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Chapter 10: Quantities

Overview

Quantities are calculated by many different methods. The type of quantity, its unit of measurement, and how it is shown in the plans will dictate the method used to calculate it. This chapter will go through the procedures used to calculate quantities using plan and cross section drawings. A detailed description of each item to be calculated, the means of calculation, and the accuracy needed is reserved for another publication.



These methods will only work if you use D&C Manager to draw or set the symbology of the elements you need to quantify.

This chapter is broken into two sections. Calculations in plan view and calculations in cross sections. D & C Manager will be used to calculate items in the plan drawing and XS Reports will be used to calculate items in the cross section drawing.

Quantities in Plan Drawings

Three different types of quantities can be calculated in the plan drawing: each, linear, and area. All of these will be calculated using the computation tool in Design & Computation manager. All of the items that need to be calculated are set up in CFLHD's Design & Computation Manager database. So, if you followed these standards while drawing each element, quantity calculations will be easy. See the chapter on D&C Manager for more information on drawing elements.

The D&C manager can be selected by picking Plan View Quantities in the Project Manager Workflow Dialog Box, or by selecting Design and Computation Manager from the GEOPAK Road Tools Dialog Box.



Figure 10-1: Accessing D&C Manager from the Road Tools Dialog Box

If you select the D&C Manager from the Project Manager Workflow Dialog, GEOPAK will automatically set Design & Computation Manager in Compute mode. If you select Design & Computation Manager from the GEOPAK Main menu, you will need to shift it to Computation mode by selecting the Compute button in the menu bar.

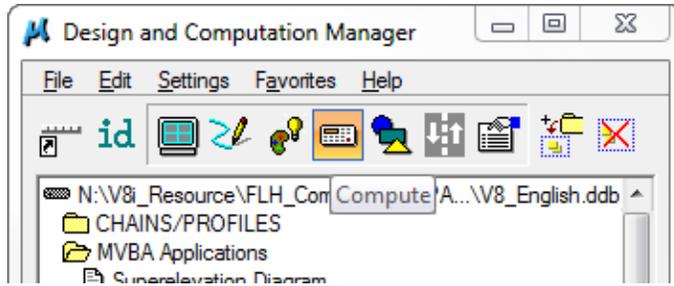


Figure 10-2: Compute Icon

This will pop up the following two dialog boxes.

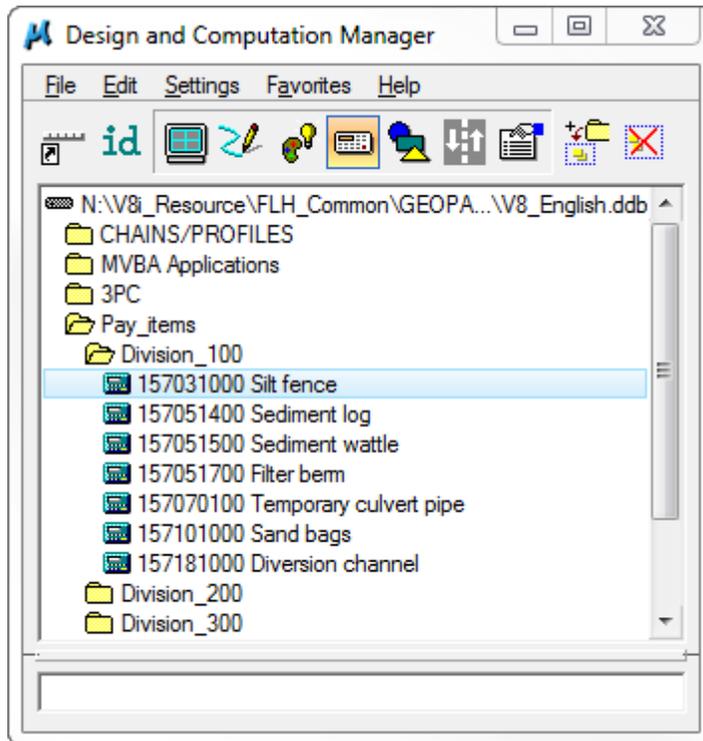


Figure 10-3: Select Item for Computation

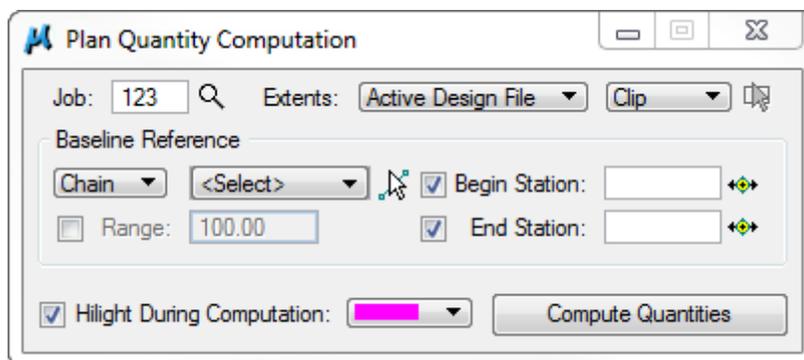


Figure 10-4: Compute Dialog

The first dialog box will allow you to select the items to be calculated. The second dialog box sets up the parameters for calculating and reporting the quantities. The following workflows will explain the processes for calculating quantities in each of the three types: each, linear, and area.



Workflow 1: Calculating “By Each” Quantities

Examples of quantities to be calculated in units of “each” are end sections, terminal sections, lights, survey monuments, etc.

To access this workflow, follow this link:

http://flh.fhwa.dot.gov/resources/cadd/cfl/documents/Workflow_10.1_v8i.pdf

Workflow 2: Calculating “Linear” Quantities

Examples of linear quantity calculations are fence, curb, guardrail, etc.

To access this workflow, follow this link:

http://flh.fhwa.dot.gov/resources/cadd/cfl/documents/Workflow_10.2_v8i.pdf

Workflow 3: Calculating “Area” Quantities

Examples of “area” quantities that are calculated in the plan view are roadway obliteration, sidewalk and concrete pavement. Since GEOPAK uses shapes to calculate areas, area quantities are not quite as simple as the “By Each” and “Linear” quantities.

To access this workflow, follow this link:

http://flh.fhwa.dot.gov/resources/cadd/cfl/documents/Workflow_10.3_v8i.pdf

Quantities in Cross Sections

Besides computing earthwork, surfacing, pavement removal, and topsoil from cross sections, cross sections can be used to calculate seeding and clearing quantities. The following workflows will explain how to calculate the clearing and seeding quantities.

Workflow 4: Calculating “Clearing” Quantities

To access this workflow, follow this link:

http://flh.fhwa.dot.gov/resources/cadd/cfl/documents/Workflow_10.4_v8i.pdf

Workflow 5: Calculating “Seeding” Quantities

To access this workflow, follow this link:

http://flh.fhwa.dot.gov/resources/cadd/cfl/documents/Workflow_10.5_v8i.pdf