Design and Computation Manager

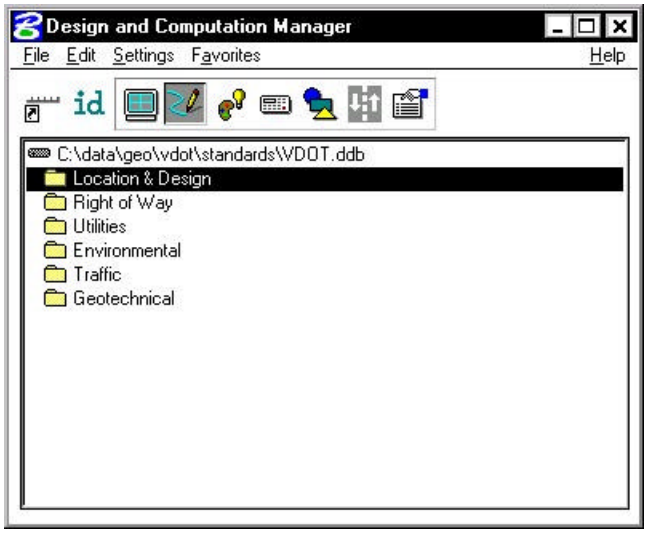
5.1 Introduction

Objectives	Understand the use of the **D&C Manager** to plot horizontal alignments into MicroStation. Understand the format of the hierarchical database and how to use it.
Road Tool Frame	Plan View Design
Menu Bar Application	
	GEOPAK Road > Design and Computation Manager

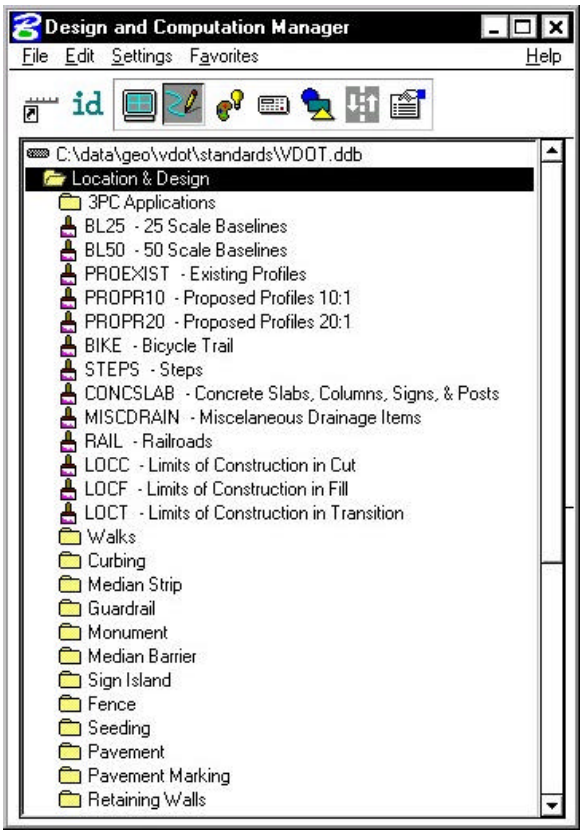
The **Design and Computation Manager** (D&C Manager) is a tool that allows the user to standardize graphics elements for drafting and pay item quantities.

A hierarchical database is used with the **Design and Computation Manager**. This database stores information concerning functional classification and display preferences for each feature and item used in a MicroStation file. This file is commonly referred to as the **ddb** file (*.ddb).

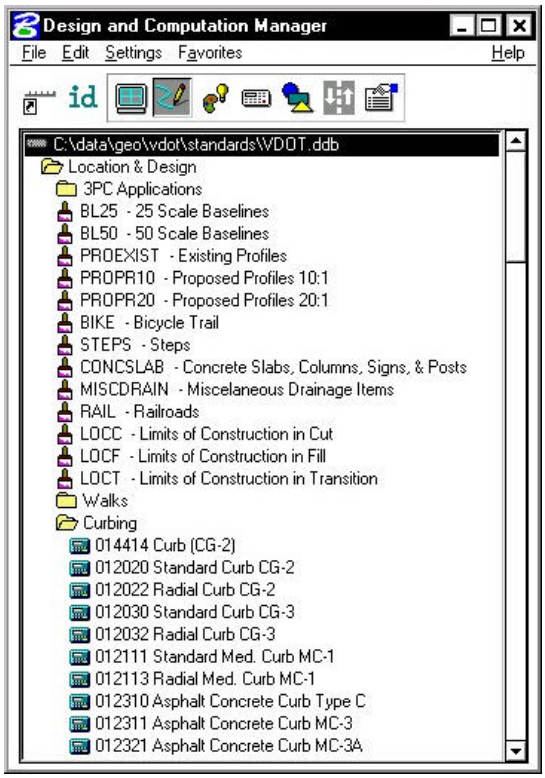
Categories are used to group and classify the features and items used in creating construction drawings. Two common examples of these categories are **Pay Items** and **Drafting Standards** as shown in the following diagram.



These categories each contain sub-categories. The sub-categories break down each classification into more specific items. For example, **Location & Design** may be broken into several additional categories such as **Walks, Curbing**, etc.



Within a category (represented by the folder icon), the items that are included are designated according to the process that they will be used for (as a drafting item indicated by a paintbrush shown in the following diagram):



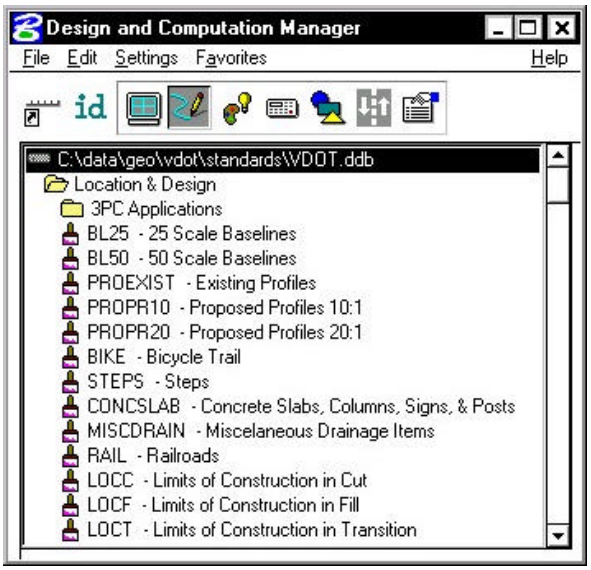
Each entry represents a specific item. The various icons representing the function they will be utilized for can identify items.

- Calculator (quantities calculations)
- Paintbrush (draw design elements)
- Report icon (default, pavement design, pavement markings, etc.)

The database may also be password protected if desired. This can be used as a security measure to protect the integrity of the database file and ensure its consistent application on a statewide or company wide basis.

5.2 Accessing the Design and Computation Manager

When the Design and Computation Manager is accessed, two dialogs are displayed.



The main D&C Manager dialog is composed of two distinct areas:

- Across the top are icons for the various modes. The D&C Manager may be configured to operate in seven different modes: **Display, Design, Set, Compute, Shape, Pavement Marking** and **Preferences.** As various modes are selected, more icons are displayed within this area.
- The **Path box** displays the name of the attached database file and your current position within the database structure. It lists the categories, sub-categories and items available for selection. This hierarchical data structure functions much like a directory. Double-clicking enables the user to move up or down within the database.

A second dialog appears differently depending on the mode of operation. This dialog enables the user to set other options not available on the main dialog.

5.2.1 File Commands

For the GEOPAK designer, the only file command options needed are **Open** and **Exit**. The other commands such as **Save**, **Merge** and **Compress** are used by personnel who maintain the database.

As mentioned previously, the **Password** option may be used to password protect the database so a user would not be able to make changes to it.

5.2.2 Edit Commands

As a designer, the most-used Edit commands will be Find, Identify and Review Item.

Find – This tool will search the database (from your current location) for an item or category. If the database is password protected, all other items will be disabled.

Identify – This tool will allow you to select an element in the design file to identify which item it matches in the database.

Review Item – This tool will allow you to review the settings/symbology for a particular item in the database.

5.2.3 Settings

Display Settings - temporarily changes the display of elements on the screen to one common color, then the user may specify additional elements to be viewed in their original colors. This tool enhances visualization when working on a complex project.

Design Settings - sets the *maximum gap* tolerance and *deduction tolerance* used in computations and the drawing scale for placing cells.

5.2.4 Favorites

Add to Favorites - saves current D&C Manager path for easy recall in the future.

Organize Favorites – allows the organization of previously saved paths.

5.3 Operational Mode - Design

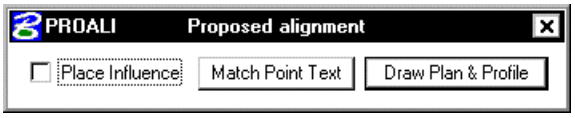
The Design mode enables the user to draw each roadway element or COGO element (and associated attributes) in the design file based on drafting item parameters.

First, the desired item is highlighted in the main dialog list box, i.e., alignment, edge of pavement, etc.

The **Place Influence** option sets the level, symbology and attribute tags of elements drawn or copied using MicroStation commands. When the **Place Influence** toggle is activated, elements are drawn using the level, symbology and attributes as defined in the GEOPAK database. When **Place Influence** is off, elements are drawn using the active level, symbology and attributes of MicroStation.

The **Draw Cogo Element** button is for drawing COGO elements to a design file. A single click to this button prompts the user for a job number, then opens a dialog that enables the user to choose a COGO item to draw.

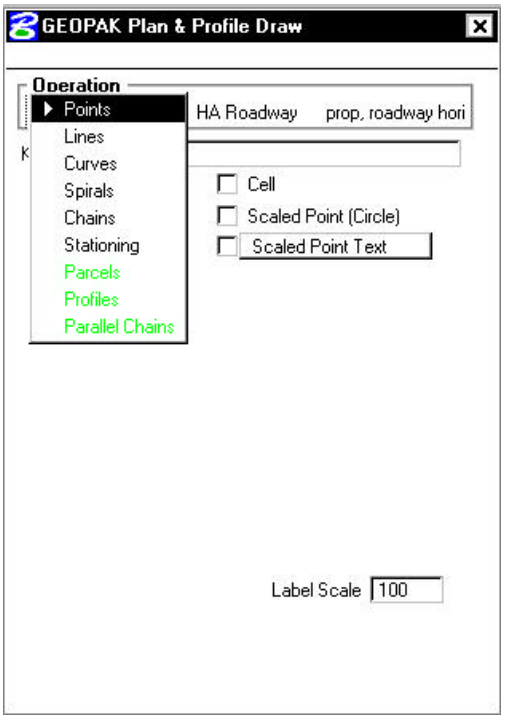
If an alignment, profile or parcel item is chosen, the **Draw Cogo Element** button changes to **Draw Plan and Profile**.



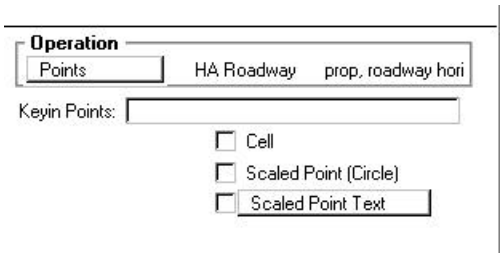
From the secondary dialog that is opened, press the **Draw Plan & Profile** button to initiate the drawing of COGO elements into the design file. Pressing this button prompts the user for a job number (the coordinate geometry database file wherein the COGO elements are stored), and then opens a dialog that enables the user to choose a COGO item to draw. **Do Not** activate the **Place Influence** toggle when using **Draw Plan & Profile**.

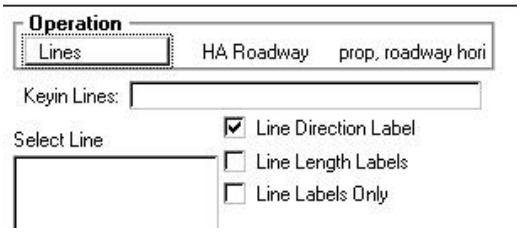
If utilizing the Design & Computation Manager within Project Manager, you are not be prompted for a job number since this is associated with the active project.

Eight operations may be accessed from the Plan and Profile Draw dialog: Points, Lines, Curves, Spirals, Chains, Stationing, Parcels, and Profiles. Each of these operations dynamically changes the dialog to reflect the selection with the various draw and label features used when placing a COGO element in a graphics file.

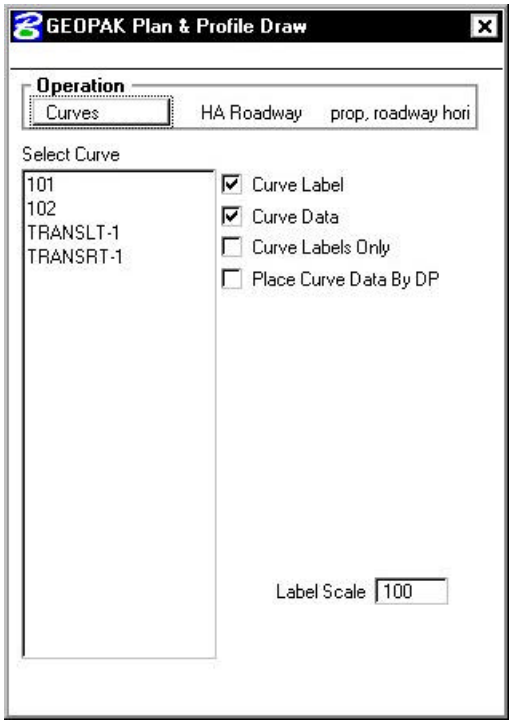


The points and lines dialog boxes have a key-in field that allows the user to specify the names of the COGO elements to be drawn. To use the line operation, the user must use point numbers to specify the ends of the line. The points/lines are drawn immediately after you enter their respective names and press the enter key. To draw more than one point or line, place a dash in-between the point numbers. To draw a line without using consecutive point numbers, use a forward slash (i.e. 10/11).





The dialog settings for curves, spirals, chains, stationing, parcels, and profiles have a list box that display the names of all curves, spirals and chains stored in the active coordinate geometry database file. Highlighting one of the available elements initiates further commands to draw the element into the design file. Each type of item has a list of parameters that can be optionally plotted.



GEOPAK can draw elements to non-active levels. After elements are drawn, it may be necessary to turn on appropriate levels and fit the elements into the view.