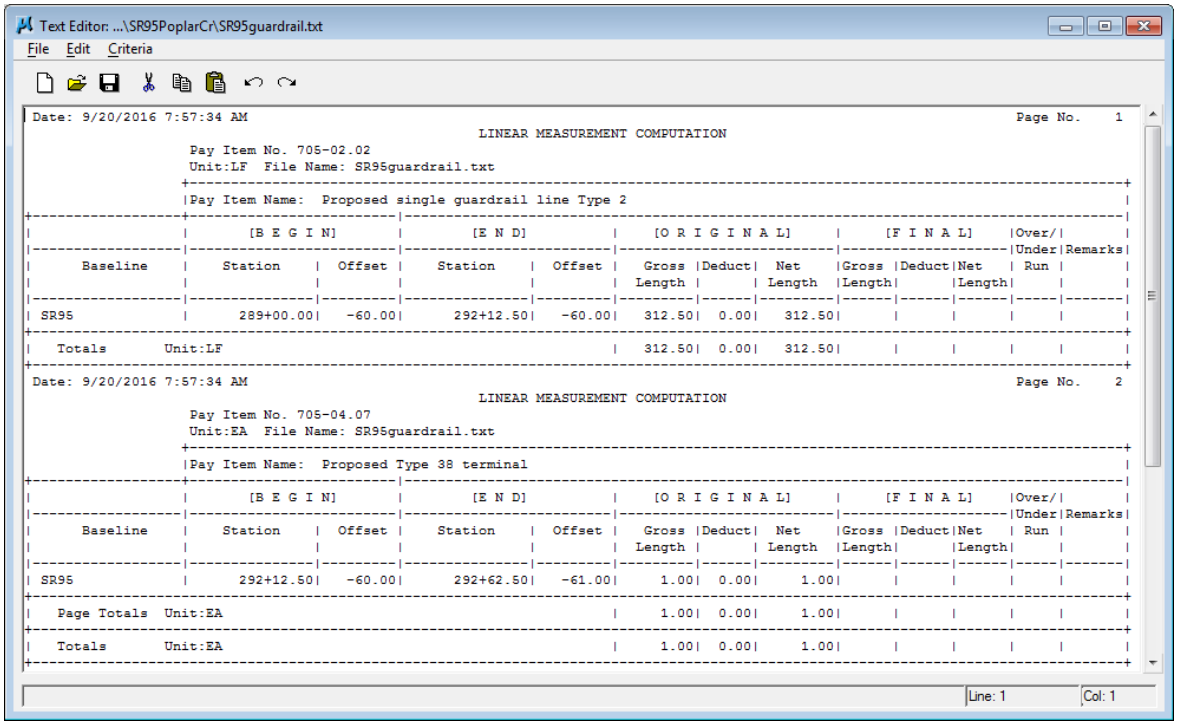
7) Since we need station limits for our guardrail tabulations let's try a different set up. In the Plan Quantity Computation dialog **set Baseline Reference** to **Chain** and chain **SR95** as shown. The **Range** setting is used to make sure items on other roadways are ignored and **Stations** can limit the area of the specified roadway as well.



8) **Click on Compute quantities**. In the Computation Results dialog **set Export Format** to **Comp Book,** keyin the filename **SR95guardrail.txt** and **click Export.**



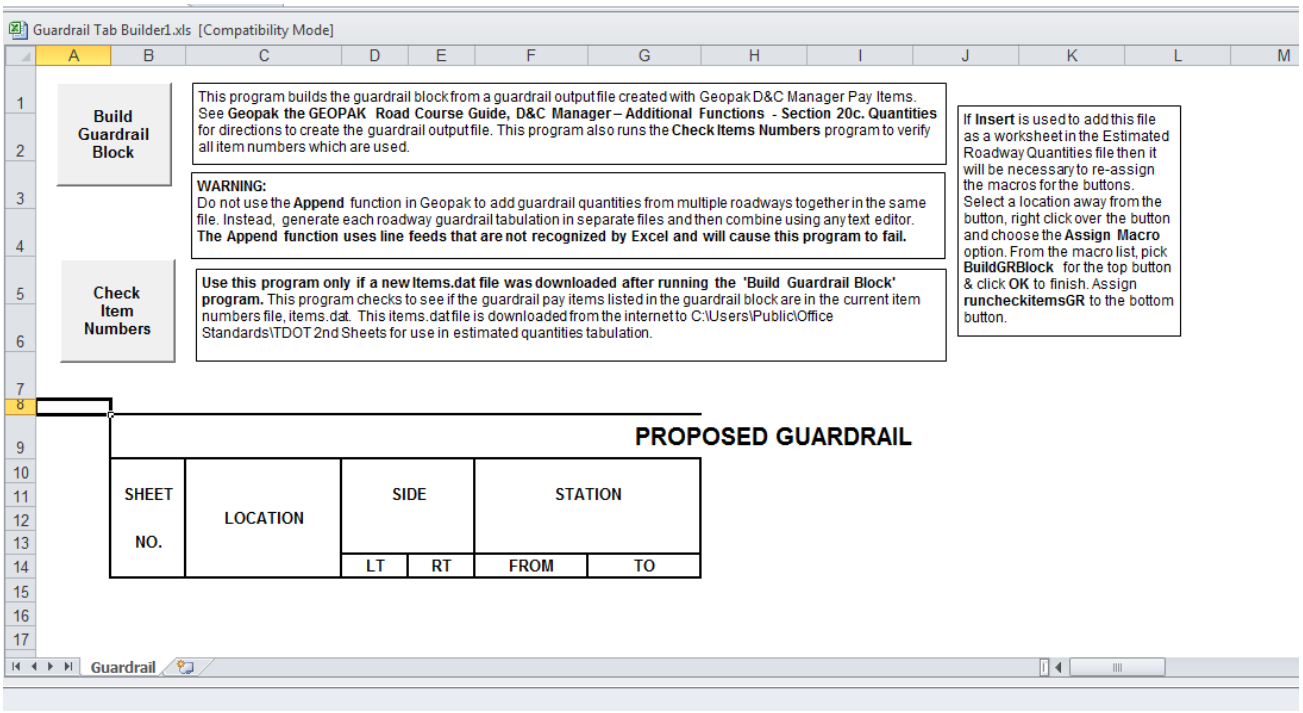
9) **Use** GEOPAK's text editor to open the file **SR95guardrail.txt** and review the results of your latest computation.



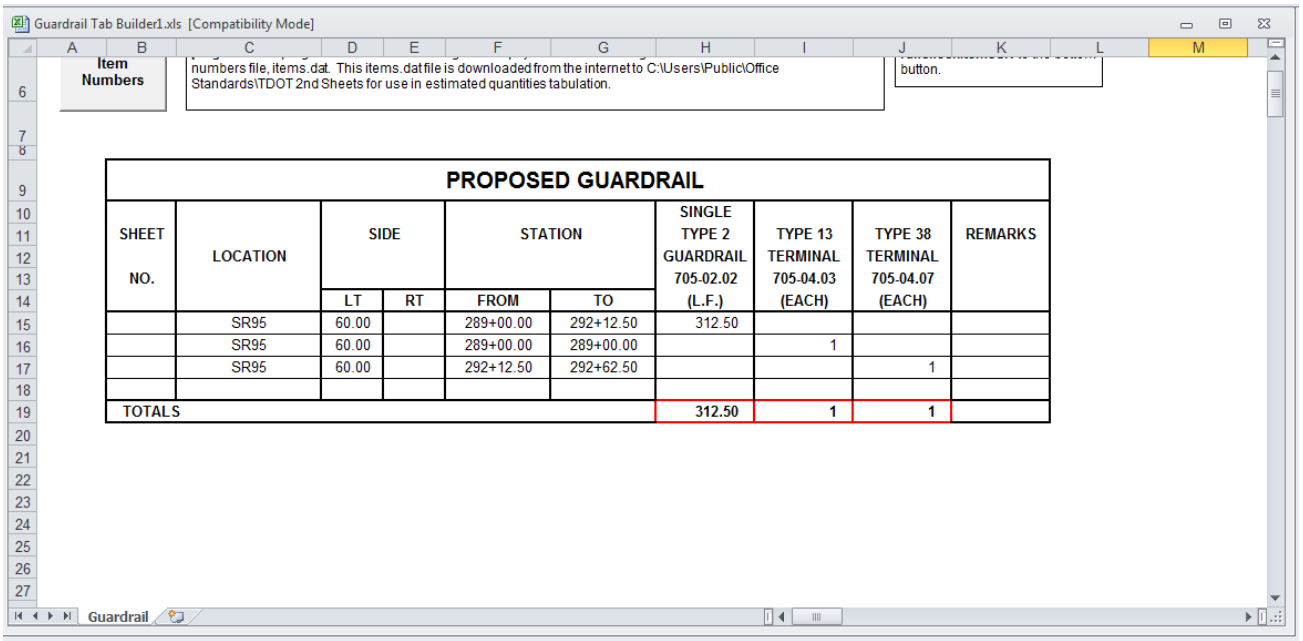
NOTE:
Guardrail quantities generated in this way can be used to automatically build the data into our standard tabulation format using the program available in standard Microsoft Excel template **C:\Users\Public\OfficeStandards\TDOTEnglishTabQuantities\GuardrailTabBuilder.xltm.**

Before making any changes to this file, use "save as" to save it into your working directory so you do not alter the template.

10) In the Working Directory. double-click to open file **GuardrailTabBuilder.xls**

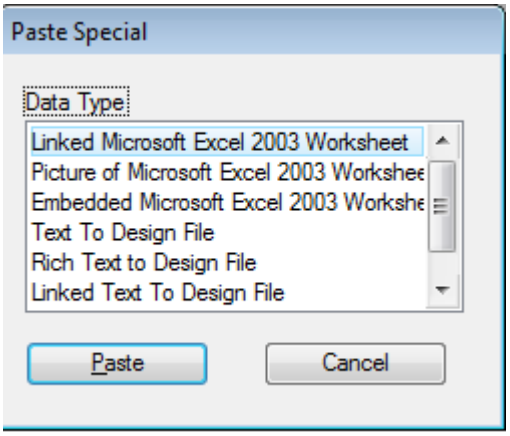


11) Select the option **Build Guardrail Block ,** go to Working Directory and select and open **SR95guardrail.txt**

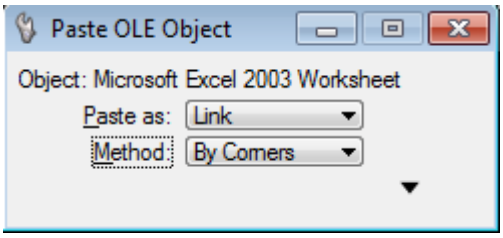


Select **File – Save to** save Proposed Guardrail tabulated block to Working Directory

12) Tabulated block can be placed in a Microstation dgn file by dragging the cursor over the block to highlight it, right –click to “copy”. Then go to dgn file , select **Edit – Paste Special, Linked Microsoft Excel 2003 Worksheet**



Select **Paste,** then **By Corners**



13) Experiment with different modes and export options to familiarize yourself with the computation functions.

If you wish, calculate some quantities on the **traffic control devices** placed in the previous exercise or perhaps the **6-30 C&G** we placed in the urban section at the end of the project.

For the curb and gutter, you can use a rate of **0.07181** cubic yards of concrete per foot which would be used for a gutter thickness of 9”. The user is prompted for this rate on each C&G element that is found. It will remember the last rate entered so you only have to key it in once and can just accept it on subsequent elements.

Refer to standard roadway drawings RP-MC-1, RP-MC-2 and RP-NMC-10 for applicable rates of concrete per linear foot for curb and gutter.

As was illustrated with the Display functions at the beginning of this chapter, a **Collection** area is set up at the bottom of D&C Manager when in **Compute** mode to allow the selection of various items from different categories under Pay Items.

NOTE:

Only D&C Manager items under the **Pay Items** category are set up for quantity calculation from graphics.

14) **Exit** the **Plan Quantity Computation** dialog and Design and Computation Manager.