



# The D&C Compute Mode

Design Manual  
Chapter 21  
Automation Tools  
Instructions  
Originally Issued: 06-30-11

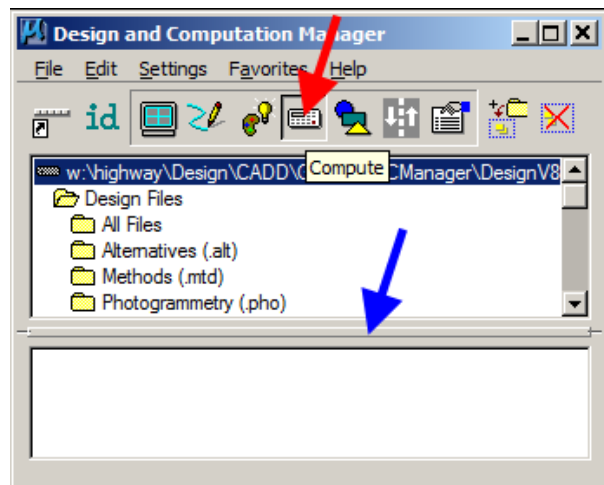
*(Much of the following information is taken directly from the Geopak Help files.)*

## Plan View Automated Quantities Tools

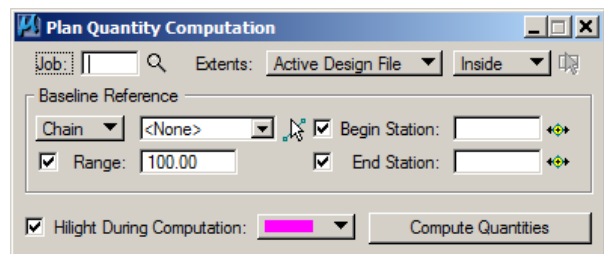
An important, yet time-consuming part of any project is the computation of quantities. Through the **Compute** mode of the Geopak Design and Computation (D&C) Manager many tools are available that make the completion of this task much quicker and easier. In addition, since the software utilizes the plan view Construction drawings to compile quantities, discrepancies between the drawings and the tabulated quantities are non-existent. Let's look at how to generate the quantities and the reports produced by GEOPAK.

## Initial Considerations for the Compute Mode

The Design and Computation Manager dialog is shown at the right. The **Compute** option button is located by the red arrow. The D&C dialog is resizable. Within the dialog, the "sash" (the long, thin bar between list boxes, located by the blue arrow) allows adjusting the partition between the list and collection boxes while the overall dialog size remains constant. Simply place the cursor over the sash and dynamically move, (*click-hold-drag-release*).



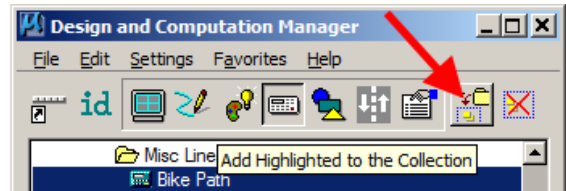
In addition to dynamically adjusting the main dialog to reflect the compute operation, the auxiliary **Plan Quantity Computation** dialog opens, as shown at the right. If this dialog was already opened from another operation, it dynamically changes to reflect the Compute operation.



Note that elements in reference files can also be utilized. Next is the selection of the desired elements.

## To Compute Quantities

1. Identify items or categories to be computed (create list of items by *double-clicking* items in the D&C listing, or *single-click* the item then *click* the **ADD** button, as shown at the right.)
2. Set Job, extent of computations (view, fence, etc.) and baseline information (chain for station / offset.)
3. Compute quantities.
4. Set Output format.
5. Create report (text file, spreadsheet, or database.)



**NOTE:** To ensure the fastest possible processing speed, select only necessary items to **Add** to the selection list. The calculation process compares each element in the file with every item in the very large D&C Manager database. This computation will include all active and reference file elements and exact duplicates will also be counted.

## Select the Desired Items

The next step is the selection of the correct item from the hierarchy. Geopak computes quantities only for those hierarchical items that are configured for the computation of quantities.



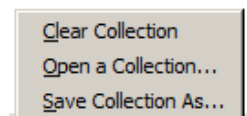
**NOTE:** The elements must have been originally placed in the file using D&C Manager with “**Place Influence**” toggled ON () and compute parameters set.

Two selection methods can be employed:

- Select an entire category - computes quantities for every item found in the selected category as well as any child categories.
- Selection of individual features - single item is computed.

Both items and groups can be utilized in the Collection box simultaneously. To remove a group or item from the Collection list box, *double-click* the item or category in the Collection list box. To remove all the categories or items from the collection list box, press the Clear Collection shortcut button (rightmost item) at the top of the main dialog.

A small pop-up menu is supported when a *right-click* is initiated, while the cursor is within the Collection list box. This pop-up menu is different than the pop-up menu that is invoked when the cursor is within the hierarchy list box.



**Clear Collection** - Removes all categories and items from the collection list box.

**Open A Collection ...** - Invokes a File Manager, wherein the previously saved collection file may be selected.

**Save Collection As ...** - Invokes a File Manager, wherein the current categories and / or items within the Collection list box file may be saved to a user defined file name. The default file extension is .col.

After the Collection list box is set, various computation options can be defined via the auxiliary dialog. The compilation of items and categories in the Collection list box and the definition of various computation parameters and options can be completed in any order before **Compute Quantities** is *clicked*.

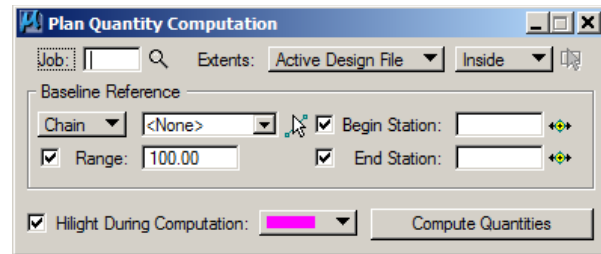
## Compute Options

### Job

**Job Number** - Geopak Coordinate geometry database (gpk) file where the specified chain is stored.

### Extents

The **Extents** option determines which elements are included in the set. In addition to the **Extents**, the **Range** option affects the selection. If the **Range** option is active, both the range and the extent must be satisfied for the element to be computed.



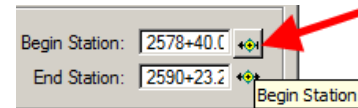
**Active Design File** - All elements in the Active Design File are candidates for computation.

**View** – Only selected items that can be seen in MicroStation view one are computed. If the view includes area outside of the **Range**, the **Range** will override.

**Fence** - A MicroStation fence must be placed, and all specified graphical features that satisfy both the fence and the **Range** will be tabulated. The **Fence** mode is sensitive to the MicroStation Inside, Overlap, and Clip modes. However, the Clip mode applies only to non-shape elements.

**Boundary Element** - A previously drawn closed shape is used to determine quantities. When selected, the user is prompted to select the closed shape. This mode is sensitive to the MicroStation Inside, Overlap, and Clip modes.

**Station Range** - A Baseline Reference (chain or dgn) must be defined for this option. The **Range** fields default to the extent of the chain. A station value can be entered in the input field or the Begin or End station can be graphically defined by *clicking the* button to the right of the input field, as shown by the arrow. Perpendicular projections to the station(s) define the extent of the computations.



**Sheet Range** - Sheets placed with the Plan Profile Sheet Composition tool can be utilized. Select the option that displays the sheet range.

**Selection Set** - A MicroStation selection set of the candidate compute elements must be created prior to computing.

**Boundary Selection Set** - A MicroStation selection set of the Boundary (not the actual candidate compute elements) must be created prior to computing.

### Baseline Reference

The Baseline Reference section defines the chain / station values that are used as a basis if the range option is used as well as station / offsets in the various output formats.

**Chain** - Uses a previously stored COGO chain. Select the chain that sets the default stationing. The chain may be defined graphically by *clicking* Identify Chain and graphically selecting.

**DGN** - Uses a graphic element. Set to DGN, *click Identify DGN Element, select* and *accept* the graphic element. The stationing is based on the length of the element, starting at 0.00. The element type and MicroStation element ID is displayed to the right of the DGN option.

**None** - No reference is required, so the Baseline Reference is blank. Note this limits the type of output format, as no station / offset values can be computed.

**Begin Station / End Station** - Based on the Chain selection. The default values are the limits of the chain or the length of the DGN element if set to DGN. To use a partial chain, *toggle* on the Begin or End Station and set the value. *Click* Begin or End Station to graphically define the station.

**Range** - Left and right offset limits (in master units) from the chain where the quantities are computed. Any specified item located outside of the limits is not included in the report. Note, it is sensitive to the type of **Extents** and the Inside, Clip, and Overlap modes.

## Completing the Plan Quantity Computation

**Highlight in Computation** - When activated, all MicroStation elements utilized in computations are highlighted in the selected color.

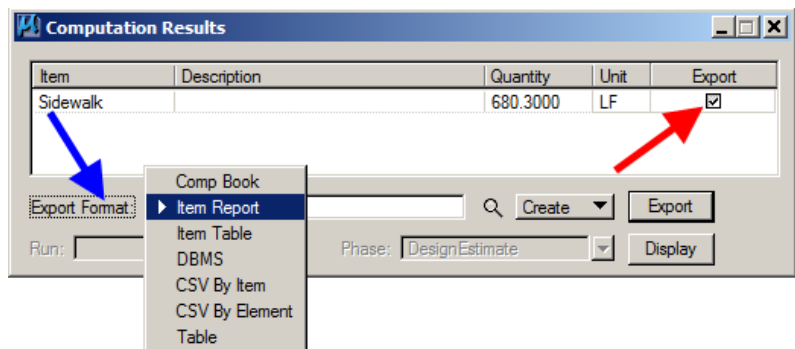
**Compute Quantities** - Commences the computation process.

To Compute Quantities (in the **Plan Quantity Computation** dialog)

1. Set the **Job**.
2. Define the **Extents** and the Inside, Clip or Overlap mode.
3. Define the **Baseline Reference** information.
4. (Optional) *Toggle* on **Range** and set the value.
5. (Optional) *Toggle* on **Begin** and / or **End Station** and set the values.
6. (Optional) *Toggle* on **Hilite During Computation** and select color.
7. Click **Compute Quantities**.

## Computation Results

The listing displays the pay items and associated total quantity computed. To exclude a pay item from the report, turn off the **Export** toggle (located by the red arrow). The next decision to be made is the type of report desired (located by the blue arrow). The content of the dialog changes dynamically based on the report type selected.



## Export Format

**Comp Book** - A more detailed report that lists not only quantity summaries, but also geometric properties such as plan view coordinates and station/offsets for located elements. File is in ASCII format.

**Item Report** - Quantities Summary listing pay items, descriptions, units and total quantities for located elements. File is in ASCII format.

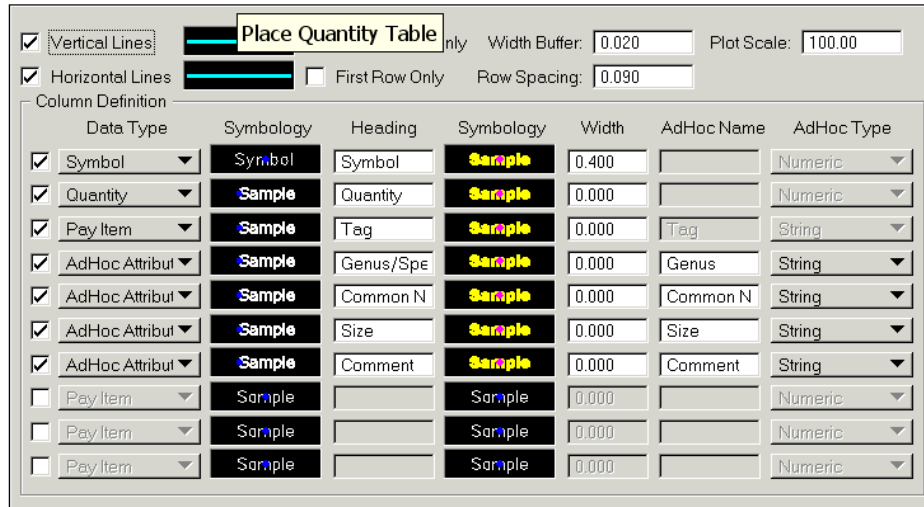
**Item Table** - Contains the same information as the Item Report, but formatted in tabular form.

**DBMS** – This format has very detailed information, including calculated and rounded quantities, geometric properties, pay item numbers, descriptions, station / offset values, etc. The format relates to the selected database (e.g., Microsoft Access, Oracle, SQL Server, and dbase) and is set in the Compute Settings tool.


**CSV by Item** - Quantities Summary listing pay items, descriptions, units and total quantities for located elements. Format is CSV (coma separated values). To use a predefined format for this report, browse and select a stored \*.qtd preference file.

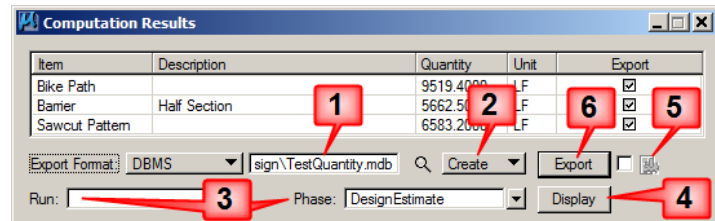
**CSV by Element** – This is a more detailed report that lists not only quantity summaries but also geometric properties, such as plan view coordinates and station/offsets for located elements. The format is CSV (comma separated values).

**Table** – This type has user defined table column properties. A symbols column for legends is also included, as well as adhoc attribute tabulations. To use a predefined format for this table, browse and select a stored \*.qtd preference file.



## Other Computation Results Fields

- File Name field** - Manually enter the file name or *click* the identify icon (  ). Note the file extension should match the Export Format (e.g., mbd for Access database, csv for comment separate values)



- Create / Append** - Quantity calculations can be placed in a newly created file or appended to a previously created file.
- Run / Phase** - Used only for the **DBMS** format for subsequent use in the Quantities Manager tool. Quantities can be separated into various phases, as a means to group various pay items. Default phases include: Design, Preliminary, and Final. Note that new phases can be added, but there are naming limitations of downstream applications (i.e., Transport links in Quantities Manager. Runs may also be used as a method of grouping various quantities and / or pay items.
- Display / Undisplay** - Displays or undispays the exported quantities.
- Advanced Project Settings** – This is to be used with the DBMS option only and the button is located to the right of the Export button when the **DBMS** format is selected.
- Export** - Commence processing.

## To Export Quantities

1. *Toggle* off any unwanted quantities (Toggle the **Export** option off in the Computation Results dialog).
2. Set the **Export** Format.
3. Enter the file name in the entry field.
4. Set to **Create** or **Append**.
5. (Optional) If using the DBMS format, set the **Phase** and **Run**.
6. (Optional) Set **Display** or **Undisplay**.
7. *Click* **Export**.

# Chronology of Changes to Design Manual Section:

## 021a-800 The D&C Compute Mode

6/30/2011 NEW  
New