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# Chapter 16: D & C Manager

## Overview

Elements such as edges of pavement, centerlines, curb and gutter, and guardrail, whether created through GEOPAK coordinate geometry, or simply drawn into MicroStation must be placed with the correct symbology. This is vitally important for such things as plotting, automated quantities, cross-sections, and ease of checking. GEOPAK's design and computation (D & C) manager is the tool that automates this task through the use of a hierarchical database, **.ddb**, containing information about each element to be placed within a set of plans.

### CFLHD

At CFLHD, there are English and Metric versions of the database for use on their respective projects. Each **.ddb** file is broken into 3 categories: **Pay_items**, **Criteria**, and **Features**. **Pay_items** is then further broken down into the correct division, as shown below, then to section, then individual item, etc.

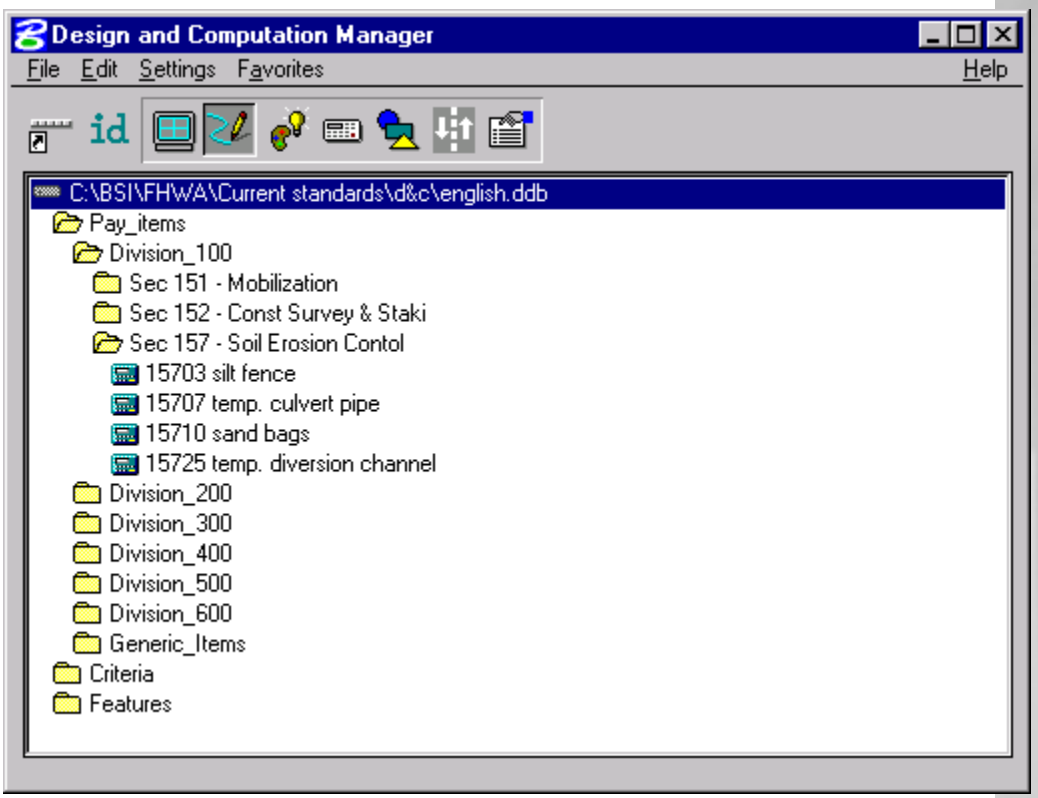


**Figure 16-1: Design and Computation Manager**

# Workflow 1: Downloading and Attaching the Correct .ddb File

1. *The .ddb file in use at CFLHD can be found at:*

   ***http://www.cflhd.gov/cadd/standard_files/ddb_files.zip***

2. *From the above link, download file and unzip the .zip file.*
3. *Place the unit correct .ddb file in a location where it can be easily accessed for each project.*

*Placing the .ddb file in a project specific location ensures several things:*

- *That the current .ddb file will be used on the project for which it was intended.*
- *That the .ddb file used on the current project will be archived with the project for future use.*
- *That the file is less likely to be copied to a future project, which must, again, download the most current .ddb file.*

4. *Access the D&C Manager by selecting Applications>GEOPAK Road>Design and Computation Manager, as shown below, or by selecting the D&C Manager icon from the GEOPAK Road tool frame. Once accessed, two dialog boxes appear. The main D&C Manager dialog box, as shown in step 5, and a secondary dialog showing various D&C Manager options.*

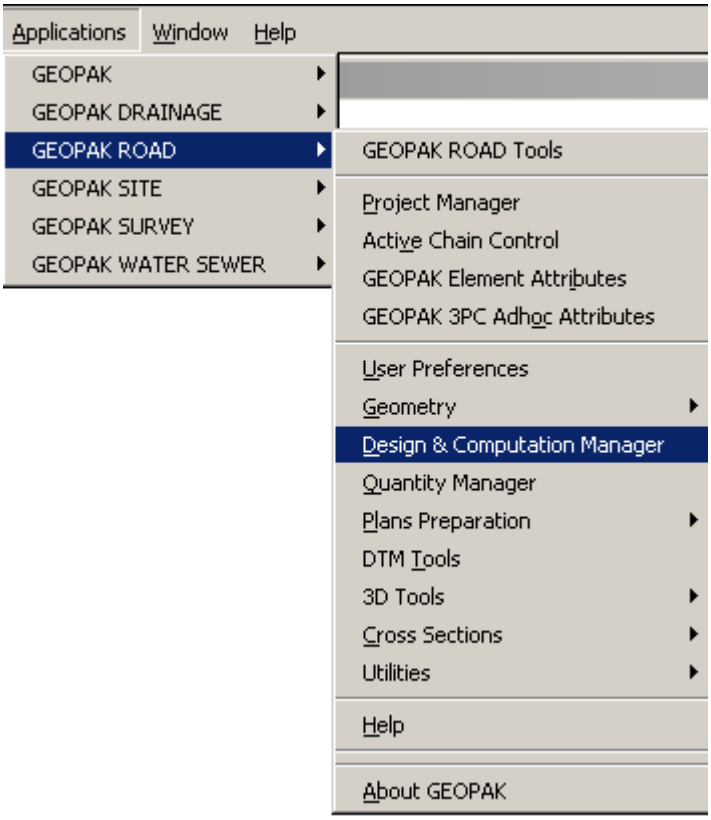


**Figure 16-2: Access D&C Manager**

*5. From the D&C Manager dialog select File>Open.*

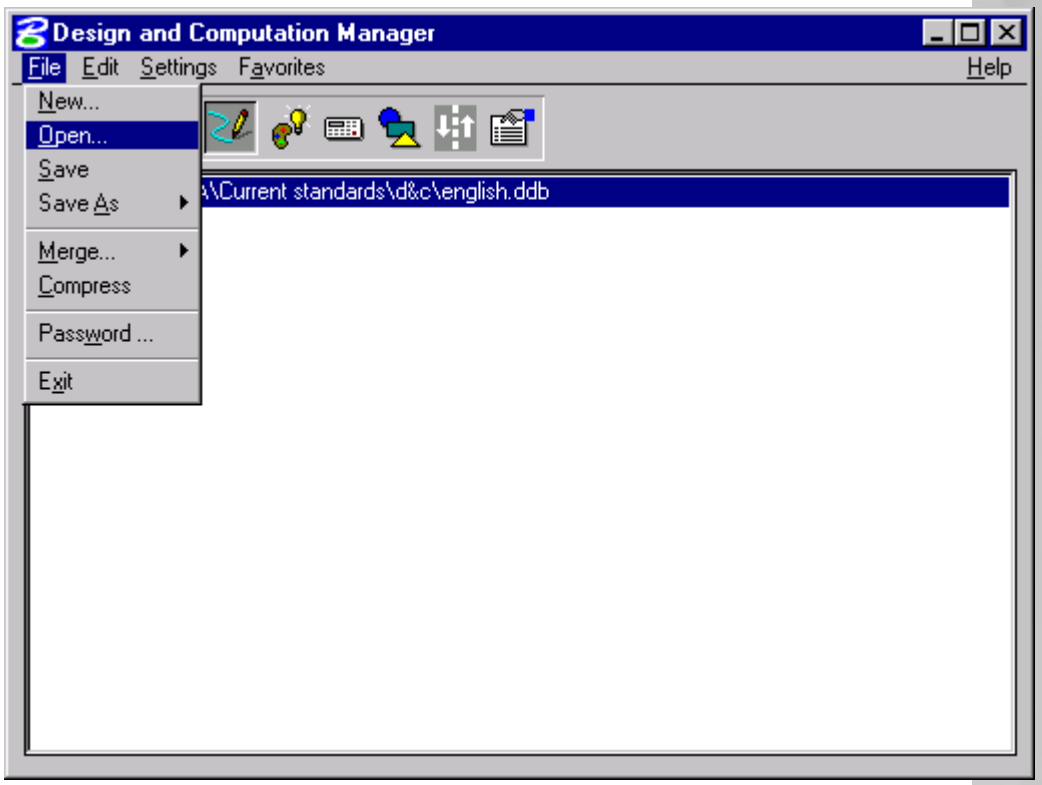


**Figure 16.3: Open Database**

6. *Select the .ddb file specific to the units of the current project from the location of the saved files.*

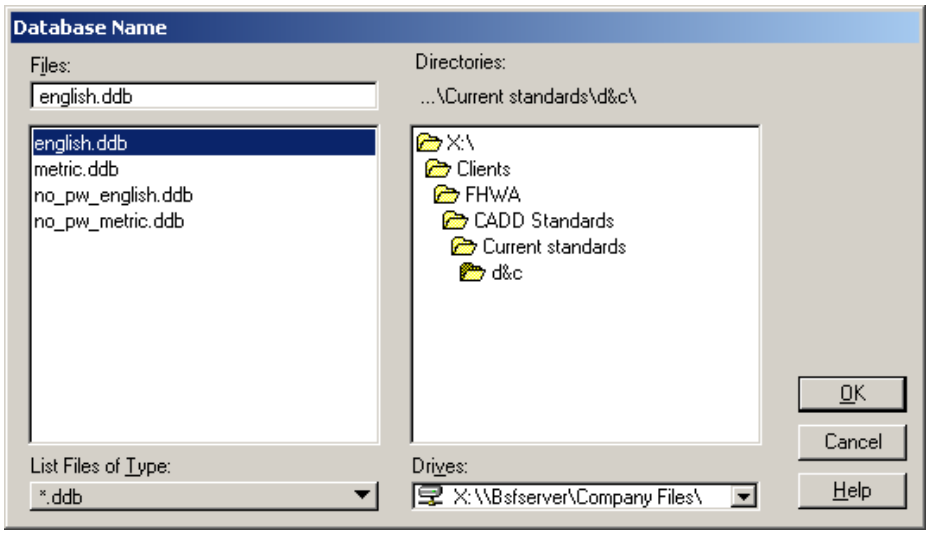


**Figure 16-4: Select CFLHD Database**

7. *Select OK, the correct .ddb file will now be attached.*

## Using the D & C Manager

As stated in chapter 11, this manual is not intended to teach the use of GEOPAK to the novice user. However, the following workflows will outline the most important uses of the D & C Manager, and their importance to CFLHD. There are two types of information drawn by the D & C Manager: elements such as centerlines, which have been stored in the coordinate geometry database, and elements, such as shoulder lines, which have not been stored. See the chapter on Horizontal and Vertical Geometry for a list of elements for which a coordinate geometry chain must be created.

# Workflow 2: Drawing Elements from Coordinate Geometry

8. *Once a chain, profile, or other coordinate geometry element has been stored in the coordinate geometry database, it will be drawn into MicroStation using the D & C Manager's Draw Plan and Profile tool. From the D & C Manager dialog box, select the type of element to be placed. Make sure the Design button, shown as a pencil drawing a line below, is selected.*

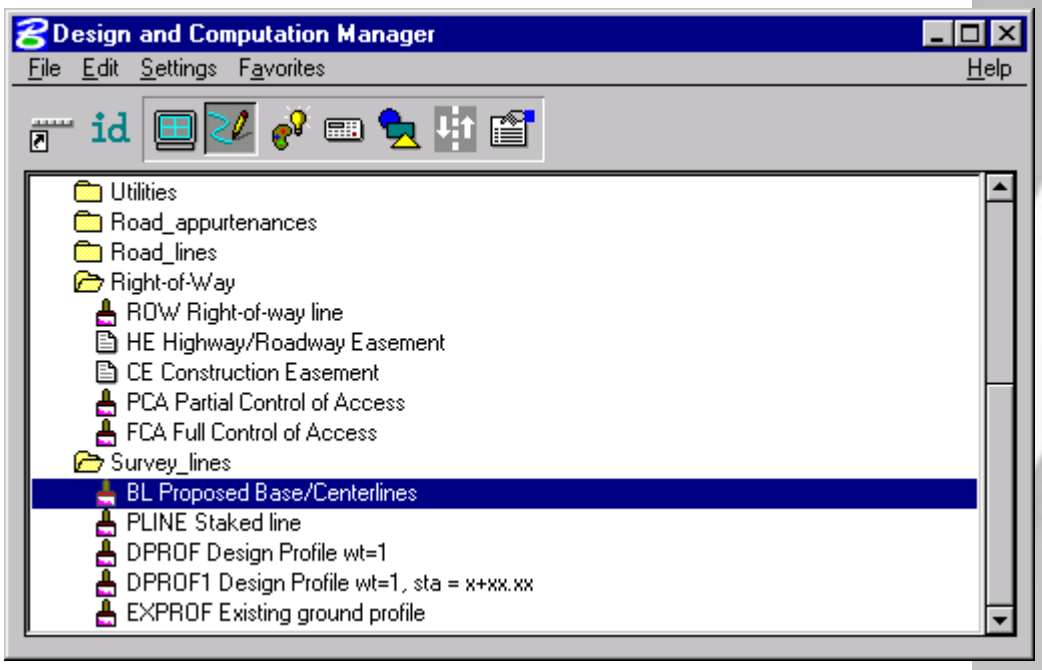


**Figure 16-5: Select Database Item**

*The feature has all of the attributes, as determined by CFLHD, needed to draw the element into MicroStation. The following dialog box shows how CFLHD has created each item with the correct level, color, weight, and style, for use with CFLHD criteria, quantities, etc.*

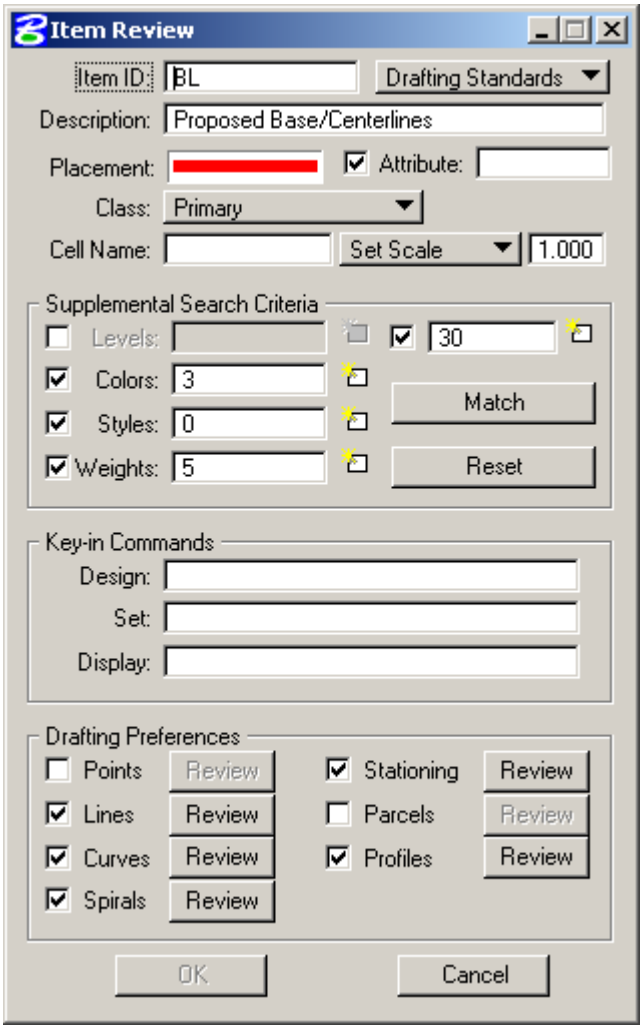


**Figure 16-6: Item Review**

*From the above dialog, selecting any of the buttons from the preferences portion of the dialog box will access information specific to the preference selected. In the case of the dialog below, preferences for drawing lines is shown.*

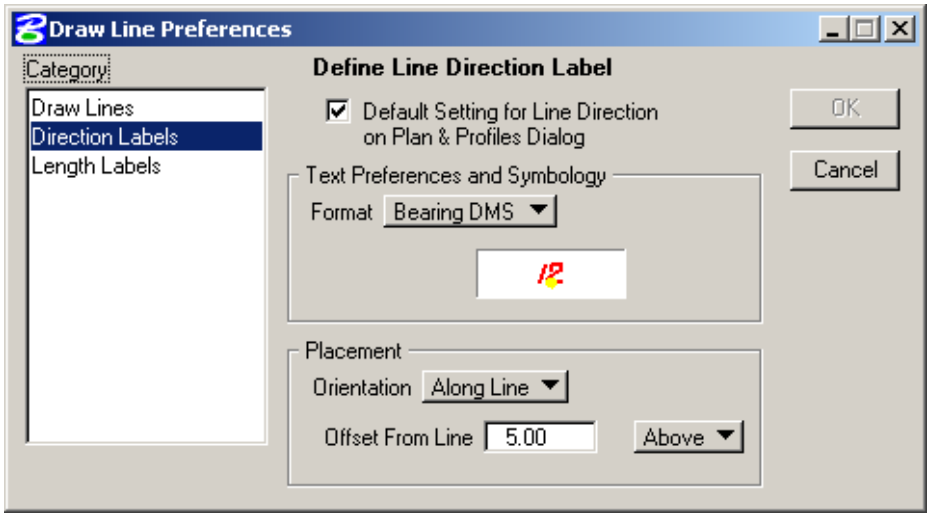


**Figure 16-7: Line Preferences**

*Double click on the window under the format button to get the following dialog box.*

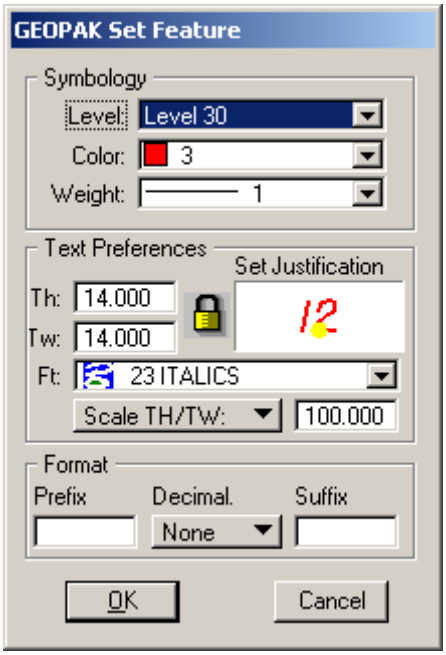


**Figure 16-8: Line Feature Preferences**

*The task of creating all of this information has already been done by CFLHD. It is password protected and cannot be modified by the user.*

9. *Once the correct element has been selected, click the Draw Plan and Profile button in the secondary D&C Manager dialog.*

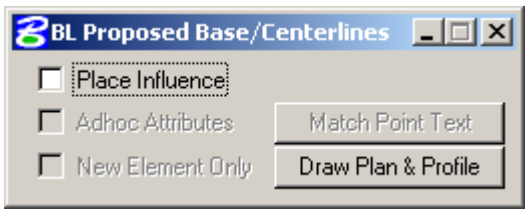


**Figure 16-9: Draw Plan and Profile Dialog**

10. *Clicking the Draw Plan & Profile will activate the dialog box shown below, allowing the user to select the desired COGO element, shown on the left side of the dialog box. The list of elements shown in this box will correspond to the category set by the operation button in the upper left corner of the dialog box. Categories include Chains, Stationing, Profiles, Curves, Spirals, and Parcels.*

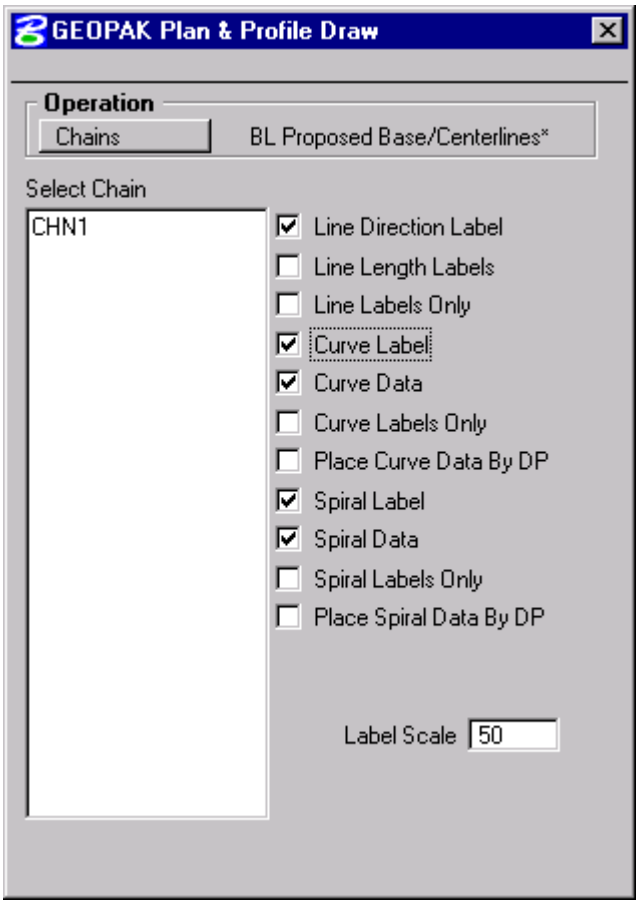


**Figure 16-10: Select Chain**

11. *The various types of annotation that can be placed with the active category of COGO element are listed along the right side of the dialog box as a series of check boxes. The default setup of these check boxes has been determined by CFLHD. The information to*

*be placed, in this case, Line Direction Label, Curve Label, Curve Data, Spiral Label, Spiral Data, is what CFLHD expects to see on a typical project. As such, for final submission to CFLHD, these toggles must not be changed. For preliminary, in-house work, these may be toggled on/off as needed.*

12. *The Label Scale field in the lower left corner of the dialog controls the size of text and graphic annotation for the selected coordinate geometry category. The value in this field corresponds to the plot scale on 11x17 size plan sheets where the elements will be used. For example, if D&C Manager is being used to draw a chain for a Metric units project that will be used for 1000:1 scale plan sheets then the value in the Label Scale field should be 1000. Similarly, if D&C Manager is being used to draw a chain for an English units project that is being used for 100' = 1" plan sheets then the value in the Label Scale field should be 100.*


For the Stationing category there are a limited number of values that are allowable in the Label Scale field. For Metric units Stationing the allowable values for Label Scale are 50, 100, 200, 250, 300, 400, 500, 1000, and 2000. For English units Stationing the allowable values for Label Scale are 10, 20, 40, 50, 100, and 200. If a value other than those listed is used for the Stationing category no stationing will be drawn.

13. *Select the coordinate geometry element to draw by single clicking on it in the list box along the left side of the dialog. The element will be immediately drawn into the active design file.*


When drawing a chain into MicroStation, select the desired chain only once. It will plot immediately upon selection. If the plotted chain is not visible, do a MicroStation fit view to fit the chain into the MicroStation window.

## Placing Design Elements Using MicroStation Commands

Placing elements into MicroStation which have not been designed using coordinate geometry, but rather will be drawn using MicroStation becomes an easy process with the D & C Manager. CFLHD requires that elements be placed using the correct symbology, for the reasons stated above. Most importantly, CFLHD criteria files search for elements placed with the correct symbology to create proposed cross-sections. The D & C Manager can be used in conjunction with both MicroStation commands, such as move parallel and place line, and GEOPAK commands, such as draw transition. This is accomplished with the Place influence command in the D & C Manager.

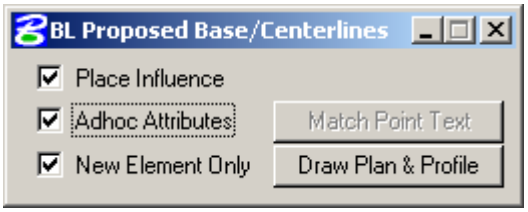


**Figure 16-11: Place Influence**

Toggling on place influence will allow the user to place any element with the attributes of any element selected in the D & C Manager. With the Adhoc Attributes toggled on, GEOPAK will give the new or modified element the same adhoc values as the active item. With new element only toggled on, any modifications to a selected item will not result in changing the attributes of that element. In the example above, a line drawn using MicroStation's place line command will be drawn with the attributes of **BL Proposed Base/Centerlines**.

## Workflow 3: Drawing Elements Not Designed in Coordinate Geometry

1. *From the D & C Manager select the element to be drawn. In the example below, 42" Pipe culvert.*

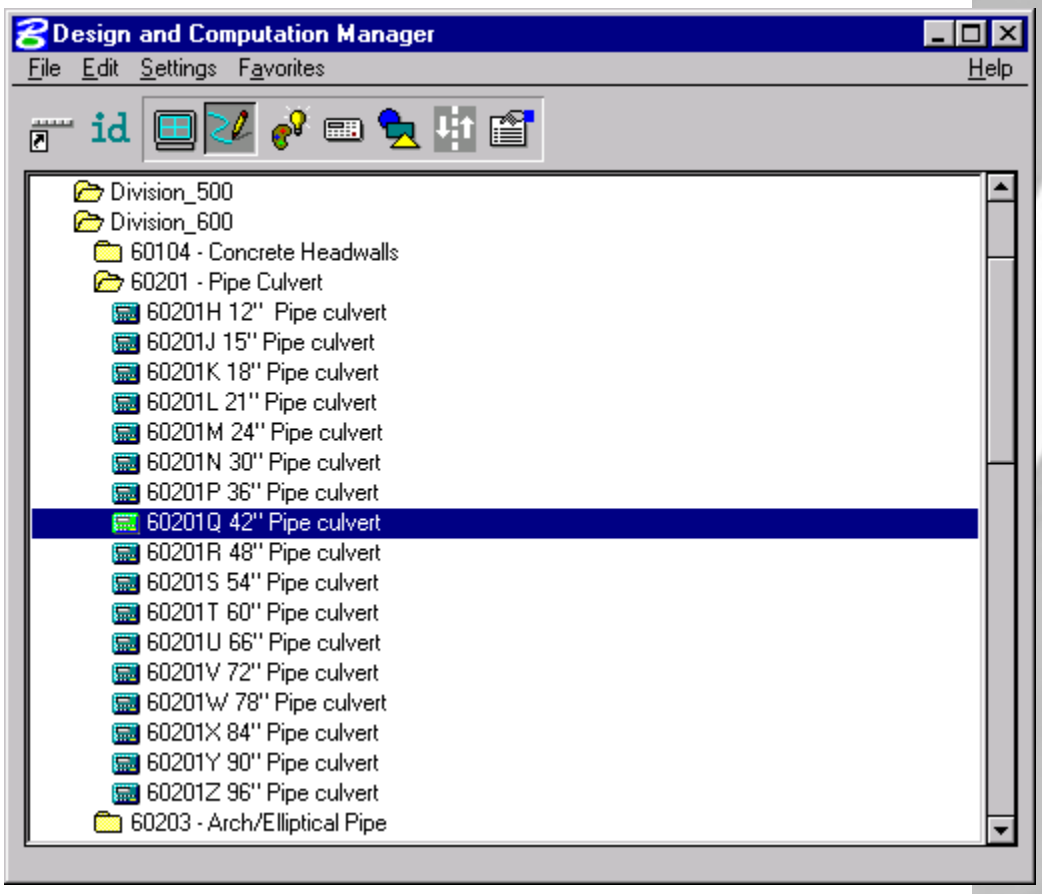


**Figure 16-12: Select Database Item**

2. *Select the desired MicroStation or GEOPAK tool, in this example, the move parallel tool.*

*The move parallel tool, when used without Place Influence, will always place the new element with the symbology of the existing element, regardless of the active attributes. Place Influence over-rides the existing attributes with that of the selected element.*

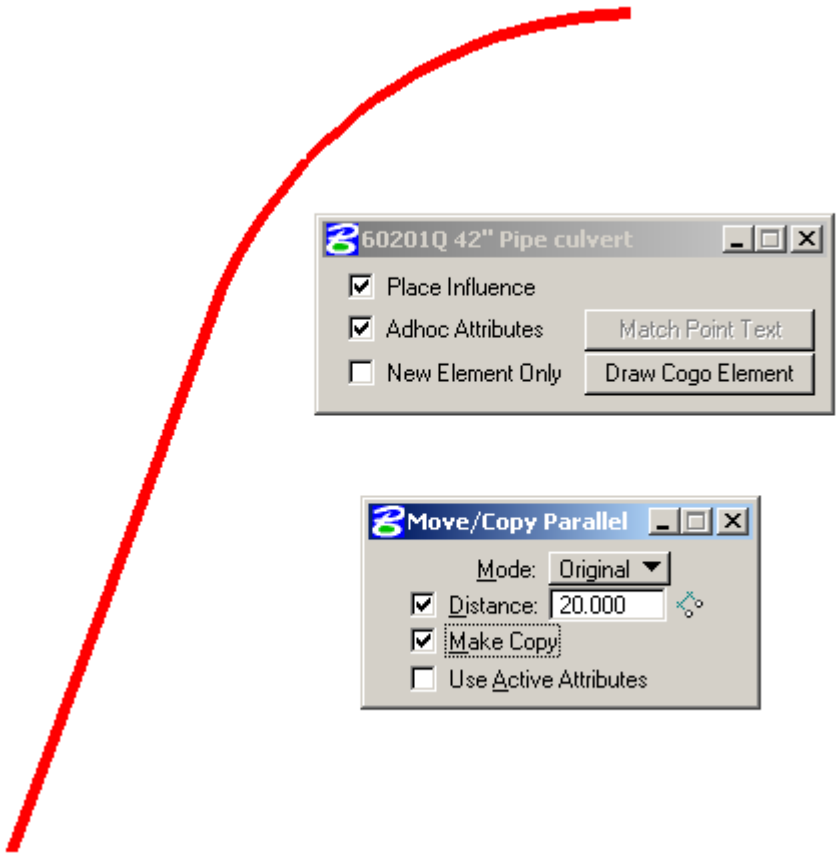


**Figure 16-13: Place Influence**

3. *With Place Influence toggled on, select the existing element and accept in the desired direction.*
4. *The new element will be drawn with the correct attributes of the element selected in the D & C Manager, regardless of the active MicroStation attributes.*

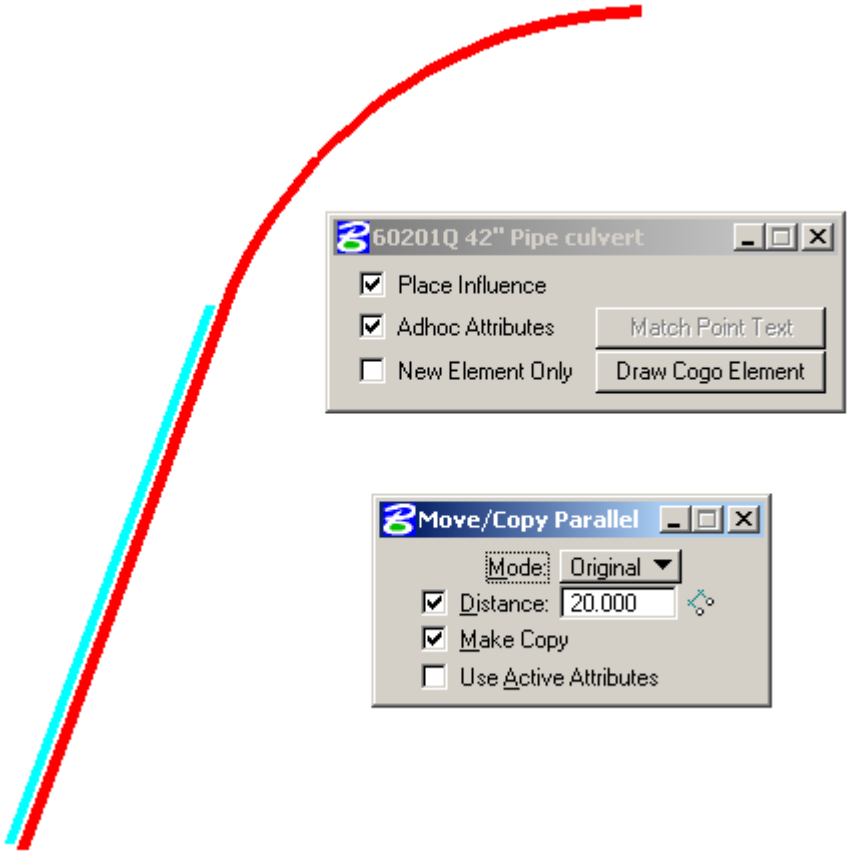


**Figure 16-14: Copy Parallel with Place Influence**

## Information for Advanced Users

Simply setting the active level, color, weight, and style or toggling on the Use Active Attributes button is not the same as using the GEOPAK Place Influence command. The two information dialog boxes shown below are, first, from the element placed with Place Influence toggled on, and, second, without using Place Influence.

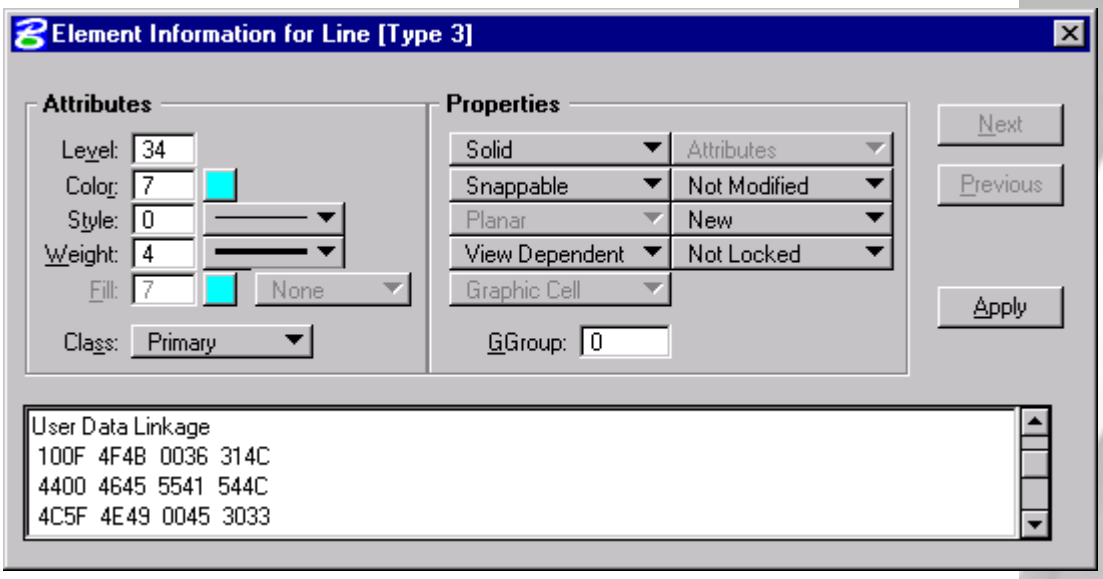


**Figure 16-14: Element Information, with Place Influence**

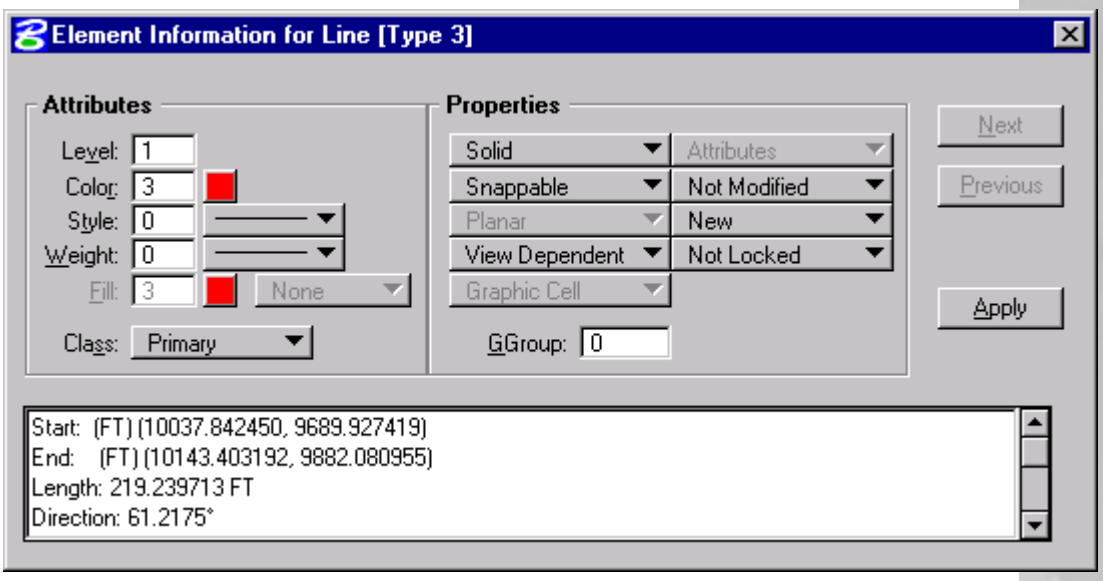


**Figure 16-15: Element Information, without Place Influence**

As shown above, the element created with place influence has user data linkage attributed to the element. The element created without place influence does not. This extra data is read by GEOPAK for things such as automated quantities, etc.