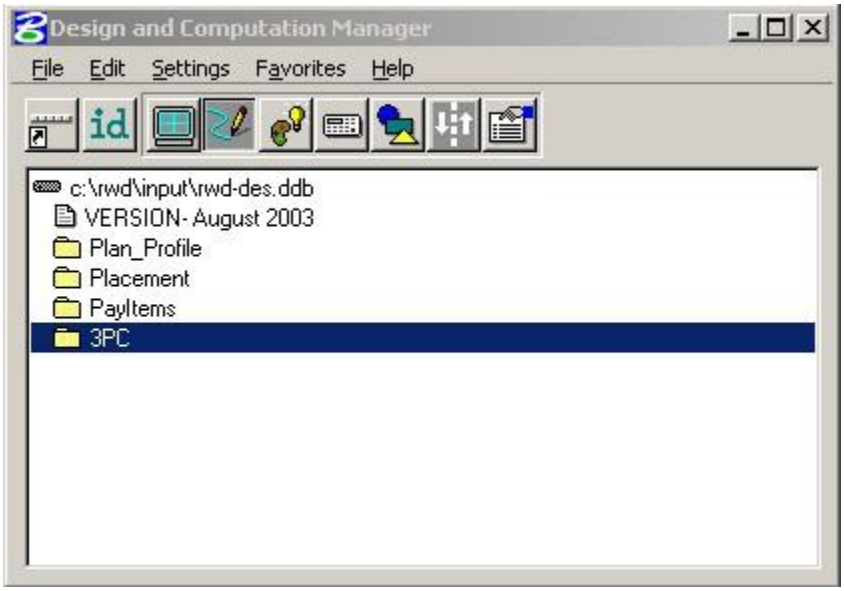
D&C Use & Quantity Recap (3-1-2011)

OverView

Plan View Quantities can be computed with Geopak's D&C Manager. Cells, Linear Elements, and Area's can be computed from elements placed in a design file. Most of the DOT's Pay Items which can be calculated from a plan view have been added to RWD-DES.DDB which is the database file which should be opened when the D&C Manager is invoked. Also the D&C Manager has a tool which aids in the placement of Pavement Marking. The following pages describe how to use the D&C Manager for computing Plan View Quantities.

Getting Started

1. To invoke Geopak's D&C Manager: Applications -> Geopak Road -> Design & Computation Manager. The following dialog will appear.



NOTE: Make sure that RWD-DES.DDB is the file that is open. If it is not, Tag FILE OPEN and open this file.

2. Double Click **PayItems**

3. Double Click the appropriate Pay Item Group depending on what you are wanting to PLACE or SET.

(See the next section for PLACEMENT & SET

PLACEMENT & SET

General

Geopak looks at the symbology of elements when computing quantities. As stated earlier, the three basic types of elements you will place & compute in the plan view are cells, linear elements (line, arc, etc.), and shapes. Because of the amount of Pay Items and the limited symbology combinations we have, each pay item has a Geopak attribute tag on it also distinguishing it from other pay items. The only way to get this attribute tag on the element you place which represents a pay item is to PLACE the element or SET symbology of the element through the D&C Manager.

This doesn't apply to cells though. You can place the cell in any manner you wish and they should be calculated correctly. Shapes must be placed through the D&C Manager. Geopak has a SHAPE tool which allows you to easily place shapes with the correct symbology. Linear Type elements also must be placed or symbology SET through the D&C Manager. The following are instructions for placing elements, so that they will be computed correctly.

Cells

Cells can be placed in any manner (i.e. AC=, throught DZINE menu, etc.) and calculated correctly.

PLACEMENT OF RAISED PAVEMENT MARKERS

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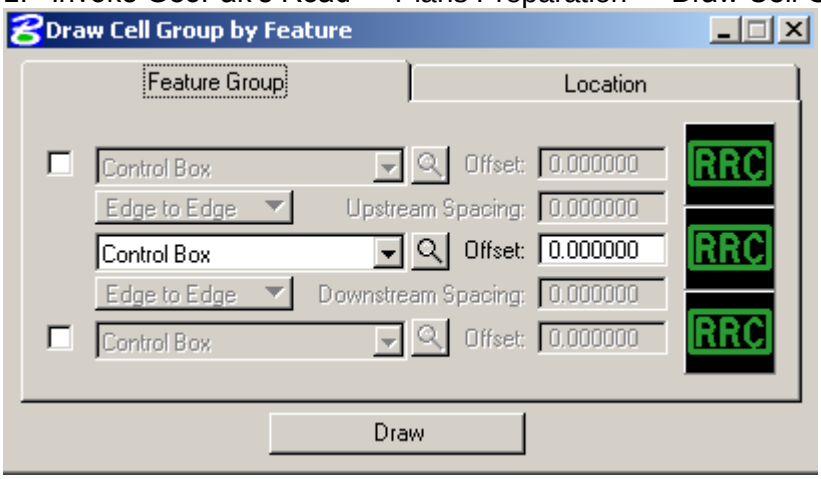
1. Invoke GeoPak's Road -> Plans Preparation -> Draw Cell Group by Feature"



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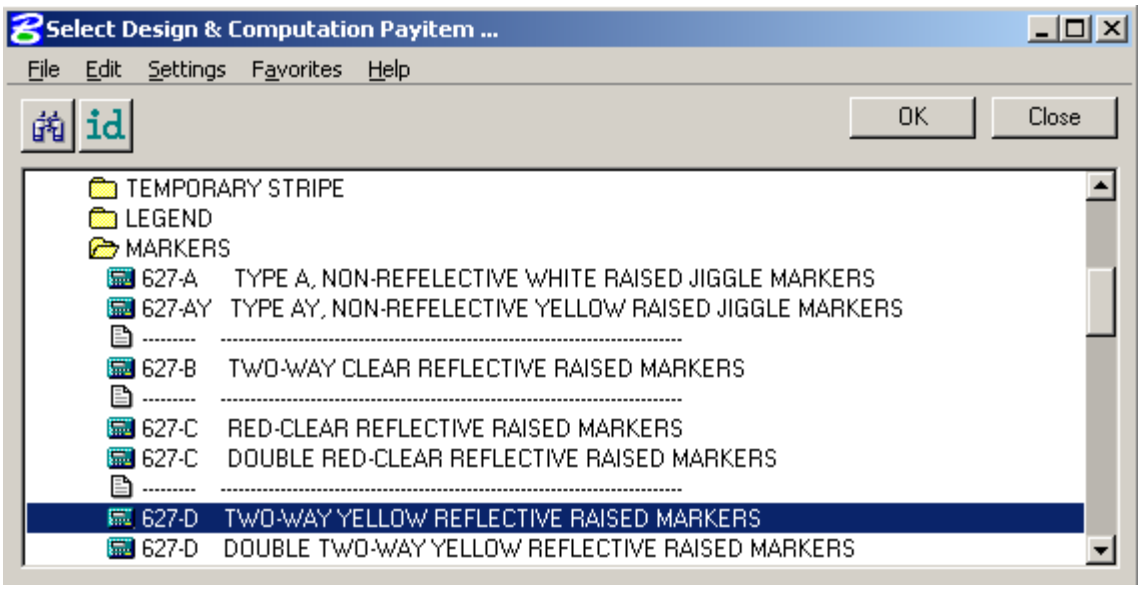
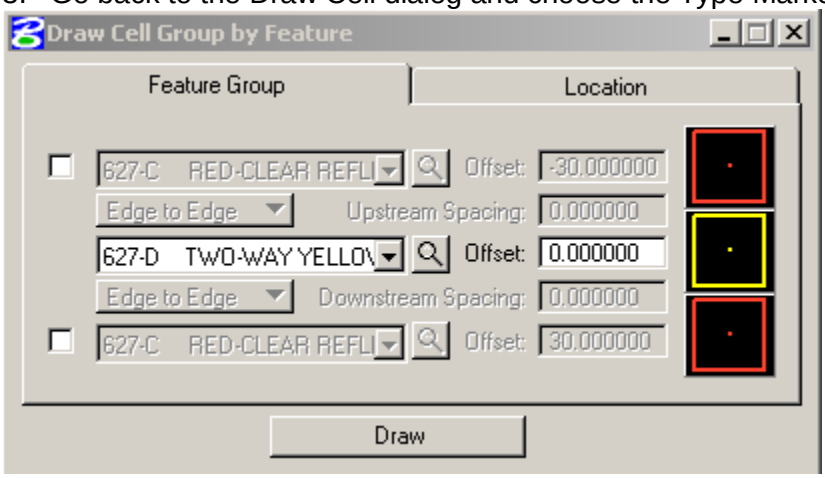
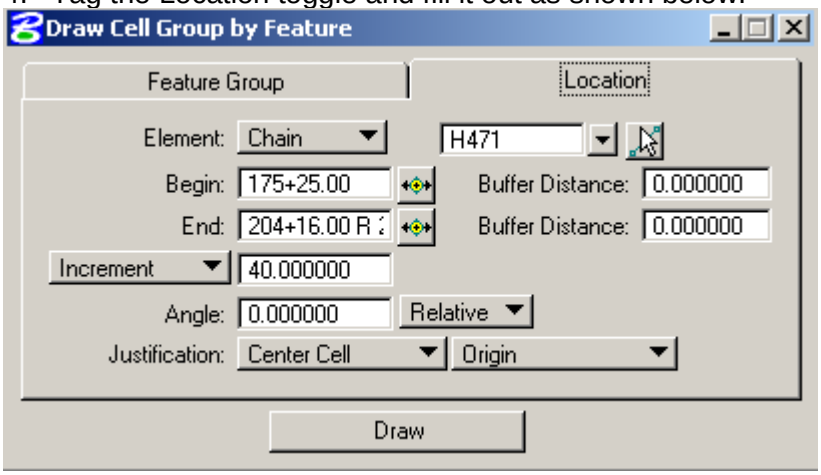
2. Tag the  button to choose the Type Marker you wish to place from the following dialog.



3. Go back to the Draw Cell dialog and choose the Type Marker.



4. Tag the Location toggle and fill it out as shown below.



5. Tag DRAW and then send a DP to the screen to draw the markers.

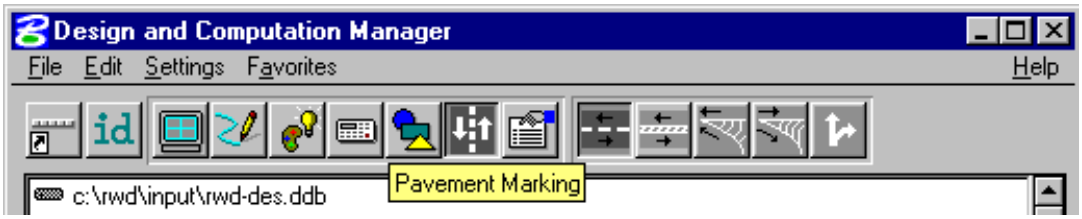
Linear Elements (Lines, Arcs, etc.)

Linear type elements must be placed or symbology of elements placed with Microstation commands SET through the D&C Manager to be computed correctly. There are two possible ways to place elements with the correct symbology through the D&C Manager and one way to SET symbology for elements. These ways are described below.

PLACEMENT OF LINEAR ELEMENTS THROUGH D&C MANAGER

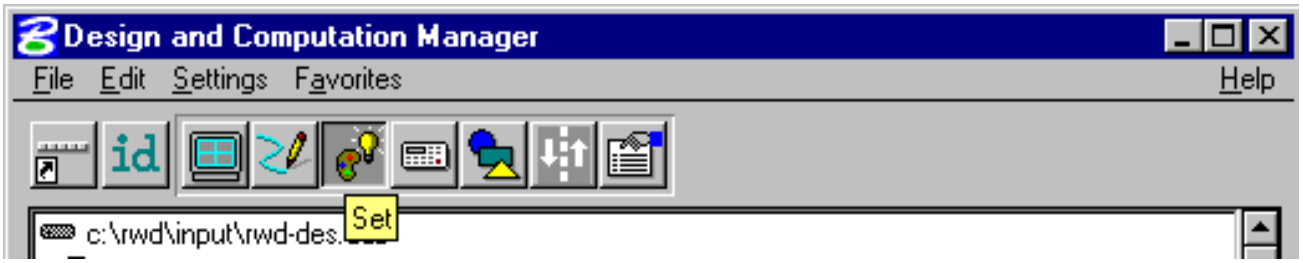
1. PLACE INFLUENCE - While placing linear type elements with Microstation commands, use the D&C Manager's PLACE INFLUENCE tool to set the symbology.

2. PAVEMENT - D&C Manager tool for placing Pavement Marking Stripe.



SET

3. SET - Linear type elements were placed with Microstation commands and then the symbology is SET through the D&C Manager.

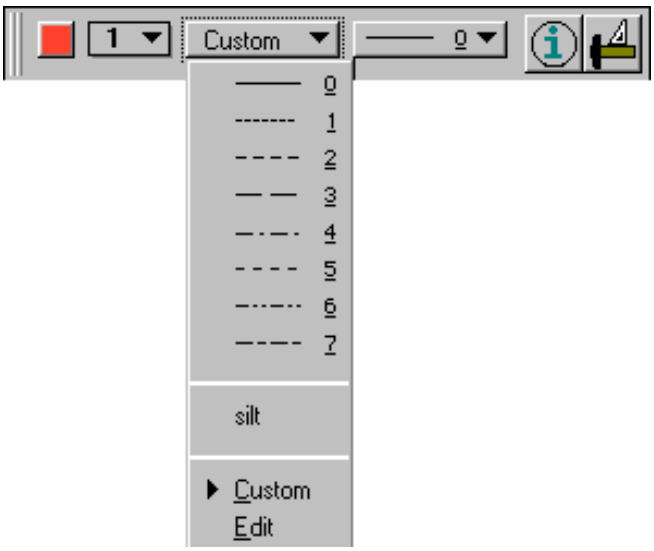


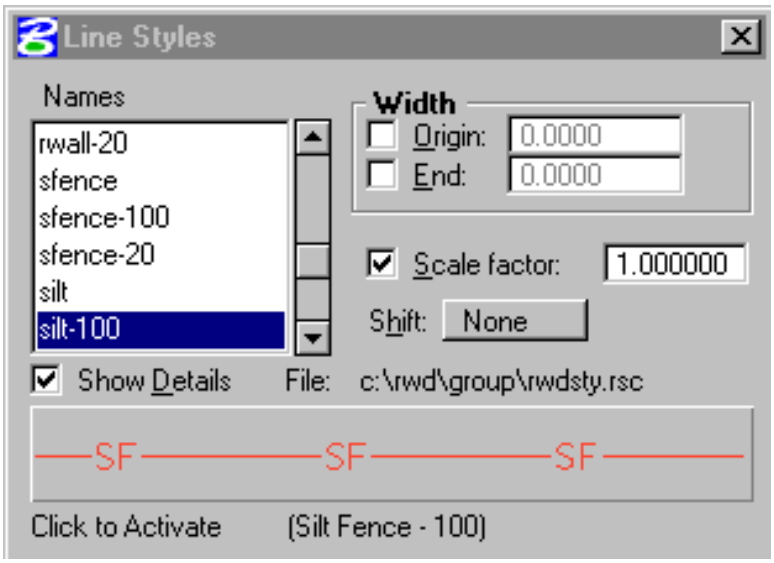
The steps for each is described below.

PLACE INFLUENCE (STEPS)

The D&C Manager's Place Influence tool allows you to perfrom any Microstation command on an element and the symbology is changed on that element during the command.

NOTE: Linear type elements with a custom line style must have Micorstation's Custom Line Styles Scale Factor ON and the correct scale factor, 250 (20) or 1000 (100), as shown below in the dialog below. If you are using Place Influence and placing linear type elements, this should be done. It doesn't have to be done to compute correctly, only for the display of the linear element to appear correctly. To get to this dialog go to Microstations Primary Toolbar-> Toggle the line style bar to Custom ->On the Line Styles dialog tag SHOW DETAILS -> Tag Scale Factor ON and set the Scale Factor to the appropriate scale.

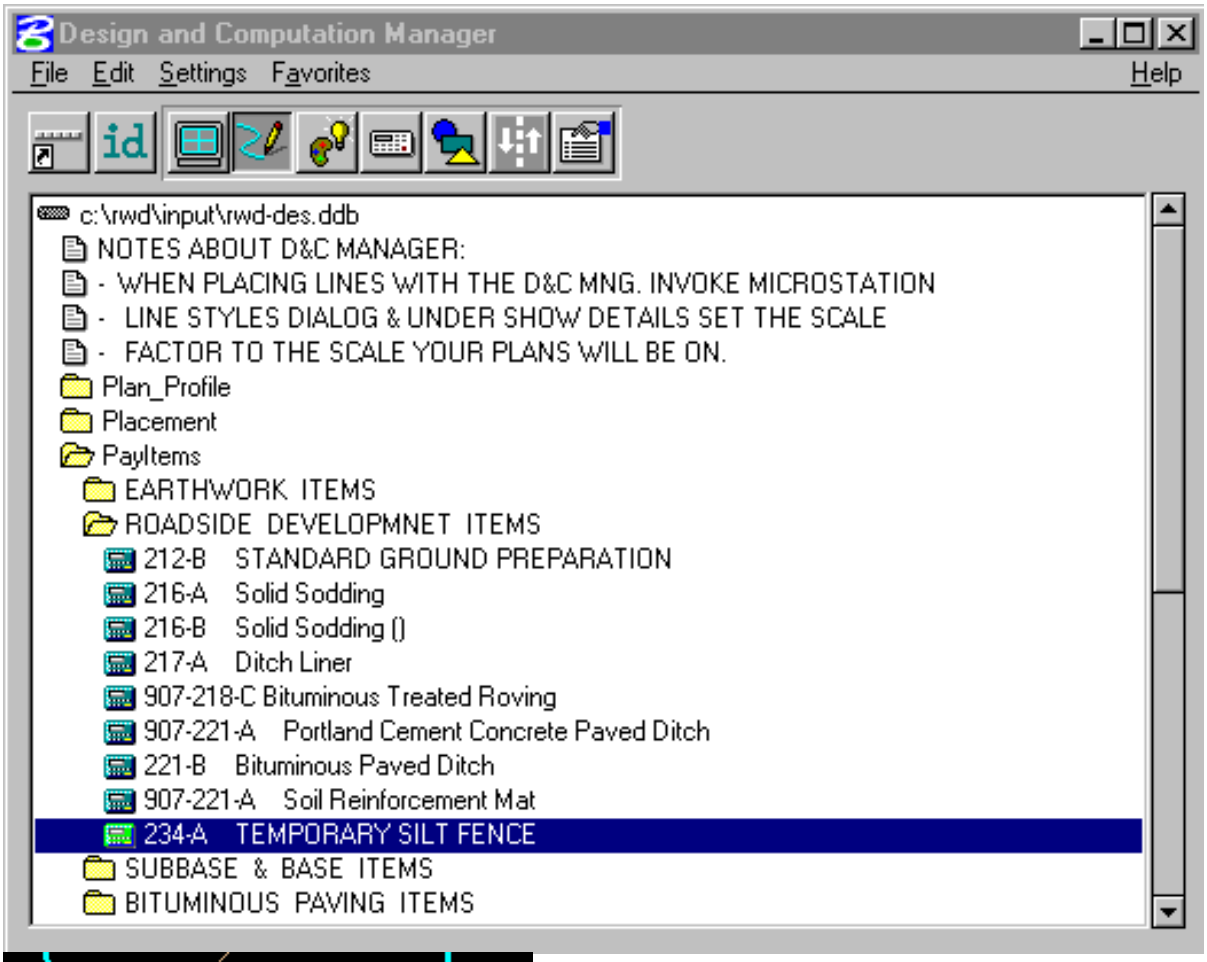




In these steps we will place 234-A TEMPORARY SILT FENCE as an example.

1. While in the D&C Manager go to the appropriate PayItem by double-clicking PayItems/ROADSIDE DEVELOPMENT ITEMS.

2. Tag 234-A TEMPORARY SILT FENCE (The dialog should look similar to the one shown below.) Choose the Microstation command PLACE LINE. Place the line and it should appear as shown below right.


Design and Computation Manager
File Edit Settings Favorites Help
c:\rwd\input\rwd-des.ddb
NOTES ABOUT D&C MANAGER:
- WHEN PLACING LINES WITH THE D&C MNG. INVOKE MICROSTATION
- LINE STYLES DIALOG & UNDER SHOW DETAILS SET THE SCALE
- FACTOR TO THE SCALE YOUR PLANS WILL BE ON.
Plan_Profile
Placement
PayItems
EARTHWORK ITEMS
ROADSIDE DEVELOPMNET ITEMS
212-B STANDARD GROUND PREPARATION
216-A Solid Sodding
216-B Solid Sodding ()
217-A Ditch Liner
907-218-C Bituminous Treated Roving
907-221-A Portland Cement Concrete Paved Ditch
221-B Bituminous Paved Ditch
907-221-A Soil Reinforcement Mat
234-A TEMPORARY SILT FENCE
SUBBASE & BASE ITEMS
BITUMINOUS PAVING ITEMS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SF

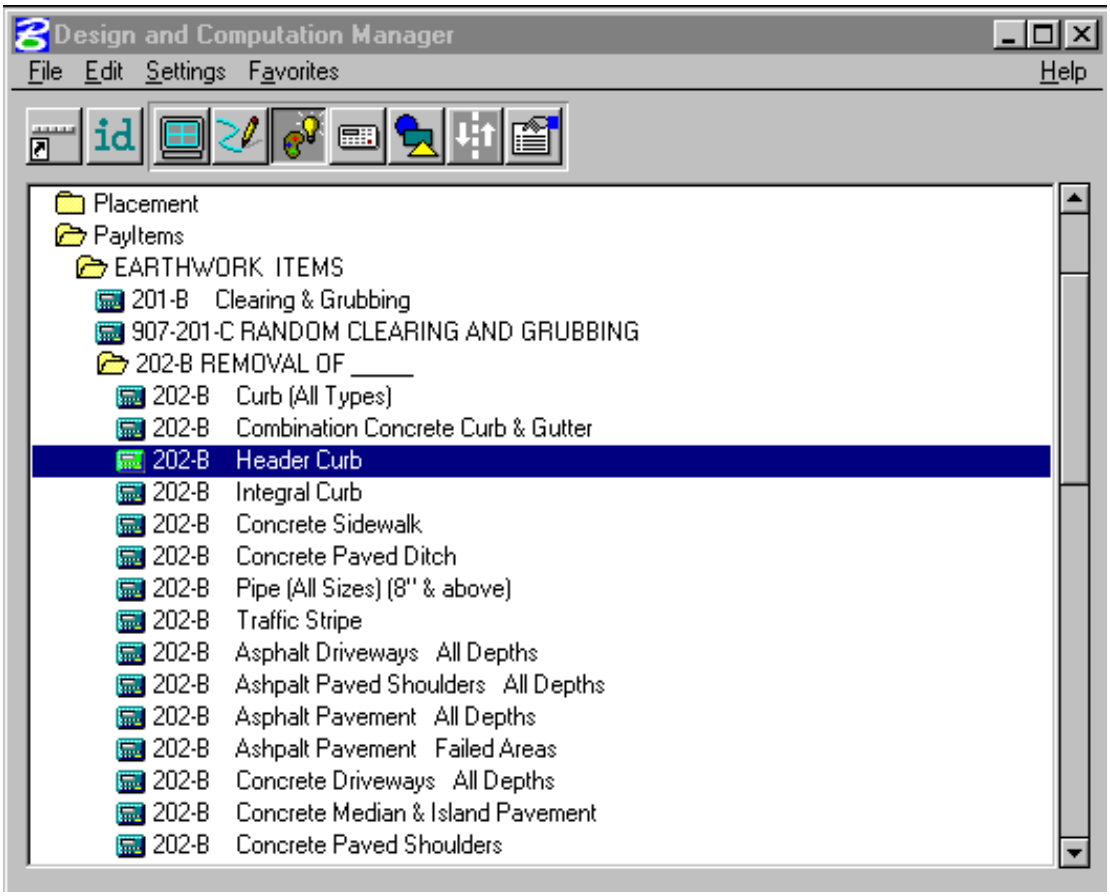
SET

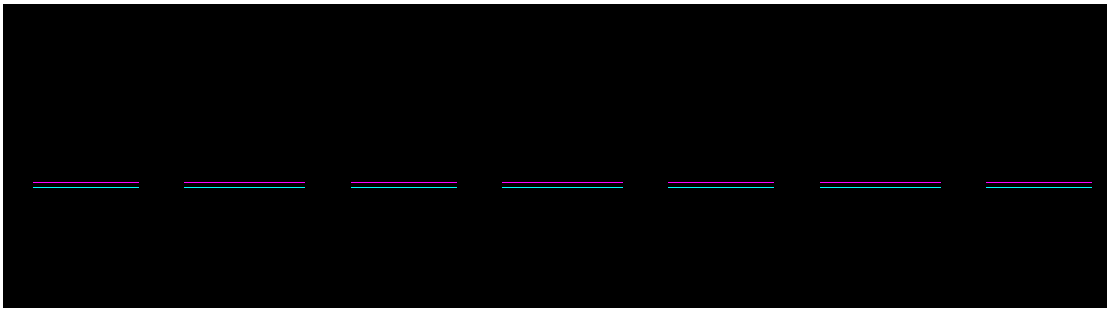
SET allows you to SET the symbology of an element after it has been placed in Microstation. In this example we will change the symbology of existing header curb to 202-B REMOVAL OF HEADER CURB.

1. While in the D&C Manager go to the appropriate PayItem by double-clicking PayItems/EARTHWORK ITEMS/202-B Removal OF __
2. Tag 202-B HEADER CURB
3. Click on the ICON in the upper row of the dialog to SET.
4. On the floating dialog box use Selection Set or tag the box for Complex Chain, tag SET and then tag the element that you want to change, or just double click on the item and it will change.

The dialog and the results are shown below. NOTE that the header curb is represented by two elements.

You need to only SET one of these to compute the correct length of removal.



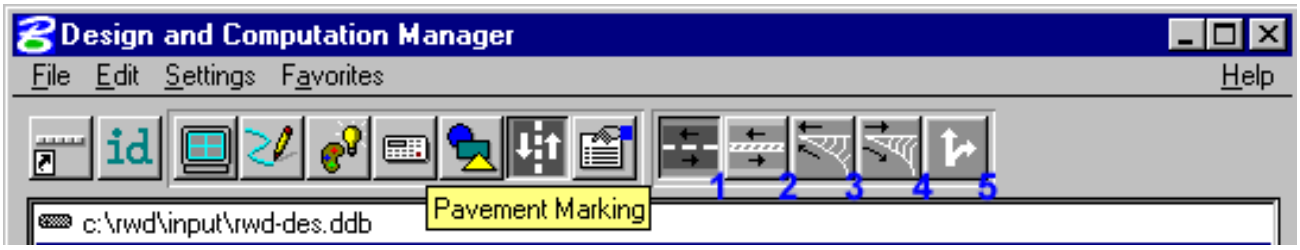


PAVEMENT MARKING

Geopak has a specific tool for placing pavement marking stripe. The following are instructions for using this tool.

A. INVOKING GEOPAK's PAVEMENT MARKING APPLICATION

1. Tag the icon in the D&C manager to PAVEMENT as shown below.



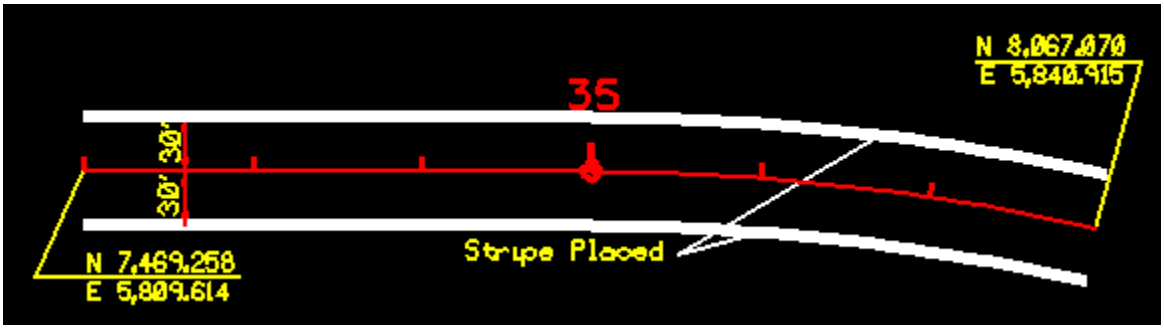
1. Striping
2. Separation
3. Chervron Diverge
4. Chevron Merge
5. Symbols

B. PLACING LONGITUDINAL STRIPE (EDGE, SKIP, CONTINUOUS, etc.)

Below are two examples of striping a 5-lane section with PLASTIC stripe, with the first example placing a SINGLE stripe, the second a DOUBLE stripe.

SINGLE STRIPE EXAMPLE

In this example we will place edge stripe (626-C OR 628-C 4" CONTINUOUS WHITE (EDGE) as shown in the figure below.



1. While in the D&C Manager go to the appropriate PayItem by double-clicking PayItems/PAVEMENT MARKING ITEMS/PLASTIC

2. Tag 626-C OR 628-C 4" CONTINUOUS WHITE (EDGE)

3. Tag the leftmost Pavement Marking Icon in the bottom left corner of the D&C Manager to invoke the STRIPING Dialog.

4. The upper left toggle is should be set to SINGLE STRIPE A. Notice the PayItem we tagged in step 2 shows up just below right of this toggle and to the right of a button that says SINGLE.

The top left toggle has six options: Single Stripe A
Single Stripe B
Double Stripe A
Double Stripe B
Double Stripe C
Double Stripe D

All Single Stripe options are the same and all Double Stripe options are the same, but different stripe can be assigned to each button and saved. If you wanted to change the single stripe you were placing you would select the payitem in the D&C Manager and then tag the single button. The next example shows how to place double stripe.

The stripe we will place first is shown below.

5. Under the BEGIN field, tag the DP button and Snap to and data point where you want the stripe to begin.

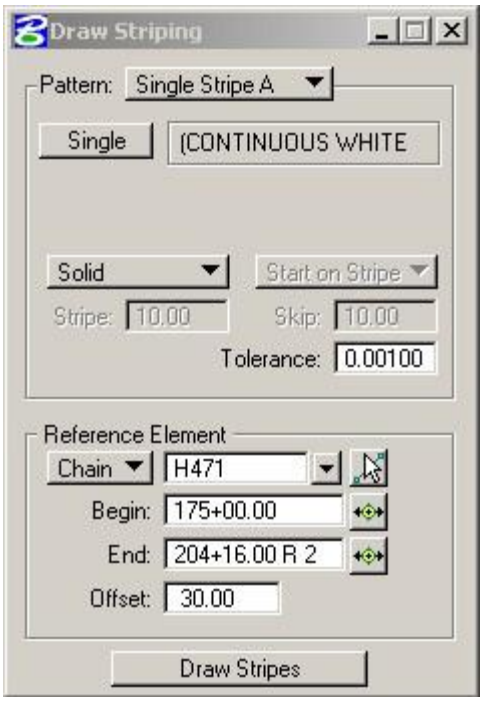
6. Under the END field, tag the DP button and Snap to and data point where you want the stripe to end.

7. Select COMPLEX CHAIN or SELECTION SET and then tag ID ELEMENT.

8. Select the alignment you wish to place stripe about with Data Points.

9. After the APPLY button is highlighted key in the OFFSET from the alignment or element selected (30’ in this example.

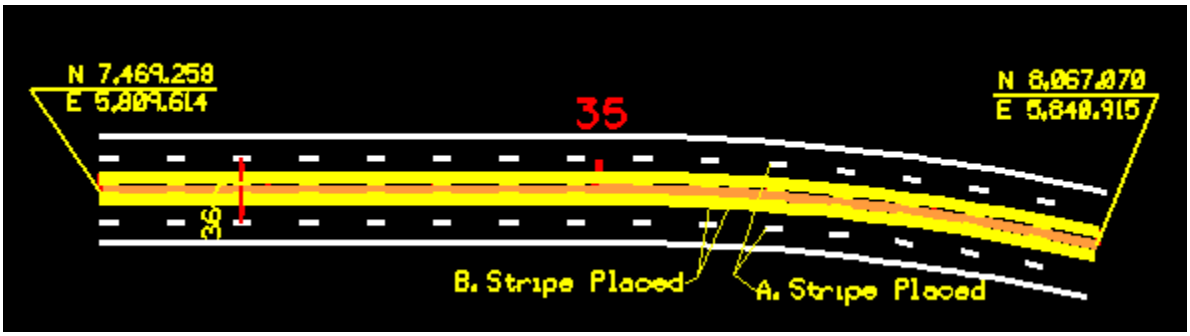
10. Tag the APPLY button to place the first stripe, we’ll place the left stripe first. Change the offset to 0 because the next stripe is placed that offset from the original offset.Place the stripe to the right.The dialog should appear as shown below.



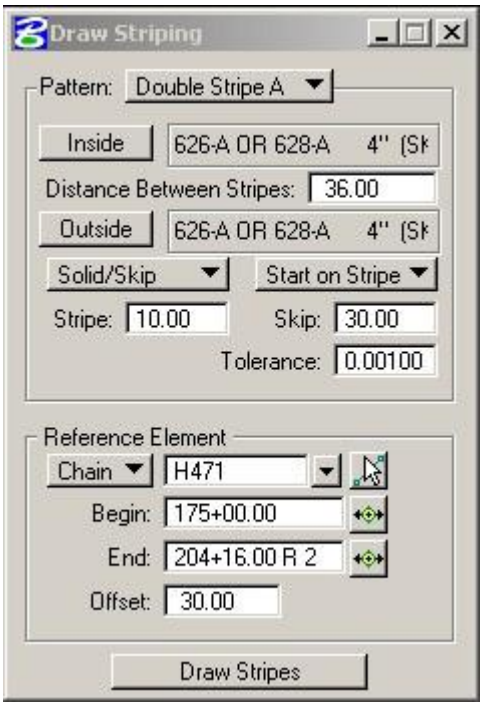
DOUBLE STRIPE EXAMPLE

In this example we'll place A) 626-A OR 628-A 4" SKIP WHITE 10'-30'
B) 626-D OR 626-D 4" SKIP YELLOW 10'-30' and 626-E OR 628-E 4" CONTINUOUS YELLOW

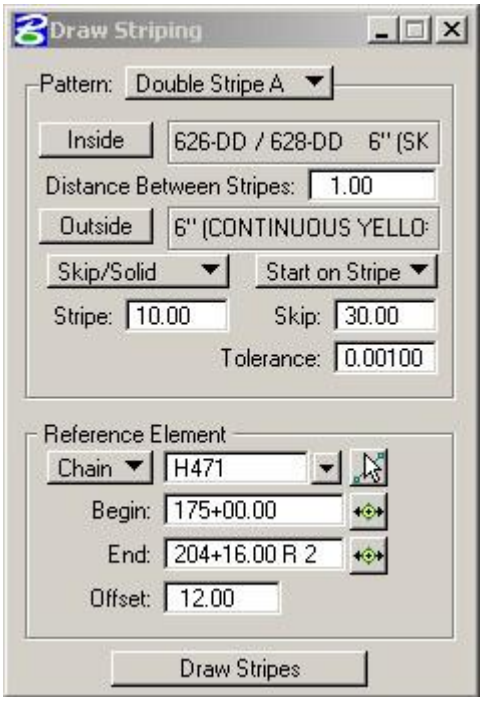
The figure below showa the stripe we'll we'll place. The settings on the dialog for placing stripe A) is shown below that to the left. The settings on the dialog for placing stripe B) is shown to the right.



A)

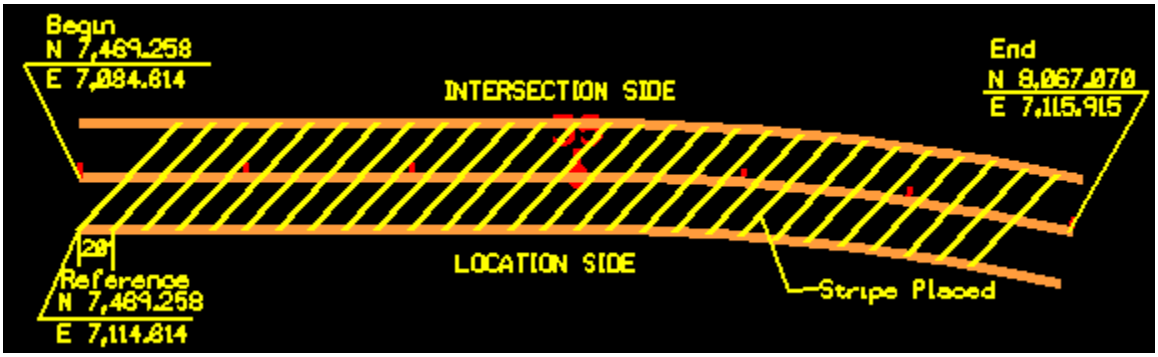


B)

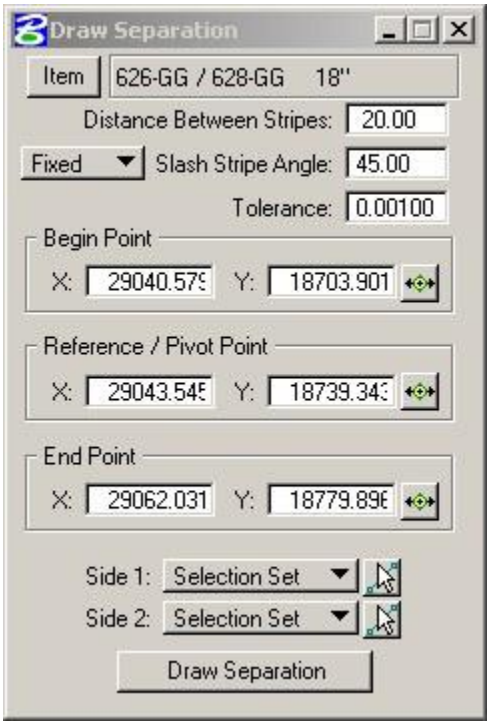


C. SEPARATION, CHEVRONS, TRANSITION

The following is an example of using the SEPARATION icon which is the 2nd from left icon on the D&C manager when PAVEMENT is selected on the toggle at the top right of the D&C Manager. The Chevron Diverge & Merge are placed similar, so no examples will be given for them.



Dialog settings for placing the Separation stripe in the figure above.



Shapes

Shapes for area calculation have to be placed or SET through the D&C Manager to be calculated correctly.

NOTE: The area you wish to compute a quantity for needs to be a clean shape. By clean, I mean no elements should cross it. The area you wish to place a shape in should be made up of lines and arcs only. In this example we will place the shape for 608-A CONCRETE SIDEWALK (WITHOUT REINFORCEMENT)

1. While in the D&C Manager go to the appropriate PayItem by double-clicking PayItems/INCIDENTAL CONSTRUCTION ITEMS

2. Tag 608-A CONCRETE SIDEWALK (WITHOUT REINFORCEMENT)

3. Tag the SHAPE icon on the D & C Manager.

4. Set the left upper toggle at the bottom of this dialog to Automatic. The Level, Fill Color, Weight & Style, should not be altered. The tolerance is the maximum distance between elements which make up the area you wish to place a shape in. This value can be altered, but normally is set to 0.1. The Radius is the radius of the circles which are placed at the beginning or end of each element when you perform the next step.

5. Tag DRAW and give a DATA POINT within the closed elements you wish to place a shape. The shape should be placed. The dialog and results are shown below.

DISPLAY

Steps

Display is a D&C Manager tool which allows you to DISPLAY elements before you calculate them. This allows you to visually see what you will later compute. You should always DISPLAY elements before computing.
You can display as many elements as you wish, but it is probably better to display for only one Pay Item at a time. In this example we will DISPLAY 617-A RIGHT-OF-WAY MARKERS.

1. Tag the DISPLAY icon on the D & C Manager.

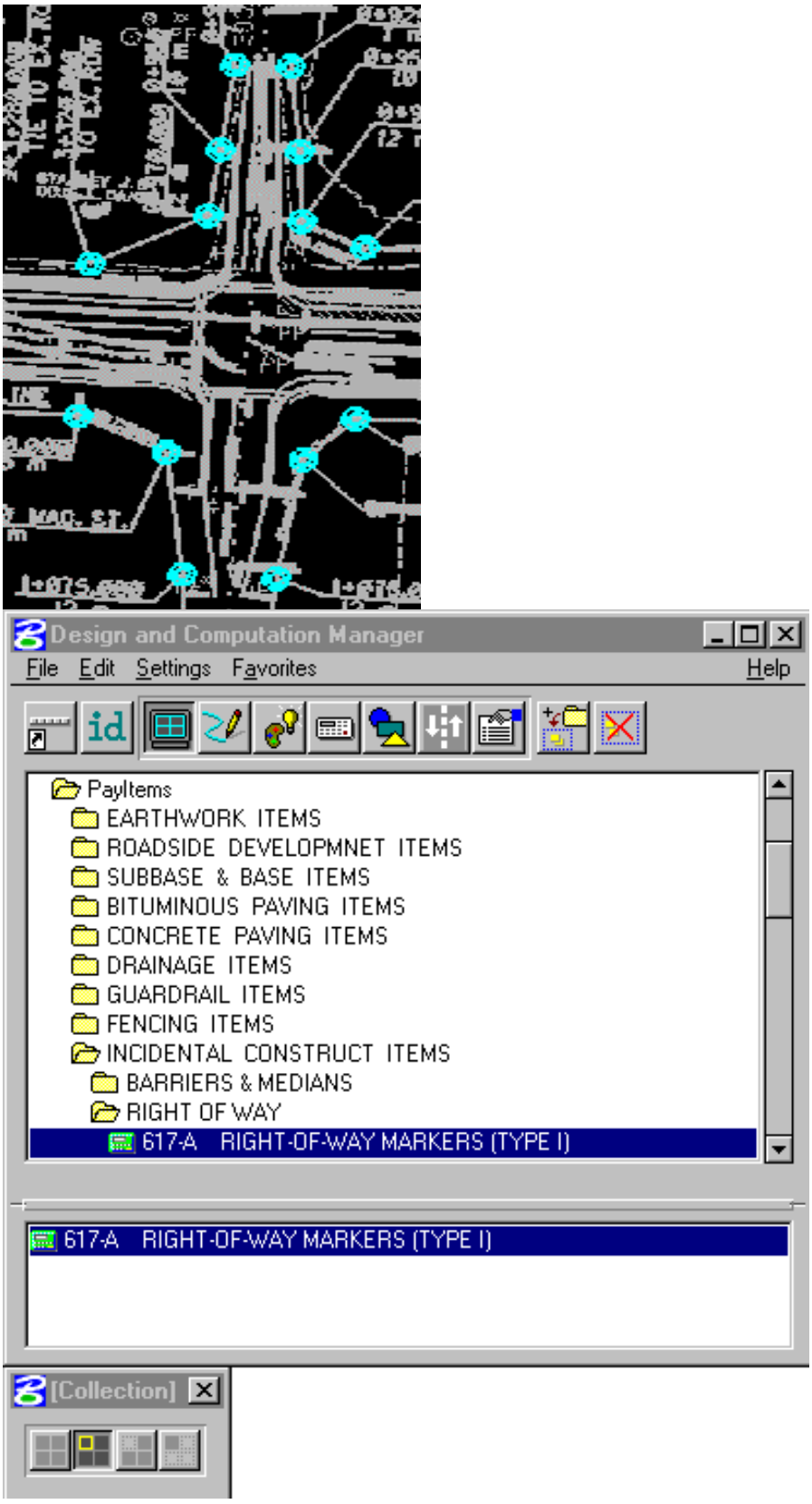
2. While in the D&C Manager go to the appropriate PayItem by double-clicking PayItems/INCIDENTAL CONSTRUCTION ITEMS

3. Tag 617-A RIGHT-OF-WAY MARKERS.

4. Tag ADD and the PAYITEM should appear in the COLLECTION box at the bottom of this dialog.

5. Tag HIGHLIGHT to HIGHLIGHT the elements that represent the PayItem you selected or TAG ONLY to ONLY display the elements that represent the PAYITEM you selected.

NOTE: Geopak uses the Microstation ELEMENT HIGHLIGHT COLOR which is normally white. If you have white elements involved you can change the highlight color by going to Microstation SETTINGS -> DESIGN FILE -> TAG COLOR -> CHANGE THE ELEMENT HIGHLIGHT COLOR. You could also go to the D&C Manager's USER -> DISPLAY SETTINGS and set the DISPLAY toggle to GREY and choose whichever color you want (Normally Grey). Tag OK and all elements appear as the grey color. When you tag HIGHLIGHT on the D&C Manager the elements which represent the PAYITEM you have selected show up as the color they actually are. To change the DISPLAY of these elements back to their original color go back to USER DISPLAY SETTINGS and change the DISPLAY toggle to COLOR. The following is an example of DISPLAY with the DISPLAY toggle set to GREY so that all elements are one color and when Highlight is tagged after 617-A RIGHT-OF-WAY markers are selected (ADDed to the COLLECTION area of the D&C Manager).


Design and Computation Manager
File Edit Settings Favorites Help
id
Payltems
EARTHWORK ITEMS
ROADSIDE DEVELOPMNET ITEMS
SUBBASE & BASE ITEMS
BITUMINOUS PAVING ITEMS
CONCRETE PAVING ITEMS
DRAINAGE ITEMS
GUARDRAIL ITEMS
FENCING ITEMS
INCIDENTAL CONSTRUCT ITEMS
BARRIERS & MEDIANS
RIGHT OF WAY
617-A RIGHT-OF-WAY MARKERS (TYPE I)
617-A RIGHT-OF-WAY MARKERS (TYPE I)
[Collection]

COMPUTE

Steps

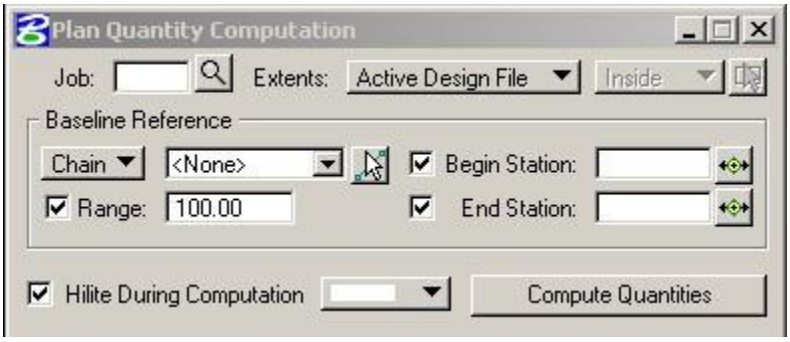
The D&C manager will compute quantities for an element if it was placed correctly. In this example we will COMPUTE 617-A RIGHT-OF-WAY MARKERS (TYPE I).

NOTES: 1. Pay attention to the unit of the payitems which are computed and the unit the actual payitem needs to be shown as. You might need to do some conversion to get to the correct unit of measurement. For example, the quantity units might be calculated in Square Meters for a specific Pay Item, but the Final Pay Item Units should be in Cubic Meters. You'll have to convert manually.

Another example, if you calculated a quantity and the unit was in Cubic Meters, this is based on 1". You would have to multiply that quantity by your actual depth to get the actual Final Quantity.

1. Tag the COMPUTE icon on the D&C Manager.

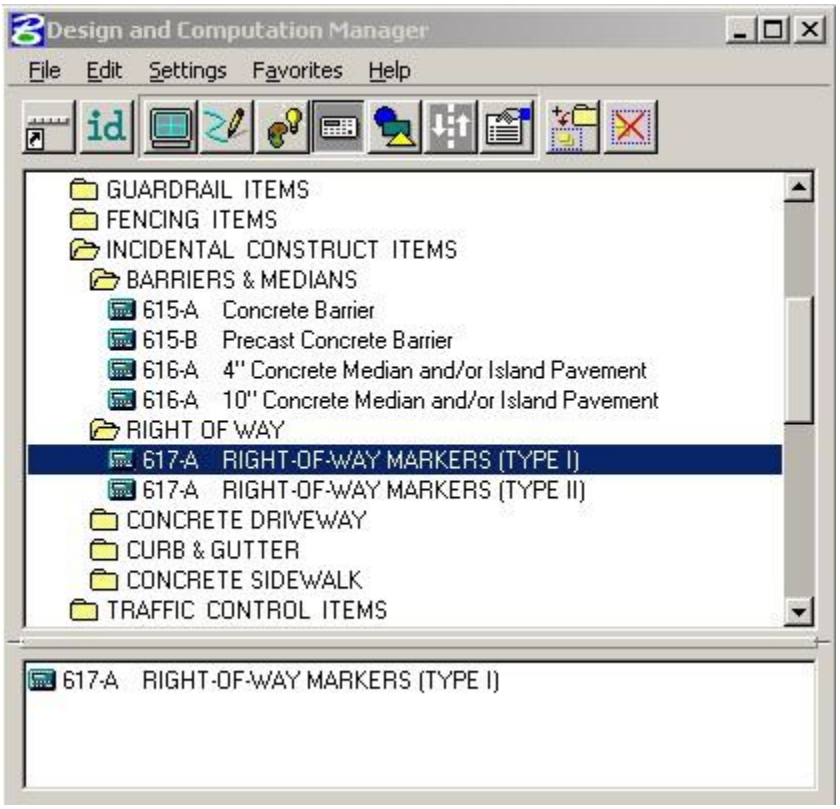
The following dialog will be invoked:



2. While in the D&C Manager go to the appropriate PayItem by double-clicking PayItems/INCIDENTAL CONSTRUCTION ITEMS/RIGHT OF WAY

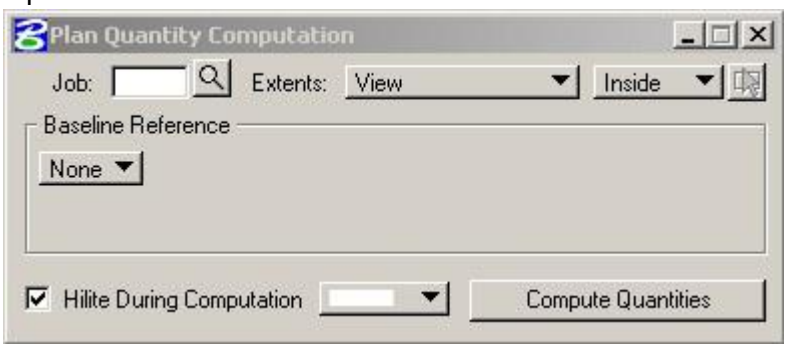
3. Tag 617-A RIGHT-OF-WAY MARKERS.

4. Double Click on the item to add this PayItem to the Collection area.

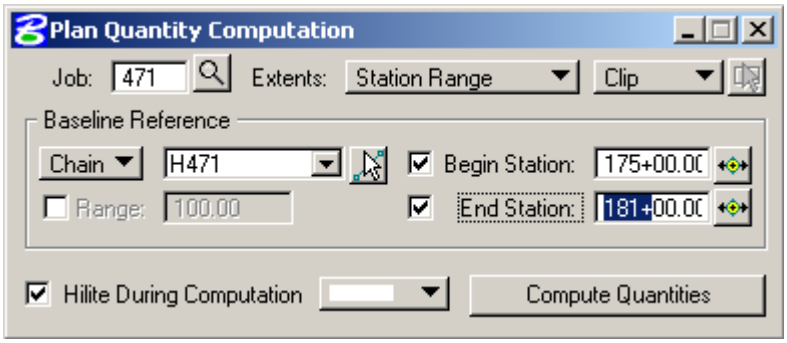


5. Change the Plan Quantity Dialog similar to one of the settings shown below. Note that this was done by changing the Extents to View and the Baseline Refence to NONE instead of CHAIN.

Option 1 – Calculate all items in DGN.



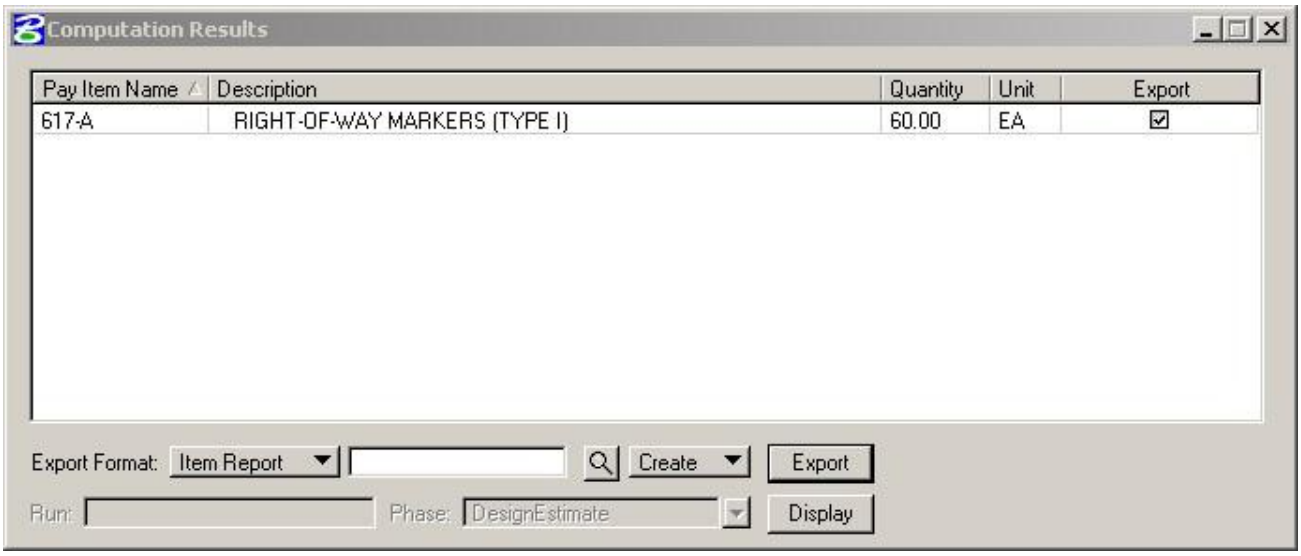
Option 2 – Calculate items for a certain station range.



Note:

1. If you want your Pay Items referenced to a chain (By Station Offset) you would enter a Job Number and choose a Chain under Baseline Reference.

6. Tag COMPUTE QUANTITIES and the following dialog will display the quantities.



7. Set the Export Format to ITEM REPORT and keyin the name of your intended output file – Q-ROW.OUT

8. Tag EXPORT to create the Item Report.

NOTE: Once you compute once, you cannot use these names again. If you do the previous data will be overwritten unless you set the CREATE toggle to APPEND.

9. Shown below is the format of the Item Report ASCII file created.

ITEM REPORT

```
+-------------------------------------------------------------------------------+
|                                                          Page No.   1         |
|      Pay Items List       wk1000.dgn, 4-10-98, kb                             |
```

Date: 04/10/1998	File Name: qi-row.out		
Item No.	Description	Unit	Quantity
617-A	RIGHT-OF-WAY MARKERS (TYPE I)	EA	60