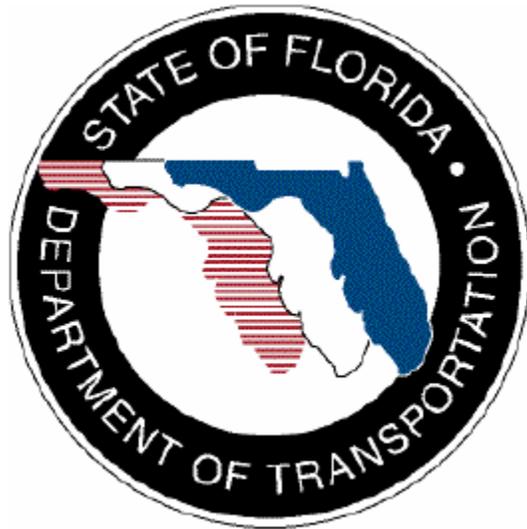


**STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION**



**FDOT Quantity Manager
CE-11-0103**

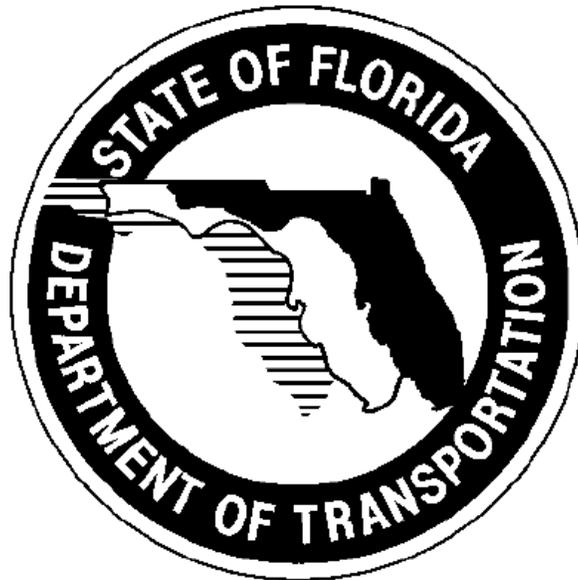
March 24, 2011

**ENGINEERING / CADD SYSTEMS OFFICE
TALLAHASSEE, FLORIDA**

<http://www.dot.state.fl.us/ecso/>

FDOT Quantity Manager

FDOT Course ID: CE-11-0103



**ENGINEERING / CADD SYSTEMS OFFICE
TALLAHASSEE, FLORIDA**

Course Manual

March 24, 2011

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FDOT Quantity Manager

CE-11-0103

Description

This course instructs on the GEOPAK's Design & Computation Manager covering the tools and interface, including Quantity Manager, importing quantities and generating reports. Students will learn to use the tool and become familiar with how to draw items and then quantify them. Drawing plan items like Curb & Gutter, Sidewalk & Pavement shapes are also covered. Students will use the Quantity Manager tool and become familiar with how to draw items and then quantify them.

Topics Covered

- Overview
- Design & Computation Manager Tools
- Design & Computation Settings
- Drawing Quantity Shapes
- Generating Quantities
- Quantity Manager
- Open a Project in Quantity Manager
- Creating Categories, Payitems and Quantities
- Quantity Manager Styles and Reports
- TRNS*Port Groupings
- Exporting to TRNS*Port

Prerequisites

The following courses and some manual drafting or related CADD product experience is recommended:

- FDOT GEOPAK for Roadway Designers – Basic (CE-11-0099)

Duration: 16 Hours

Professional Credit Hours: 14 PDHs

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For information about this and other CADD training courses, publications, videos, and Frequently Asked Questions, visit the Engineering/CADD Systems Office of the Florida Department of Transportation on the world-wide web at <http://www.dot.state.fl.us/ecso/>

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1 QUANTITY MANAGER OVERVIEW

OBJECTIVES

Review the workflow and components of computing quantities.

- Requirements of Florida Department of Transportation (FDOT)

One of the most time consuming and tedious tasks during the production of a plan set has always been calculating Payitem quantities. In the past, this was done manually. The problems with manually calculated quantities arise from the massive amount of work involved in calculating correctly.

Several years ago, GEOPAK started delivering, with the Civil Suite, an optional application known as Construction Manager. Construction Manager used information created by the D&C Manager (D&C Manager) during the design process to automatically compute most of the quantities, and then place them on a Comp Book Form. However, Construction Manager could not handle anything, not drawn in a design file, such as the Mobilization Payitem, which is a Lump Sum item; unless there was a dummy element in a .*dgn* file representing this Payitem. In addition, the user could not modify the resulting Comp Book forms.

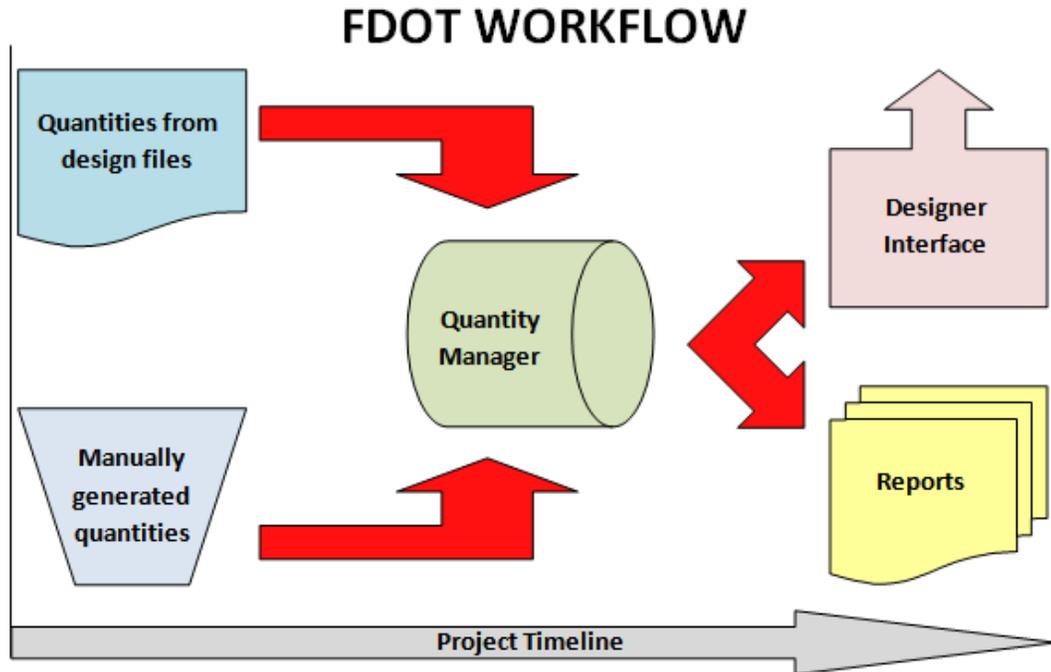
Quantity Manager is an application that addresses the issues with Construction Manager. Introduced with GEOPAK 2001, Quantity Manager has these features:

- automatically calculates quantities,
- accepts changes,
- allows for manually entering quantities,
- creates Comp Book Forms,
- exports to TRNS*PORT,
- creates cost estimates, and
- performs additional tasks covered in this manual.

Quantity Manager is a stand-alone application; although it is necessary to have MicroStation and GEOPAK to gather the quantity data, Quantity Manager can manipulate the data and create reports alone. Quantity Manager uses a database that is modifiable throughout the life of the project, easily accommodating late design changes and eliminating the need to wait until the end of the project to start calculating quantities.

QUANTITY MANAGER WORKFLOW

Shown in the figure below, is a workflow that represents the process of creating and providing Payitem quantities for FDOT projects. All the elements of the design that have Payitem defined must exist. GEOPAK supplies a tool called the D&C Manager that is both a design tool and a quantity calculator. Scanning for quantity information is possible for any element placed with D&C Manager, or having the appropriate tagged attributes. Once the elements are drawn and the quantities compute, the data transfers into Quantity Manager for review and/or modification. Then, Payitems not computed automatically with D&C Manager enter manually. Finally, Reports for the Comp Book are generated and the entire database is exported to TRNS*PORT.



FDOT STANDARDS

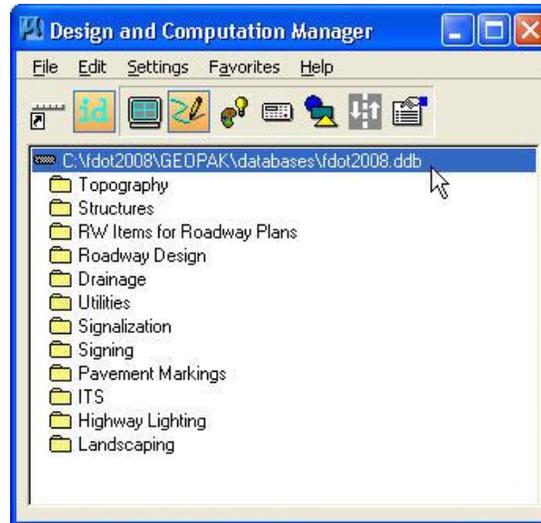
The FDOT has several resources available to instruct and aid designers in computing Payitem quantities. The Estimates Office publishes the Basis of Estimates Manual, the governing document that specifies how each Payitem should be computed. A Master Payitem List containing every Payitem that is available for use in Florida is also provided by the Estimates Office. The Engineering/CADD Systems Office (ECSO) provides tools to simplify the process of generating quantities. The D&C Manager database (FDOT20**.ddb), and several Quantity Manager report styles are delivered with the FDOT Software. The D&C Manager database from FDOT is pre-set to comply with both drafting standards specified by the CADD Production Criteria Handbook (CPCH) and the Payitem computation methods supplied by the Basis of Estimates Manual. The Quantity Manager reports delivered from GEOPAK replicate by design the standard FDOT Comp Book forms.

FDOT recommends to use D&C Manager for all drafting to insure that each element is on the correct symbology and that quantities can be automatically calculated. The FDOT20**.ddb database that is supplied by FDOT includes nearly all items that will be used on an FDOT project.

D&C MANAGER DIALOG

To access D&C Manager, from the *Road* toolbox, click the **Design & Computation Manager** icon

--or--from the MicroStation menu, select **Applications**, point to **GEOPAK ROAD**, and then select **Design & Computation Manager**.



D&C Manager uses a hierarchical database (the *.ddb* file) which stores information concerning functional classification and display preferences for each feature and item used in a MicroStation file.

The ECSO is responsible for the development of the FDOT standard GEOPAK D&C Manager databases. FDOT developed the databases to comply with the CADD Standards as defined in the CPCH. This database may need to be modified for project specific items or to comply with District standards. If the database is customized, the user saves the customized database into the project directory in the symb folder. Saving the database to the project directory is important because this ensures delivery of the modified database with the project.

MENU ITEMS

The D&C Manager has four menus.

File This menu allows you to create a new *.ddb* file, open an existing *.ddb* file, save a *.ddb* file, save as, merge *.ddb* files, compress *.ddb* files, use a password for a *.ddb* file, and exit D&C Manager.

Edit This menu allows users to perform multiple edit functions to the *.ddb* file. If a change is made to the database, the user can Undo or Redo. Users can Copy, Move, Rename, and Delete database Items and Categories. There are also Options to Find an item or Category, and to Identify a database Item. Available too, are tools to create a New Category or New Item, as well as Modify Item and Review Item.

Settings This menu has eight items pertaining to the way items are displayed in MicroStation and the method of computing quantities. These items are covered individually later in this manual.

Favorites This menu allows users to store and recall frequently used items.

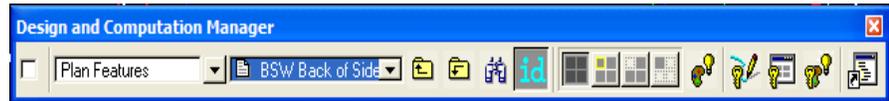
TOOL BAR

D&C Manager has a toolbar for quickly access to different modes.



 **Switch To
Toolbox Mode**

D&C Manager is set up to work in two different modes, the whole dialog box or the toolbox. This icon opens the toolbox mode. This toolbox can be resized and docked. To change the display back to the whole dialog box, click the Switch to Dialog Mode icon, the last icon on the right. The Place Influence check box is at the left end of the toolbox.



 **Identify
Item**

The D&C Manager item is set to match an existing MicroStation element previously drawn by the D&C Manager. If the item which is Identified does not match an item in the opened database, a message appears in the status bar saying: No matching database item



 **Display**

The Display icon filters the MicroStation elements in the design file so only specific features display. This icon expands D&C Manager to show a collection bin. This collection bin is for displaying multiple items at one time. This icon also opens a second toolbox with four icons as seen in the figure below.



From left to right the icons are Normal Display, Highlight Selection, Hide Selection and Display Only Selection. The function of these icons is covered later in the manual.

 **Design**

The Design icon is used to plot Coordinate Geometry and MicroStation elements into MicroStation with the defined symbology by use of Draw Plan and Profile or in conjunction with MicroStation's element placement commands with Place Influence activated.





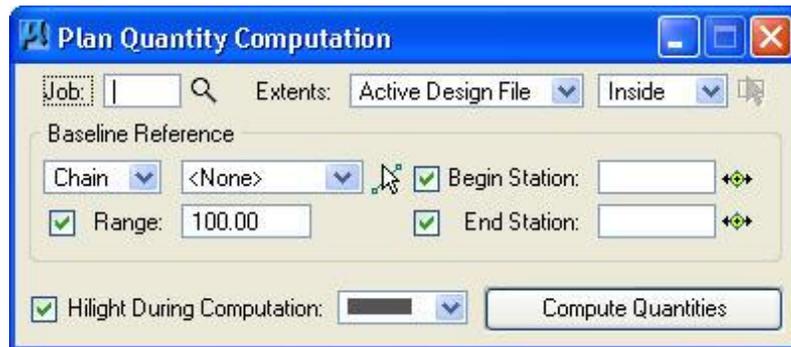
Set

The Set icon is used to set the symbology of previously drawn MicroStation graphic elements in accordance with the parameters of a selected item in the database. This tool is used to apply a D&C Manager attribute to element that was drawn without using the Design mode of D&C Manager, or to fix items that were originally drawn with the wrong symbology. Set can also be used to append or delete Adhoc Attributes, which are discussed later in this manual.



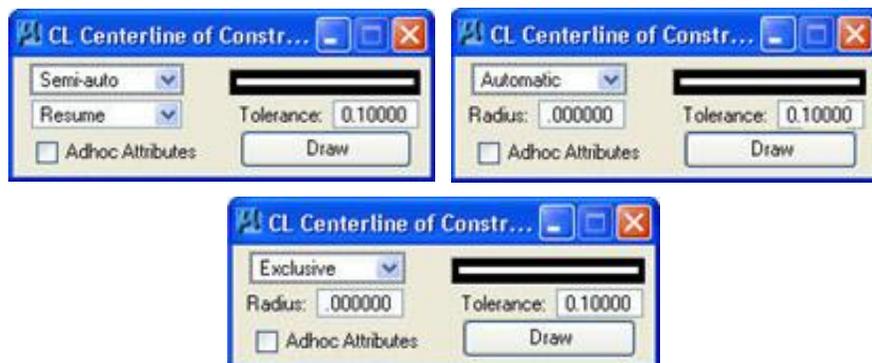
Compute

The Compute icon is used for tabulating quantities of items that have been placed as a Pay Items by use of the Design or Set mode. If elements are drafted using MicroStation tools, quantities cannot be computed unless an attribute is applied using the Set tool. This tool also expands D&C Manager to show the collection bin, allowing for processing multiple pay items at one time. A second toolbox is also opened as seen in the figure below. Quantity computations are covered in detail in Chapter Five of this manual.



Shape

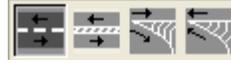
The Shape icon uses plan view MicroStation graphics to place shapes required for quantities. This tool opens a second dialog box as shown in the following figure.





Pavement Marking

This mode dynamically provides additional options for placing pavement striping and markings. This tool adds four additional tools to D&C Manager as shown in the following figure.



The four Pavement Marking tools from left to right are:

- Striping
- Separation
- Chevron Diverge
- Chevron Merge

The Pavement Marking tools are covered in the FDOT Traffic Plans Course and as such are not detailed in this manual.



Preference

This icon expands the toolbar to include four additional icons to configure D&C Manager. These same tools are accessible through the Edit menu.



The tools are from left to right:

- New Category
- New Item
- Modify Item
- Review Item

EXPLORING FDOT'S .DDB FILE

FDOT has created a database file in the FDOT20** folder located at `geopak\databases\FDOT20**.ddb`. This database has been set up specifically by FDOT to create elements with the correct level symbology according to FDOT CADD Standards. The .ddb file is set up with discipline folders called categories. Inside of each category are items.

Categories The basic component of the hierarchical tree is the Category, represented by a folder icon. The FDOT database categories are divided by discipline. The following figure shows the Categories with a description relative to their discipline. Inside these Categories, you have either subcategories or items.



Items The other database component is the item. The item icon correlates to the definition of the item. An item can be a drafting item, a compute item, a default item or a pavement item. (Pavement items are not used by FDOT and are not covered). Items contain specific functions related to defined element symbology or quantity calculations.

Opening a category reveals several items as shown below:

- | | | |
|---|--------------------------------|---|
|  | Default Icon | These items are used to set drafting standards for MicroStation commands or to draw COGO elements without annotation. In some cases, these items will run a 3PC routine. |
|  | Drafting Standards Icon | These items can be used to set drafting standards for MicroStation commands or to draw COGO elements with annotation. |
|  | Calculator Icon | These items are used to set drafting standards for MicroStation commands or to draw COGO elements. The graphics are tagged with a pay item attribute that can be used to calculate plan quantities. |

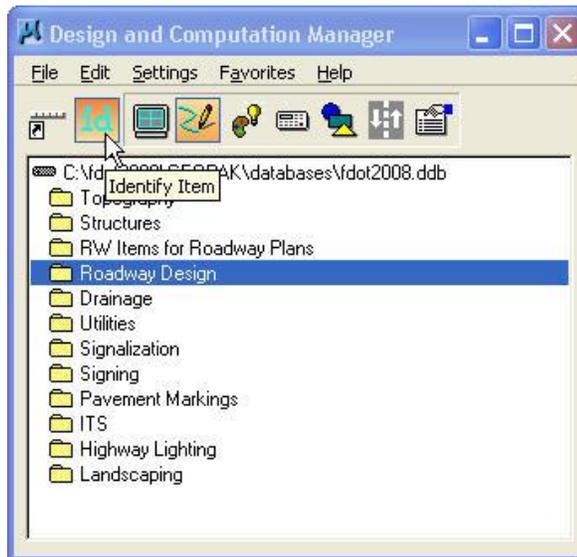
2 D&C MANAGER TOOLS

OBJECTIVES

- Present details of the D&C Manager tools
- Explore using Identify Item, Display Item, and Set Item tools in plans production.

IDENTIFY ITEM TOOL

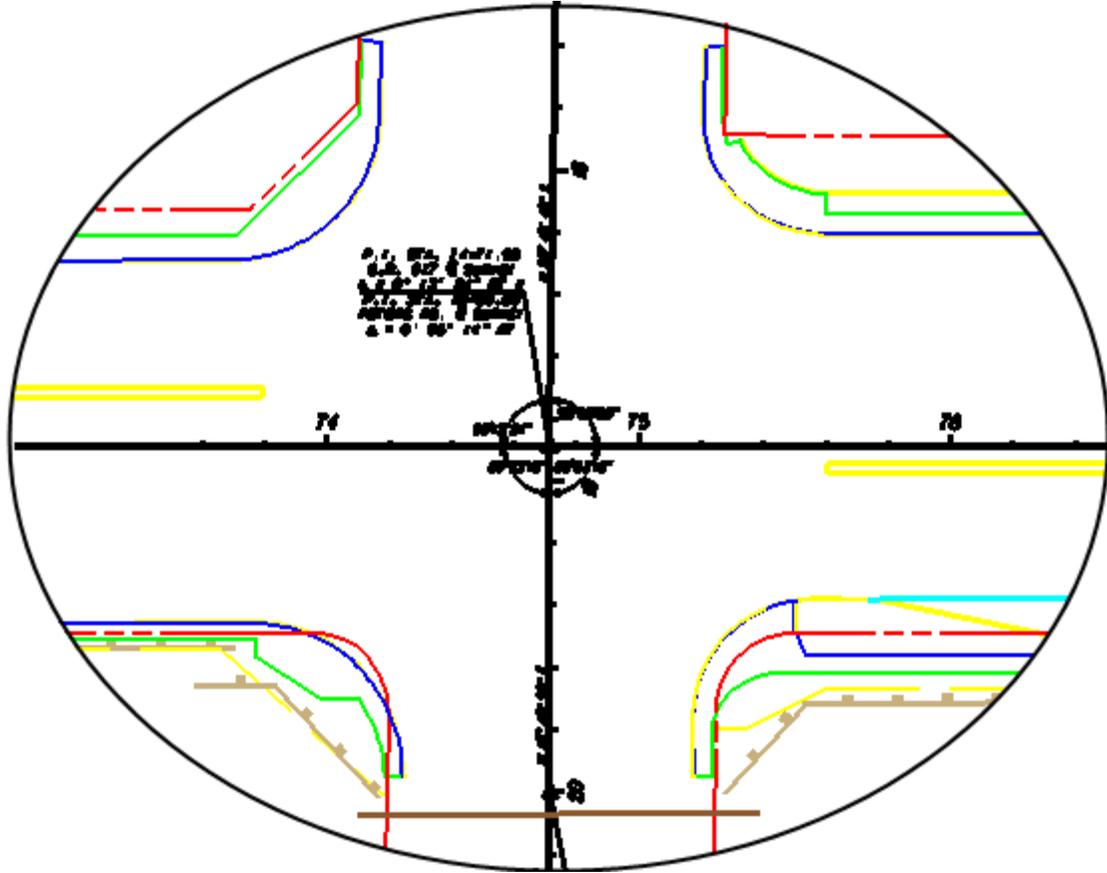
The user generally utilizes the *Identify Item* tool in conjunction with other tools. The main function of Identify Item is to set the active D&C Manager database Item to match an element already in the design file.



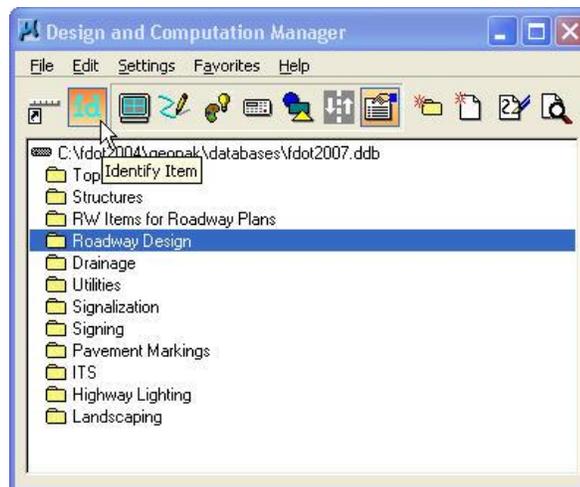
In function, *Identify Item* works much in the same way as the Match Element Attribute tool in MicroStation. The user activates the tool and identifies the element to be matched. This sets the current or active symbology to be used by other tools. The difference is that the D&C Manager Identify Item tool not only allows for setting symbology, but also searches the FDOT database for an Item that matches the selected element. In searching the database, *Identify Item* looks for an entry that has matching symbology and database attributes. If there is a matching Item, the active D&C Manager Item is set. Once the Item is set, uses of other tools from the D&C Manager come into play for their various purposes.

Exercise 2.1 Identify an Existing Element

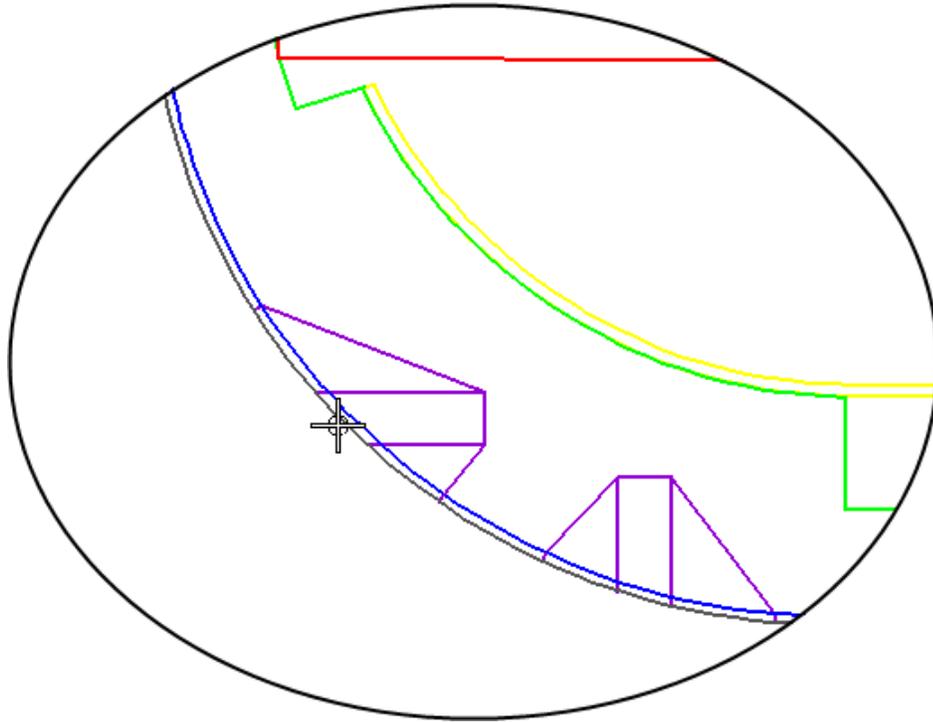
1. Open *dsgnrd01.dgn* from the C:\e\projects\00000000000\Roadway directory.
2. Zoom the MicroStation view until the intersection near the beginning of the project can be clearly seen.



3. Open D&C Manager.
4. To start the Identify Item tool, click the **Identify Item** icon.



5. In the design file, select the **Face of Curb** on the intersection return in the Northeast quadrant of the intersection. The Face of Curb highlights.



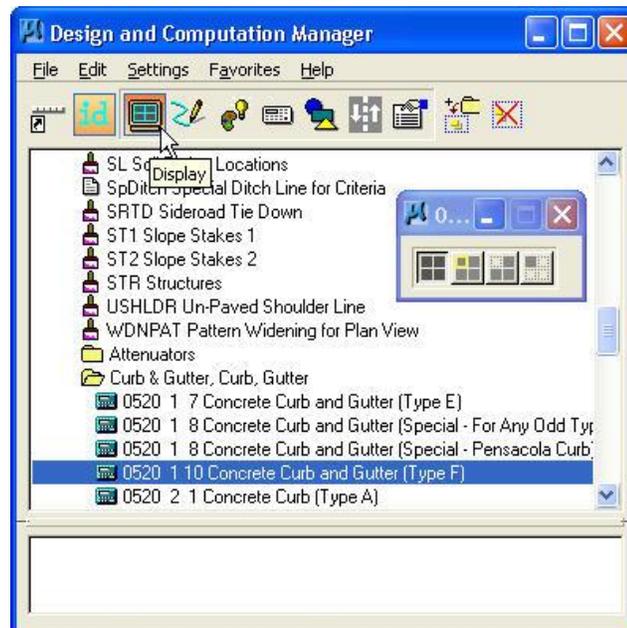
6. Click in a vacant area of the design file to accept the command. The Curb Type F item highlights in D&C Manager. This indicates that D&C Manager found a match to the selected element and has set this as the active Item. From this point, the user can implement any other tool from the D&C Manager using this Item.



7. In the design file, select the **Back of Sidewalk** to identify and select it.

DISPLAY TOOLBOX

D&C Manager Items use the *Display* tools to filter elements in a design file.



Similar to the *Select by Attribute* tool in MicroStation, Display searches the design file for elements meeting certain criteria. Display also searches the active and reference files for the active database Item, or a collection of Items, and applies a display filter to visualize the design file elements using one of four tools.

- | | |
|-------------------------------|---|
| Normal Display | Applies no filter to the view; elements are displayed according to the MicroStation View Attributes. |
| Highlight Selection | This displays elements in the same way as Normal Display , except that the selected Items highlight, according to MicroStation's highlight color settings. |
| Hide Selection | This applies a filter to the design file that displays everything except for the Items selected. |
| Display Only Selection | Displays only the Items selected and hides everything else in the design file. |

When using the display tools, be sure to set the display to NORMAL prior to closing, as the last display mode used will continue until reset.

- **To display a single item**
 1. From D&C Manager, click a single item.
 2. From the Display toolbox, click the desired tool icon.
- **To display multiple items**
 1. Add each item to the collection box.
 2. From the Display toolbox, click the appropriate tool icon.

Note Hidden elements are still located by D&C Manager when creating shapes and calculating quantities.

Exercise 2.2 *Displaying Items*

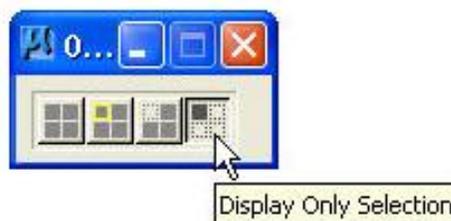
1. Following procedures learned in the previous exercise, click the **Identify Item** icon and select **Curb Type F**.



2. With *Curb Type F* as the active Item, click the **Display** icon. The *Display* toolbox opens.

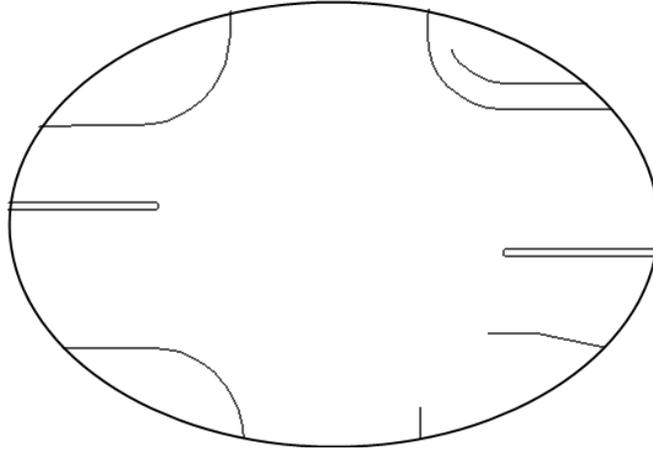


3. From the *Display* toolbox, click the **Display Only Selection** icon. Only the *Curb Type F* Items display.



- In D&C Manager, double-click the **Curb Type F** and **Curb Type D** items. Both items add to the collection box.

Note Part of the Type F Curb in the lower right corner does not display, because it does not match the Curb Type F database Item.



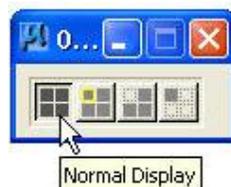
- On the *Display* toolbox, click the **Hide Selection** icon. Both *Curb Items* are hidden and everything else now displays.



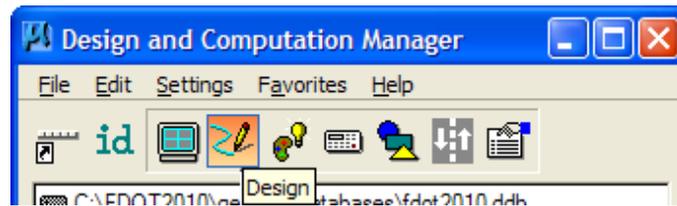
- Double-click the **Curb Type D** item in the collection box. The **Curb Type D** returns to view.
- On the *Display* toolbox, click the **Highlight Selection** icon. *Type F Curb* displays and highlights.



- On the *Display* toolbox, click the **Normal Display** icon. The view returns to normal.



DESIGN MODE



The user utilizes Design mode to place most elements. Design mode is the default mode when D&C Manager opens. The tool is used for the following functions:

Set Drafting Standards

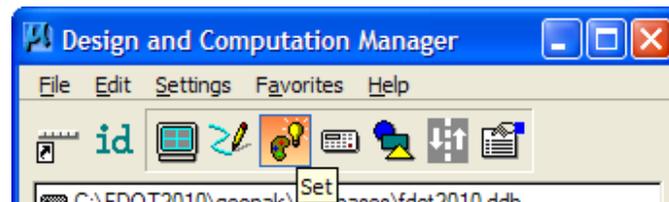
This function is for the placement of MicroStation elements using MicroStation commands by the Place Influence option. Place Influence check box is used to override the currently active MicroStation symbology settings. The Place Influence check box is located at the left of the dialog box. By selecting the Place Influence check box, the designer can use MicroStation commands to place or modify elements utilizing the drafting standards established for the currently selected item in the D&C Manager database.

Plot COGO Elements

Plots the Coordinate Geometry elements into the design file according to the Drafting Standards set by the selected D&C Manager Item.

This manual assumes that all elements of the design are already in place. As such, the Design Mode is not detailed. For more information on the Design Mode, refer to FDOT's Course Manual for Basic GEOPAK for Roadway Designers.

SET MODE



The Set mode works by setting a pre-drawn element to the attributes of the active D&C Manager Item. The Set mode also appends or modifies the user data linkage to reflect the Payitem or Feature assigned to the active Item.



If the database Item has Adhoc Attributes associated with it, select the Adhoc Attribute check box to Append or Replace the attributes. Elements can be set individually or as a group. Setting multiple elements at once requires either a selection set or a complex chain. A selection set can be created using MicroStation's Power Selector or Select by Attribute tools. The complex chain component of Set requires a series of connected linear elements.

➤ **To set an individual element**

1. From D&C Manager, click the **Set** icon.
2. In the design file, click the element to be set.
3. Click in an empty part of the design file to accept.

Exercise 2.3 Setting Elements

1. From D&C Manager, set **Curb Type F** as the active Item.
2. Click the **Set** icon to activate **Set Mode**. A dialog box opens.



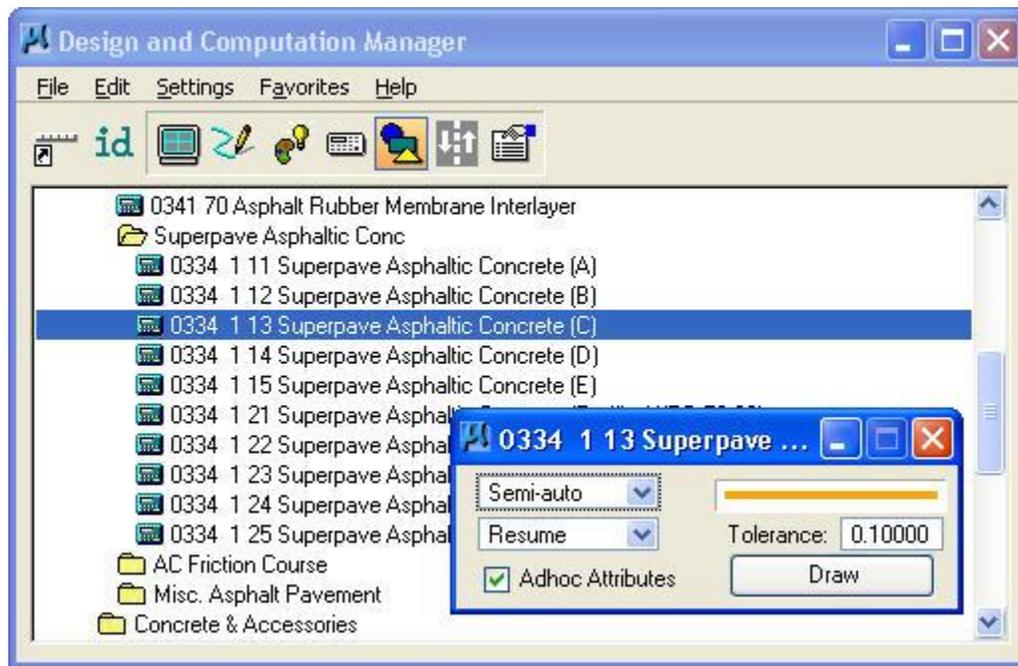
3. From the dialog box, click the **Set** icon.
4. In the design file, click the **Face of Curb** on the return in the southeast quadrant of the intersection. Zoom the view closer, if needed.
5. Click in an open area of the design file to accept the command.



6. Use the Display tool to highlight **Curb Type F** Items and verify that the Set was successful.

SHAPE MODE

To quantify users create most elements as part of the design. Items such as Curb and Gutter, and Drainage Structures are of this type. Some quantity items, such as Pavement, are not quantifiable from the information in the design file. Use the Shape mode of D&C Manager to create a quantity shape for such items. The users utilize the Shape mode to create shapes that have the symbology and Payitem properties of the active D&C Manager database item. Creating shapes is very useful for calculating quantities for items such as asphalt, base, and stabilization, on projects with irregular areas where hand calculations are very difficult.



The Shape tool creates shapes for area calculations. There are three options for creating shapes:

- Automatic** The user clicks within a closed area to identify the point of creation for the shape. The user utilizes this option, except in the case where there is no means to turn off the display of conflicting elements.
- Semi-auto** A prompt for acceptance of each element displays for the user prior to adding the element to the shape outline. Use when the view has conflicting elements.
- Exclusive** This option utilizes the automatic option, but also prompts the user to identify an area internal to the original shape excluded from the area quantity. This option is seldom used.

PLAN QUANTITY COMPUTATION

The *Plan Quantity Computation* tool generates the quantity calculations from D&C Manager items drawn in a design file. This tool can also use a collection of items or the active item. Collections can consist of entire categories or several individual Items.

➤ **To add an entire category**

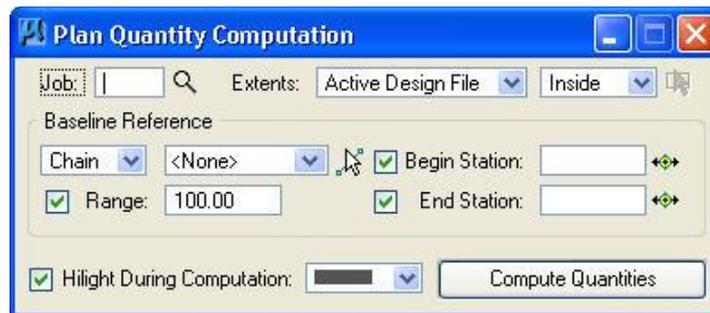
1. From D&C Manager, select the category.
2. Right click on the category. A popup menu displays.
3. From the popup menu, click **Add to Collection**. The designated category appears in the collection list box located at the bottom of the dialog box.

Note D&C Manager computes quantities for every item found in the selected category as well as any Sub-categories.

➤ **To add an individual item**

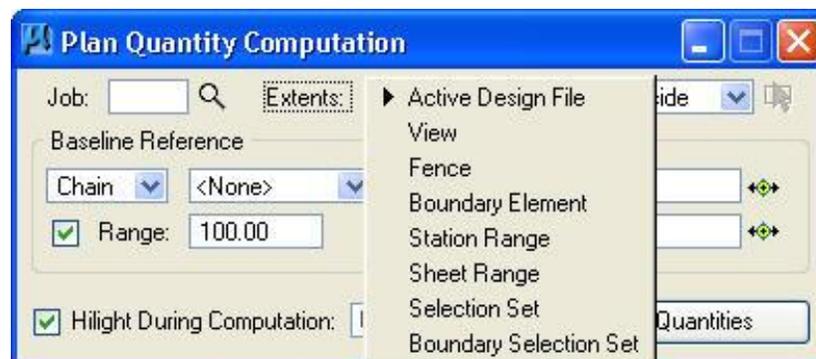
1. From D&C Manager, double-click the item. The item adds to the collection box.

Two possibly unfamiliar terms, *Extents* and *Baseline Reference*, are on Plan Quantity Computation.



Extents

The *Extents* determines which elements are included in the set. If the Range check box is selected, the element must exist within the extents and range (distance left and right of the baseline) for the element to be computed. The Extents options are listed below.



Active Design File All elements computed in the Active Design File that match the selected items.

View Only items that display in MicroStation View One are computed.

Fence A MicroStation fence must be placed, and all elements that match the selected items within the fence are computed.

Boundary Element An existing shape is used to define the boundary of computable elements. The

Fence mode affects the computation of elements within the boundary.

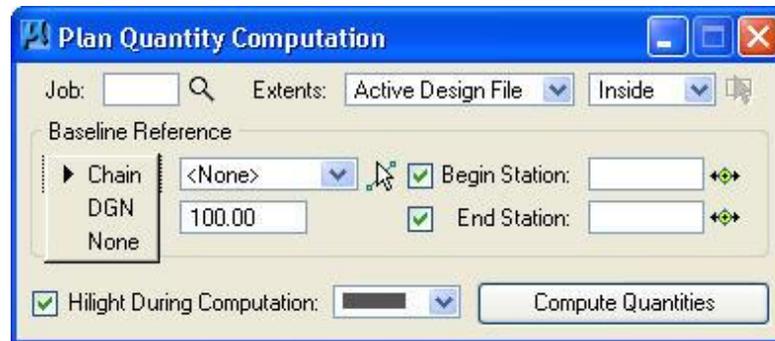
Station Range A Baseline Reference (chain or dgn) must be defined for this option. The Begin and End station limits the extent of the computations.

Sheet Range Sheets placed with the Plan Profile Sheet Composition tool can be used to define the area of computation.

Selection Set This computes those items that are in a previously created selection set that meets the definition of the compute items.

Boundary Selection Set This computes items that are within a boundary element that is in a selection set that meets the definition of the selected items.

Baseline Reference The Baseline Reference section defines the reference element for quantities. Baseline Reference has three options.



Chain This uses a previously stored Coordinate Geometry chain.

DGN This uses a graphic element. The stationing based on the length of the element, starting at 0.

None No reference is required, and the Baseline Reference is blank. This option limits the type of output available, as computations are not done no station / offset values.

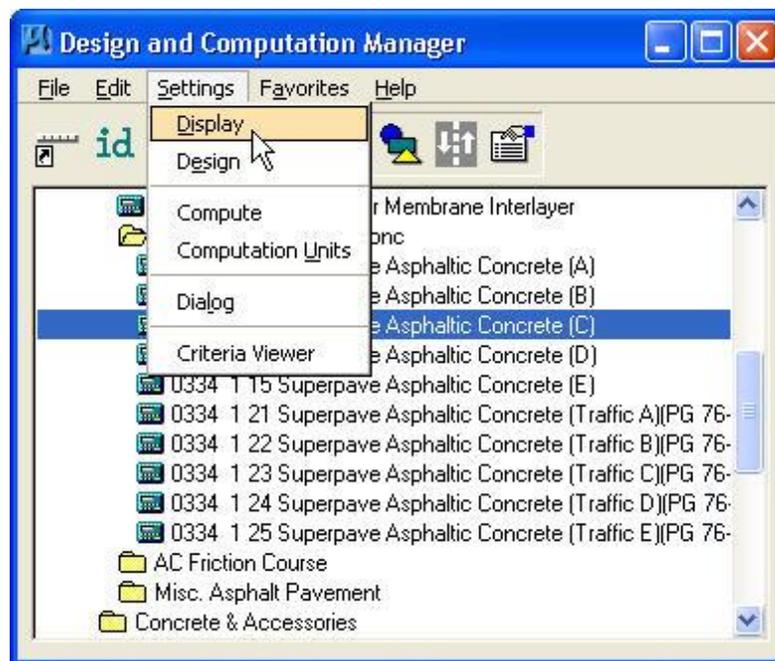
3 D&C MANAGER SETTINGS

OBJECTIVES

- Review and detail the settings of D&C Manager

D&C MANAGER SETTINGS MENU

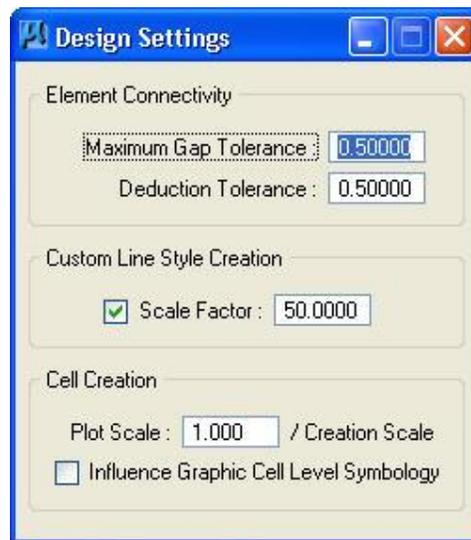
Understanding the *Settings* menu is key to successfully designing and accurately computing quantities with D&C Manager. Each command on the *Settings* menu pertains to a different area of function of D&C Manager. These setting must be correct for D&C Manager to produce the desired results.



- | | |
|--------------------------|---|
| Design | These are settings for the Design mode. |
| Compute | This contains settings specific to computing quantities. |
| Computation Units | This displays a list of the available units of computation. |

DESIGN SETTINGS

From the D&C Manager, click **Settings** and then click **Design**. Design Settings opens.



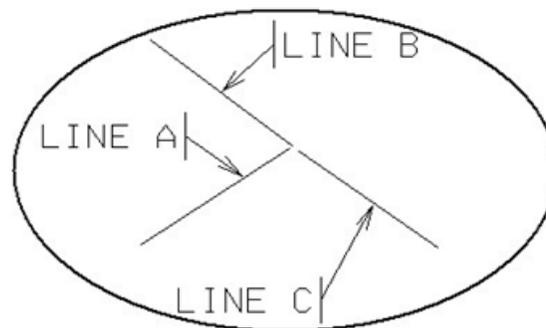
Design Settings is composed of three sections: *Element Connectivity*, *Custom Line Style Creation*, and *Cell Creation*.

Element Connectivity

Determines what D&C Manager recognizes as elements that are connected. Max Gap Tolerance and Deduction Tolerance are set in Element Connectivity.

Max Gap Tolerance

Used by D&C Manager to decide if two elements are connected. If the maximum gap between two elements is greater than the Max Gap Tolerance, the elements are not connected. If the gap between two elements is less than the Max Gap Tolerance, those elements are connected. In the following figure, Line A and B are 0.2 feet apart, which is less than the Max Gap Tolerance of 0.5. However, Line C is 0.6 feet from either of the other two lines and as such is not considered connected. Element Connectivity is also used in computing quantities. If elements are within the Maximum Gap Tolerance, they are computed as one continuous element.



Deduction Tolerance

Utilized in the Compute mode. For example, in the case of Curb and Gutter, for each manhole within the Deduction Tolerance there is a deduction of six feet to the quantity of that curb Item. The origin of the cell does not have to be on the curb line, but must be within the Deduction Tolerance in order for the cell to be recognized and the deduction to be made. In some instances, additions are made to quantities if other Items meet the Deduction Tolerance.

Custom Line Style Creation

Scale Factor Applied to custom line styles placed in the Design mode of D&C Manager. Scale Factor only applies to Custom Line Styles.

Cell Creation This option has two settings that relate to how cells are placed with D&C Manager.

Plot Scale Determines the scale at which a cell is placed.

Influence Graphic Cell Level Symbology This check box forces the cell to be placed with the symbology specified in the database, regardless of the original symbology.

COMPUTE SETTINGS

Compute Settings apply during the Compute mode and are very important to insure accurate quantity generation. Compute Settings is composed of three sections: *Baseline Chain Reference*, *CSV Export Properties*, and *DBMS Properties*.

Baseline Chain Reference

Adhoc Attribute Name Tags that are applied to an element by GEOPAK, which contains information about that element. The Baseline Chain Reference is very useful when generating quantities for areas along a side road that are not referenced to the main line roadway. Section 3.3 covers the details of Adhoc Attributes.

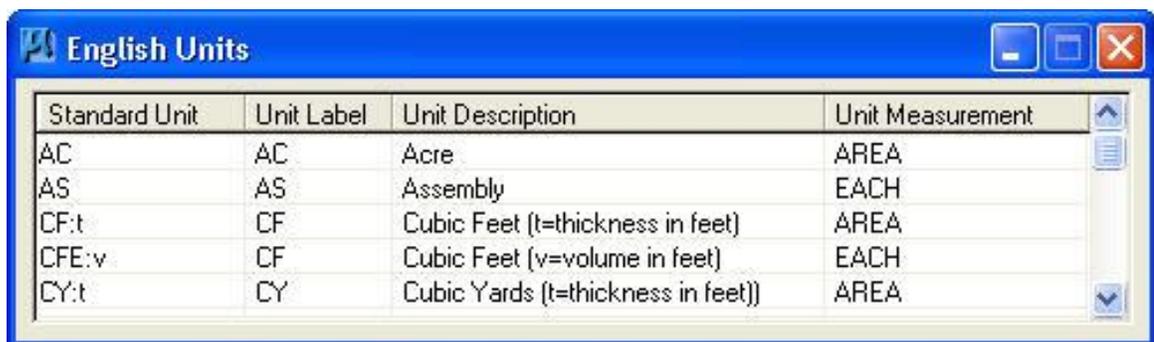
CVS Export Properties

If exporting quantities to an application such as Excel is needed, then the CSV Export Properties become important.

<i>Delimiter</i>	This is used to specify the character that delimits the information in the CSV file.
<i>Prepend Header Record</i>	This adds information pertaining to the quantity calculations as a header to the CSV file.
DBMS Properties	This contains settings for D&C Manager database functions of the Compute mode.
<i>Driver</i>	FDOT recommends setting Driver to Microsoft Access (.mdb), which does not require a User Name and Password. The Oracle and SQL Server options do require a User Name and Password. Microsoft Access databases can have a User Name and Password, but doing so is not recommended.
<i>User Name</i>	Not recommended.
<i>Password</i>	Not recommended.
<i>Purge Quantities of Deleted Elements</i>	Scans the design file for elements that were previously quantified and purges the quantity database of any elements that it does not find in the file. This is not done by default because the elements may have been in a reference file at the time quantities were originally computed, and that reference file may have been detached for whatever reason.
<i>Update Quantities for Designated Phase Only</i>	With toggle disabled, an element can appear in multiple phases. This was the behavior prior to the 8.08 release.) With toggle enabled, an element appears in only the selected phase and removed from any other phases when appending to an .MDB file created, and organizes them in a table for export with the quantity database.
<i>Create Adhoc Attribute Table</i>	Gathers the Adhoc tags associated with elements being created and organize them in a table for export with the quantity database.

COMPUTATION UNITS

Computation Units display the contents of a read-only text file, which contains all methods of calculation used by D&C Manager. This tool is very useful for reference when setting up the D&C Manager database.



Standard Unit	Unit Label	Unit Description	Unit Measurement
AC	AC	Acre	AREA
AS	AS	Assembly	EACH
CF:t	CF	Cubic Feet (t=thickness in feet)	AREA
CFE:v	CF	Cubic Feet (v=volume in feet)	EACH
CY:t	CY	Cubic Yards (t=thickness in feet))	AREA

ADHOC ATTRIBUTES

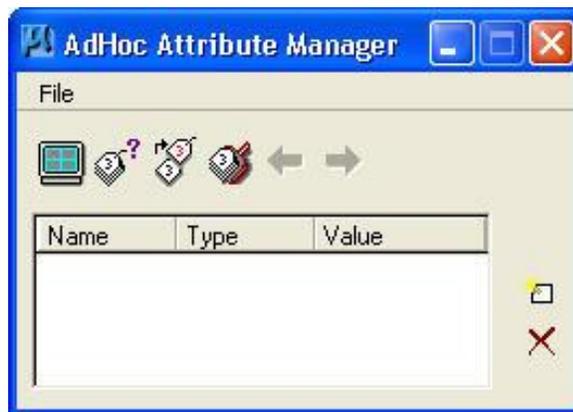
Adhoc Attributes are tags that apply to graphic elements to provide more information. Adhoc Attributes are comprised of three types of information that require mandatory definitions: *Name*, *Type*, and *Value*.

- Name** An identifying term used when GEOPAK is searching for a specific Adhoc Attribute.
- Type** Identifies the nature of the information, and has a number of different setting options. The options for Type are *Numeric*, *String*, *Unit*, *Quantity*, and *Remarks*.
- Value** The actual information to be used by GEOPAK, and is determined by the Type. For example, if the Type is set to *Numeric* then the Value must be a number. For the purposes of this class, a Type of *String* will be used.

Adhoc Attribute Manager is the tool used for tagging, reviewing, and manipulating *Adhoc Attributes*.

TO ACCESS ADHOC ATTRIBUTE MANAGER

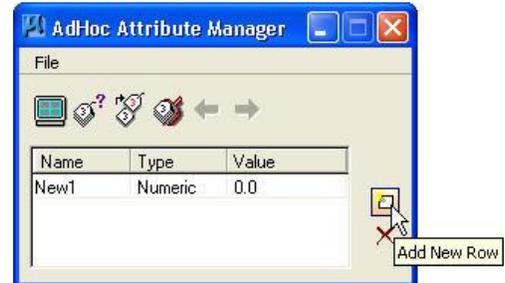
From MicroStation, click **Applications**, point to **GEOPAK Road**, then click on **GEOPAK 3pc Adhoc Attributes**.



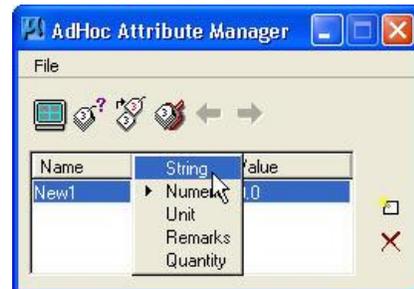
The Adhoc Attribute Manager has four icons on the tool bar for viewing and tagging elements with Adhoc Attributes. From left to right these icons are *Attribute Display Filter*, *Identify Element*, *Set Attribute*, and *Adhoc Scooper*. The two icons on the right side are *Create New Row* and *Delete Row*.

Exercise 3.1 Tagging Adhoc Attributes

1. From the MicroStation menu, select **Utility** and then select **Saved Views**.
2. Attach *Saved View Intersection 2*.
3. Use *Power Selector* to select the **Face of Curb** along the median of this side road.
4. From the MicroStation menu, select **Applications**, point to **GEOPAK Road** and then select **GEOPAK 3pc Adhoc Attributes**. Adhoc Attribute Manager opens.
5. From Adhoc Attribute Manager, click the **Add New Row** icon. An attribute named **New1** appears.



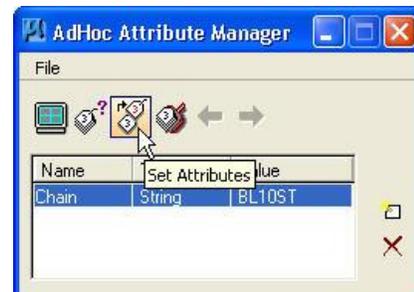
6. Click the *Name New1*, and type **Chain**.
7. Click the *Type Numeric* and then select **String** from the popup list.



8. Click the *Value 0.0* and type **BL10ST**.



9. Click the **Set Attribute** icon. Alert opens.



10. From Alert, click the **Yes** icon.
11. Close Adhoc Attribute Manager. This Curb has an Adhoc Attribute tag, associating it with **BL10ST**.

4 DRAWING QUANTITY SHAPES

OBJECTIVES

- Understanding Quantity Shapes
- Drawing Shapes with D&C Manager

DESIGN AND COMPUTATION SHAPE MODE

As discussed in Chapter 2, the Shape mode of D&C Manager is used for creating shapes that represent quantity items for Area calculations. These elements are not generally created during the design process. As such, quantity shapes for these areas need to be created using D&C Manager.

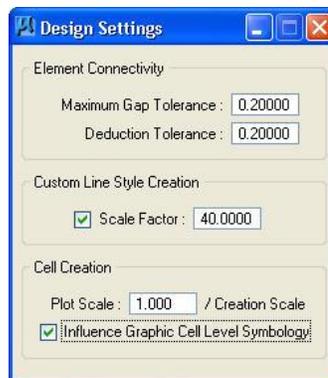
Quantity shapes are placed in their own specific file, *qtdsrd00.dgn*.

➤ **To create *qtdsrd00.dgn***

1. From FDOT Menu, use the Create/Edit utility to create *qtdsrd00.dgn*.
2. Attach the files containing design elements to *qtdsrd00.dgn* as reference files.
3. Turn off any unnecessary *Levels* in the reference files
--or-- use D&C Manager's *Display* function to display only the needed elements.

Exercise 4.1 Creating Design Settings

1. Open *qtdsrd01.dgn* located in the *Roadway* directory.
2. Open D&C Manager.
3. From the D&C Manager menu, select **Settings**, and then select **Design**. Design Settings opens.



4. From Design Settings, in the *Maximum Gap Tolerance* box, type **0.20**.
5. In the *Deduction Tolerance* box, type **0.20**.
6. Close Design Settings. The changes save automatically.

Note In order to insure accurate quantities, FDOT recommends Maximum Gap Tolerance be set no higher than 0.2. Deduction Tolerance is set, as needed.

CREATING SHAPES

The quantity shape file (qtdsrd01.dgn) used for this course already has most of the needed shapes built. This section focuses on creating shapes in the intersection area located near station 75+00. It is important to remember that the methods of computation shown in this manual may not be complete, and the designer should consult the appropriate governing documents for calculation procedures.

Although it is possible for quantity shapes to span the entire length of the project, FDOT recommends that they be broken into intervals. The designer can choose to break the shapes at intersections, or at a set distance. For this class an interval matching the plan sheets is used, but any logical interval is acceptable.

Exercise 4.2 Creating Pavement Shapes

1. Locate the intersection near the beginning of the project.
2. Open D&C Manager.
3. From the D&C Manager menu, select **Edit** and then select **Find**. Database Search opens.
4. From Database Search, in the *Name* box, type **0334**.
5. Click the **Start** button. The search for Items beginning with *0334* begins.



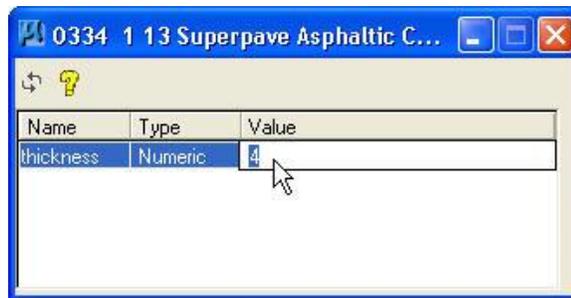
6. In D&C Manager, find and select **Item 0334 1 13**.
7. Click the **Shape** icon. 0334 1 13 Superpave Asphaltic Concrete opens.



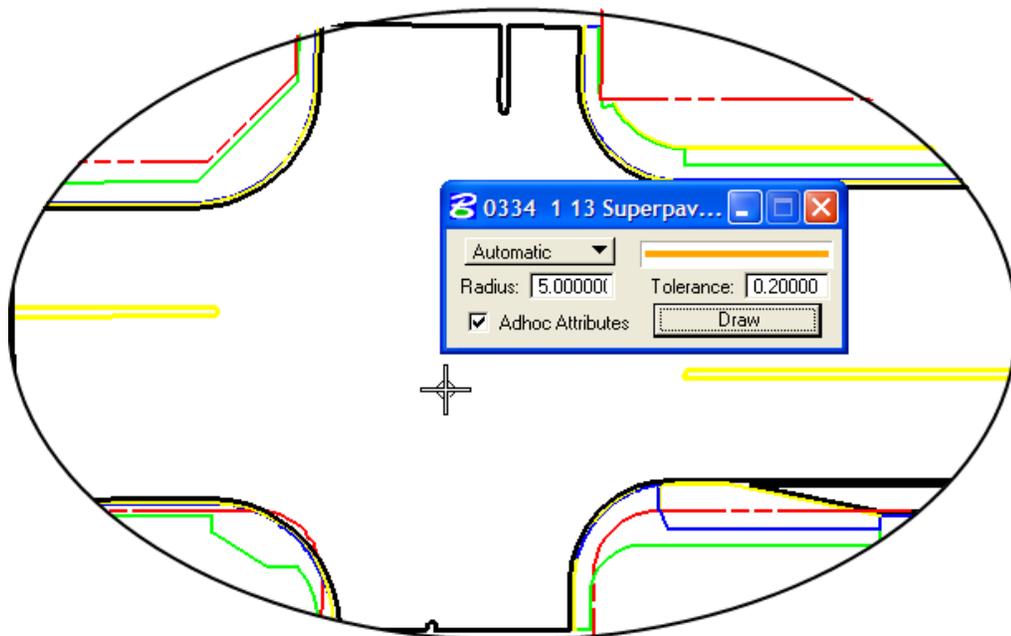
8. From 0334 1 13 Superpave Asphaltic Concrete, set the creation *method* to **Automatic**.
9. In the *Radius* box, type **5.0**.
10. In the *Tolerance* box, type **0.2**.
11. Check on the **Adhoc Attributes**. 0334 1 13 Superpave Asphaltic Concrete Adhoc opens.



12. From 0334 1 13 Superpave Asphaltic Concrete Adhoc, set *thickness value* to **4**.



13. From the 0334 1 13 Superpave Asphaltic Concrete dialog, click the **Draw** icon.
14. In the design file, click the middle of the intersection, as shown below to create the shape.



Exercise 4.3 Creating Base Shapes

Shapes for Asphalt Base quantities require more effort than Friction Course, due to the fact that base extends outside the edge of pavement. Two methods are available for base shapes. Construction lines can be drawn the appropriate distance outside the edge of pavement, or the friction course shape can be copied and modified to the size needed. For this exercise, the latter method is used.

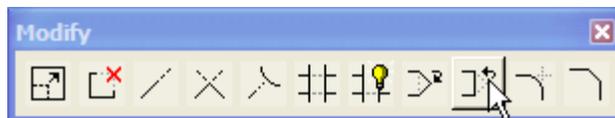
1. From the MicroStation toolbox, click the **Move/Copy Parallel** icon. Move/Copy Parallel opens.



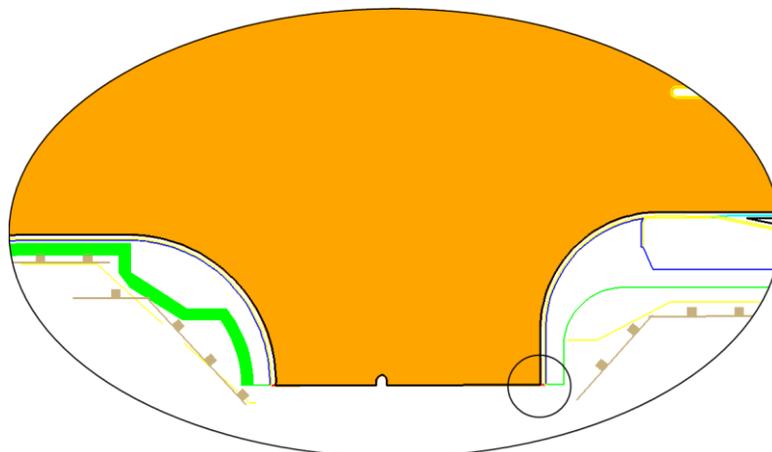
2. Set *Mode* to **Original**.
3. Select the *Distance* check box and type **0.3333**. The distance 0.3333 equals four inches.
4. Select the **Make Copy** check box.
5. In the design file, click the **Superpave shape** drawn in the last exercise, then click outside the shape. The entire shape is copied parallel, creating a new shape that extends 4 inches further outward than the original shape.
6. In D&C Manager, click **Item 0285 703 (Optional Base)**.
7. Click the **Set tool** icon.
8. Click the copied shape, and then click in an open area of the design file to accept the *Set* command. The attributes of **Item 0285 703 Optional Base (Base Group 03)** apply to the newly created shape.

Note When using this method, the corners of the shape are not square and must be modified. In this case, deleting a vertex from all the corners will be necessary.

9. From the MicroStation Modify Tool toolbox, click the Delete Vertex icon.



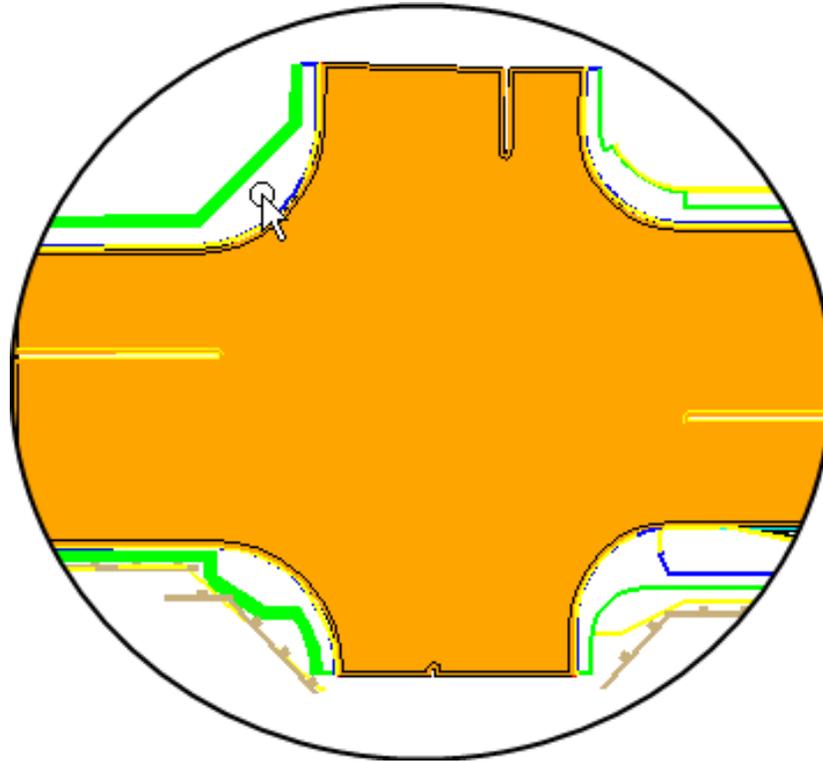
10. In the design file, zoom to the area indicated by a circle in the following figure.



Exercise 4.4 Creating Sidewalk Shapes

Shapes are required for sidewalks between the Front of Sidewalk and Back of Sidewalk lines.

1. From D&C Manager, navigate to the **Sidewalk** Category, then click **Item 0522 1 Concrete Sidewalk, 4" Thick**.
2. Click the **Shape** icon. 0522 1 Concrete Sidewalk, 4" Thick opens.
3. From 0522 1 Concrete Sidewalk, 4" Thick, click the **Draw** icon.
4. In the design file, click the sidewalk area in the upper left quadrant of the intersection. A shape is created for **Item 0522 1**.

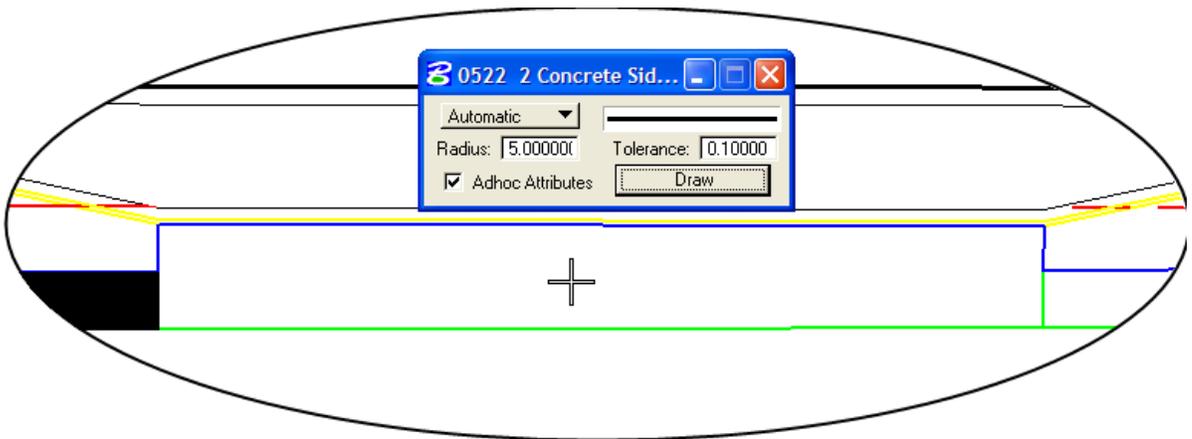


5. Repeat step 4 for the sidewalk areas in the other three quadrants of the intersection.
6. In D&C Manager, click **Item 0522 2 Concrete Sidewalk 6" Thick**.
7. Pan the MicroStation window east to view the turnout.

Note The sidewalk in the turnout must be 6" thick.

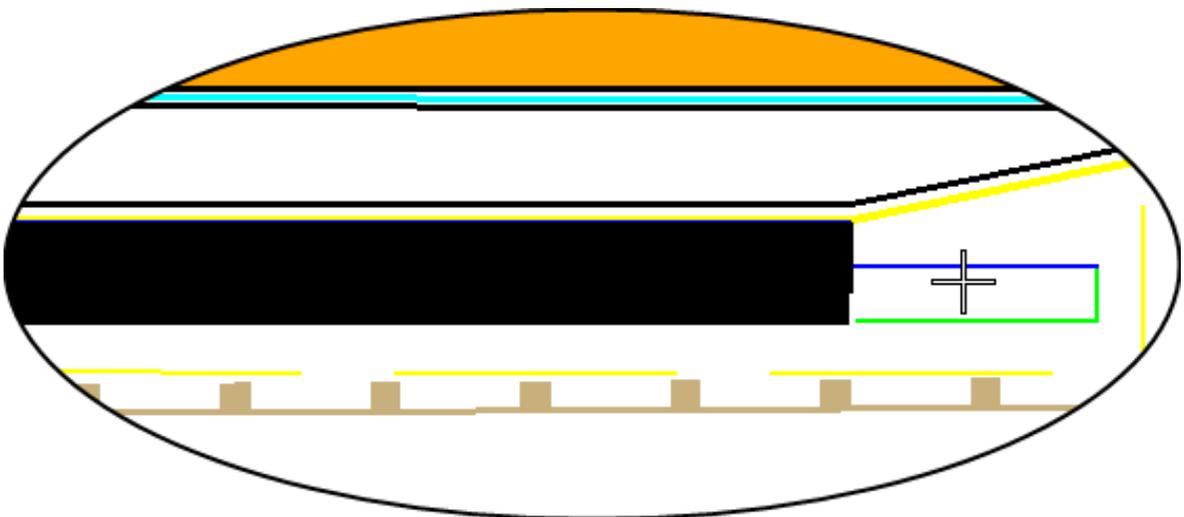
8. From D&C Manager, click the **Shape** icon. 0522 2 Concrete Sidewalk 6" Thick opens.
9. From 0522 2 Concrete Sidewalk 6" Thick, click the **Draw** icon.

10. Click the sidewalk area shown in the following figure to create the 6" Sidewalk shape.



11. Repeat steps 2 and 3.

12. Click the sidewalk to the right of the 6" sidewalk as shown in the following figure to create the shape for the 4" sidewalk.



5 GENERATING QUANTITIES

OBJECTIVES

- Calculate Payitem Quantities Using D&C Manager
- Create and Append to a Quantities Database

CALCULATING QUANTITIES WITH D&C MANAGER

Once all design elements and quantity shapes are completed, calculating quantities with D&C Manager is a simple process with four parts:

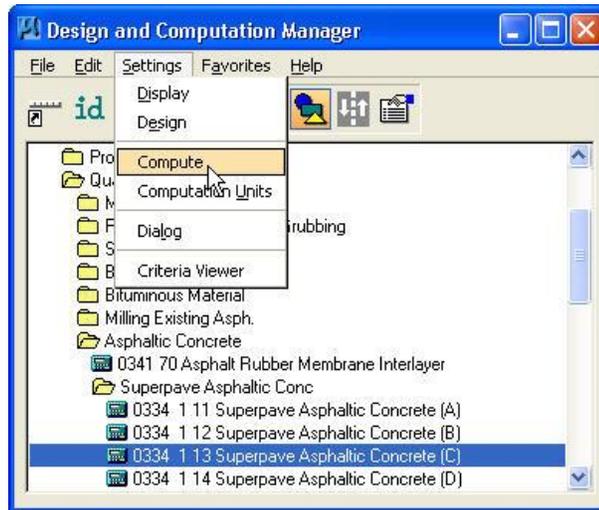
- Setting Compute Settings,
- Selecting Database Items to Compute,
- Calculating Quantities,
- Exporting a Quantity Database.

SETTING COMPUTE SETTINGS

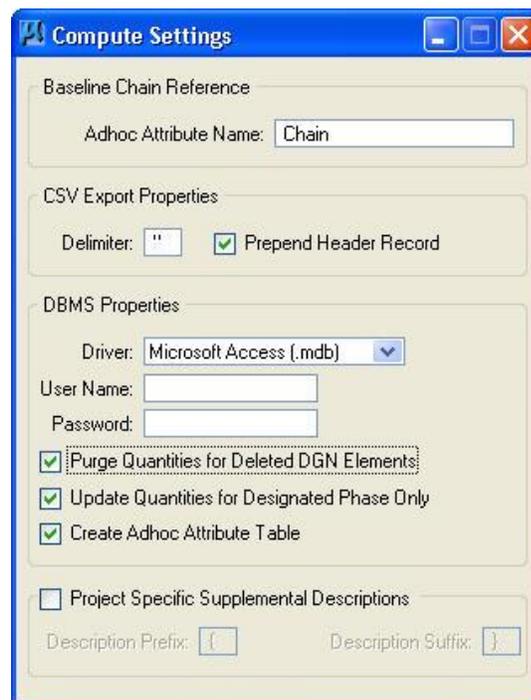
Compute Settings control how D&C Manager processes information gathered when calculating quantities. Review Compute Settings before every session of computing quantities, with careful thought about the desired final product. As a rule, some settings are always the same. The DBMS Properties is always Microsoft Access (.mdb) set as the Driver. In addition, Purge Quantities for Deleted DGN Elements and Create Adhoc Attribute Table are on. Having these options set insures that the quantity database matches the graphical elements of the .DGN file, and that all available information carries over to Quantities Manager.

Exercise 5.1 *Setting Compute Settings*

1. From the D&C Manager menu, select **Settings** and then select **Compute**. Compute Settings opens.



2. From Compute Settings, in the *Adhoc Attribute Name* box, type **Chain**.
3. In the *Driver* list box, select **Microsoft Access (.mdb)**.



4. Select the **Purge Quantities for Deleted DGN Elements** check box.
5. Select the **Create Adhoc Attribute Table** check box.
6. To save the settings, close Compute Settings.

SELECTING ITEMS TO COMPUTE

Before computing, the Items and/or Categories to be calculated must be selected from the D&C Manager database. Computations can be made on single Items, multiple Items, multiple Categories, or any combination of Items and Categories.

➤ **To select only one Item**

1. In D&C Manager, select the Item to be computed.

➤ **To select multiple Items**

1. In D&C Manager, click an Item to select it.
2. Right click the selected Item. A menu appears.
3. From the menu, click **Add to Collection**. The Item displays in the collection box at the bottom of D&C Manager.

Note The collection box appears when D&C Manager is in Compute Mode.

1. Repeat steps 1 through 3 to add multiple Items to the collection box.

➤ **To select categories**

1. In D&C Manager, click the desired Category to select it.
2. Right click the Category. A menu appears.
3. From the menu, click **Add to Collection**. The Category places in the collection box at the bottom of D&C Manager.
4. Repeat steps 1 through 3 to add multiple Categories to the collection box.

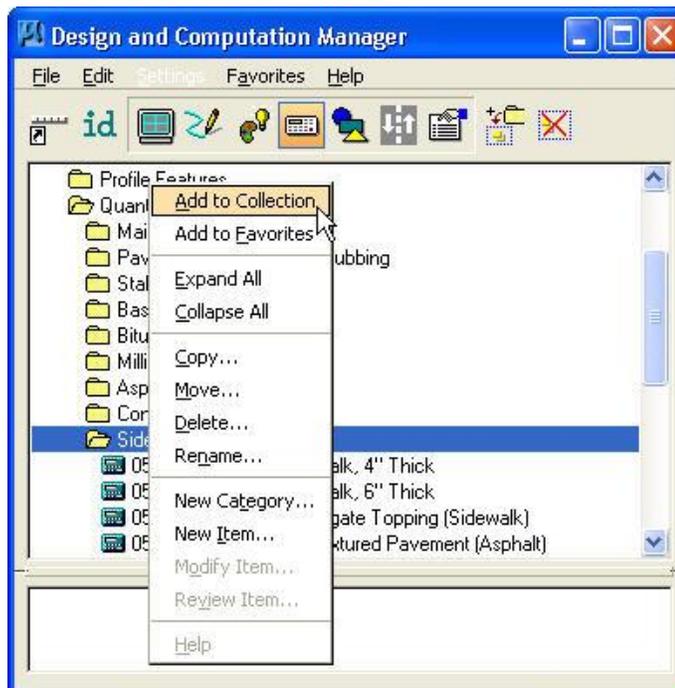
Note When selecting Categories, all Items in the Categories that are present in the DGN file are computed.

Exercise 5.2 *Selecting Items to Compute*

1. From D&C Manager, click the **Compute** icon. Plan Quantity Computation opens, and the collection box adds at the bottom of D&C Manager.

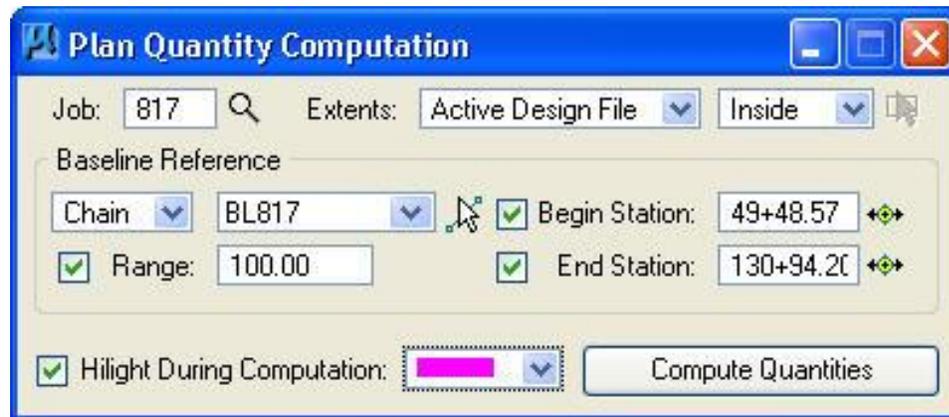


2. Navigate to **Roadway Design**, then **Quantity Features**.
3. Right click on **Quantity Features**. A popup list opens.
4. From the popup list, click **Add to Collection**. The **Quantity Feature** category adds to the collection box.

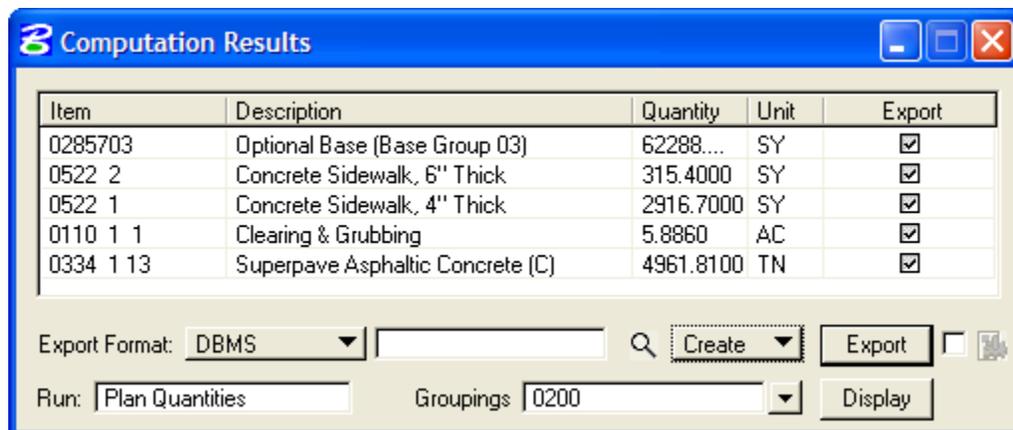


Exercise 5.3 Computing Quantities

1. From Plan Quantity Computation, type **817** in the *Job* box. The *.GPK* file is set to **Job817.gpk**.



2. Set *Extents* to **Active Design File** and **Inside**, to define the search extents to find all elements Inside the Active Design File.
3. Under *Baseline Preferences*, set the *mode* to **Chain**.
4. In the list box to the right of *Chain*, click **BL817**.
5. Select the *Range* check box and type **350**.
6. Select the **Begin Station** check box.
7. Select the **End Station** check box. The chain limits appear.
8. Select the **Highlight During Computation** check box and choose a color that stands out from elements in the *.dgn* file.
9. Click the **Compute Quantities** icon. The contents of the file are processed for a few moments, then Computation Results opens.



COMPUTATION RESULTS

Computation Results displays a table of all computed Item that were processed during computation. From here, the user can review the results and export quantity computations to a variety of formats.

The box to the right of the Export Format is for supplying a file name for the quantities database. The Quantity databases can either be created or appended to by selecting Create or Append to the right of the file name box. The Run box is used for identifying the session when the quantities were computed. Groupings is used to identify the TRNS*PORT grouping number. The Display icon highlights any item that is selected in the table view in the design file.

➤ **To sort items in the table**

1. In the table, click the column header. All Items will sort.

➤ **To exclude individual items**

1. Clear the check box in the Export column for any individual items to be excluded.

Exercise 5.4 *Exporting Quantities*

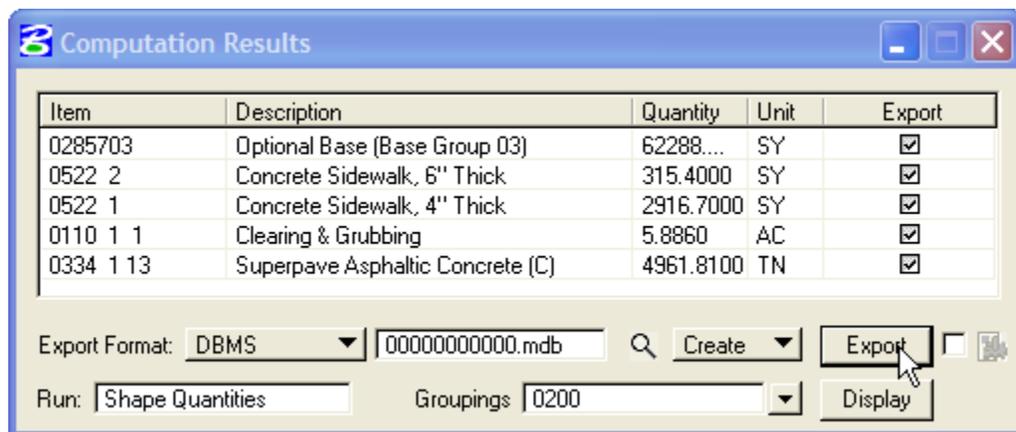
1. From Computation Results (from the previous exercise), set the Export Format to DBMS.

Note Multiple Export Formats are available, but Quantity Manager only supports DBMS.

2. In the box next to DBMS, type the file name 00000000000.mdb.
3. Select Create.
4. In the Run box, type Shape Quantities.

Note The Run should be a descriptive statement about the quantities that were calculated.

5. In the Groupings box, type 0200.

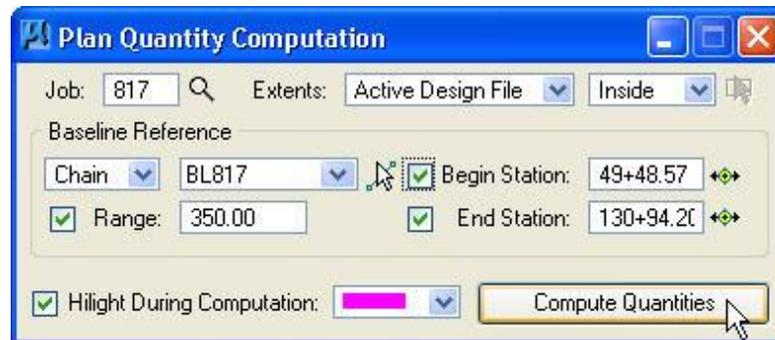


6. Click the Export icon. A quantities database is created as a file in the current working directory.
7. When export completes, close Computation Results.

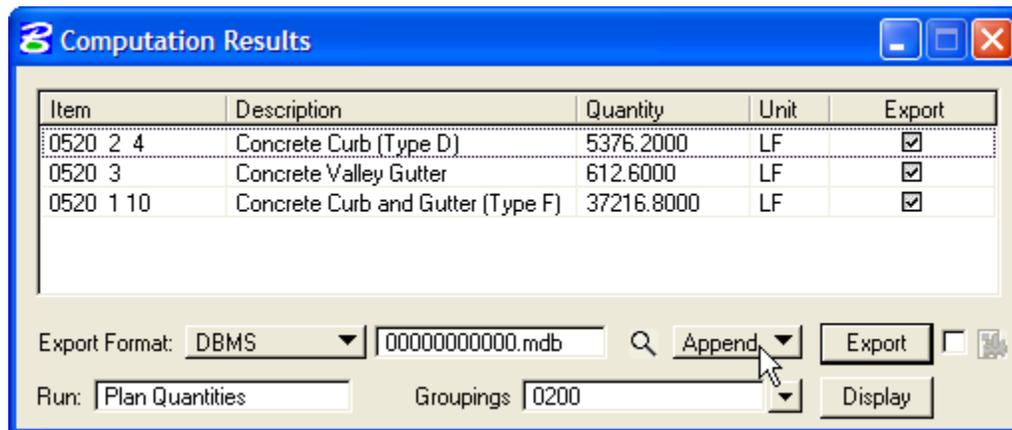
Exercise 5.5 *Appending to the Quantities Database*

In D&C Manager, navigate to Roadway Design - Plan Feature, and then to Curb & Gutter, Curb, Gutter.

1. Right click on the **Curb & Gutter, Curb, Gutter Category**, then click **Add to Collection** on the shortcut menu to add the Category to the D&C Manager collection box.
2. In the collection box, double-click **Quantity Features**. Quantity Features is removed.
3. From Plan Quantity Computation, click the **Compute Quantities** icon. The quantities are processed and Computation Results opens when processing is complete.



4. In Computation Results, change the *creation mode* to **Append**.
5. In the *Run* box, type **Plan Quantities**.



6. Click the **Export** icon. The results append to the quantity database.
7. Close Computation Results.
8. From D&C Manager, remove **Curb & Gutter, Curb, Gutter** from the collection box.
9. Select **Settings** and then select **Compute**. Compute Settings opens.
10. From Compute Settings, type **Option** in the *Set the Adhoc Attribute Name* box.
11. Close Compute Settings.
12. From D&C Manager, navigate to the **Concrete Traffic Separator** category.
13. Compute and export **Concrete Traffic Separators**.

6 QUANTITY MANAGER

OBJECTIVES

- Detail the functions of Quantity Manager
- Open a quantity database in Quantity Manager
- Detail the Quantity Manager window
- Navigate through Quantity Manager

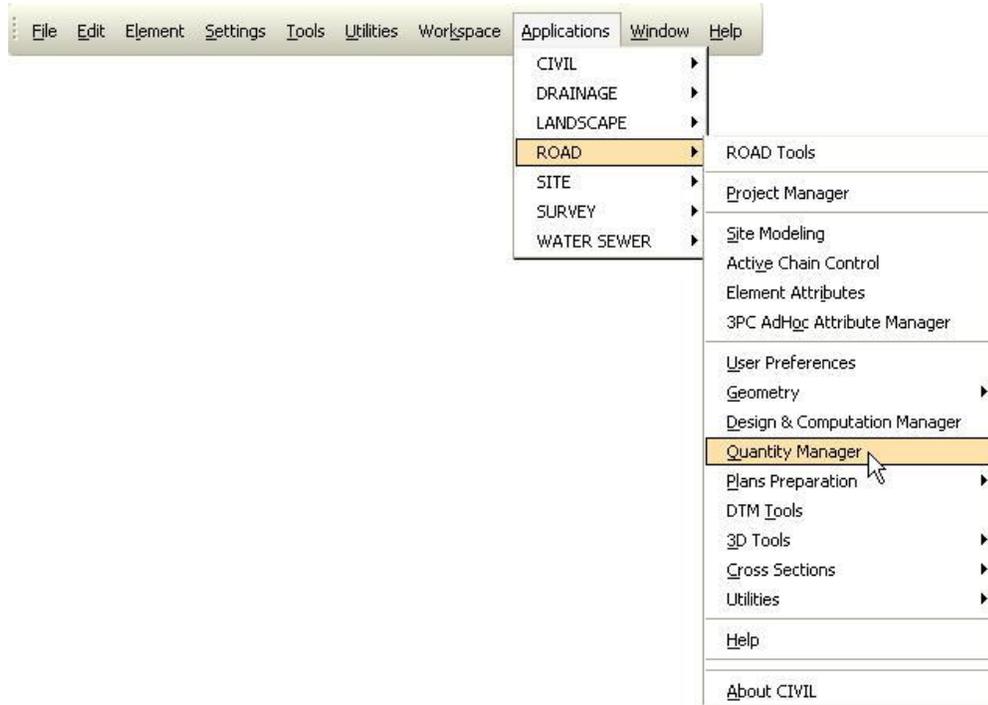
QUANTITY MANAGER OVERVIEW

Quantity Manager can be characterized as a single repository for organizing and manipulating quantities generated by D&C Manager and manually entered quantities. Quantity Manager uses a database to organize and manipulate Payitem. Some of the main functions are listed below:

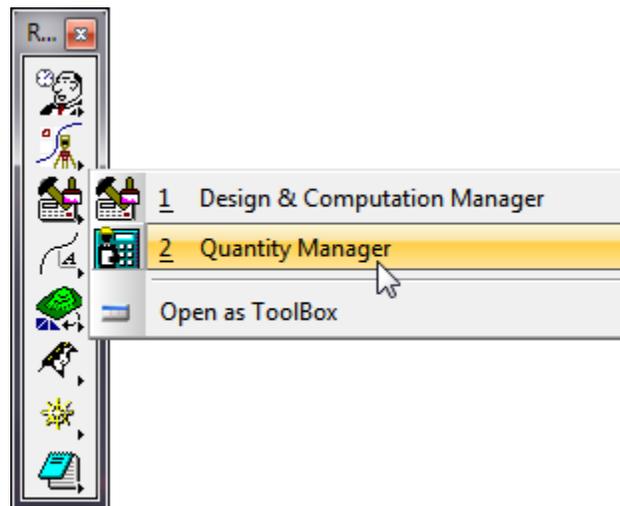
- Organize quantities by Payitem, station and element information.
- Round quantities and designation of lump sum items.
- Support for CAD quantities as well as non-graphic quantities.
- Allow manual entry of quantities and modifications to quantities.
- Facilitate importing of TRNS*PORT Payitems and funding sources.
- Facilitate exporting quantities to TRNS*PORT.
- Creating custom reports in PDF, HTML and CSV formats.
- Cost estimates and cost comparisons.

TO ACCESS QUANTITY MANAGER

From the MicroStation menu, select **Applications**, point to **GEOPAK Road**, and then select **Quantity Manager**. Quantity Manager opens.

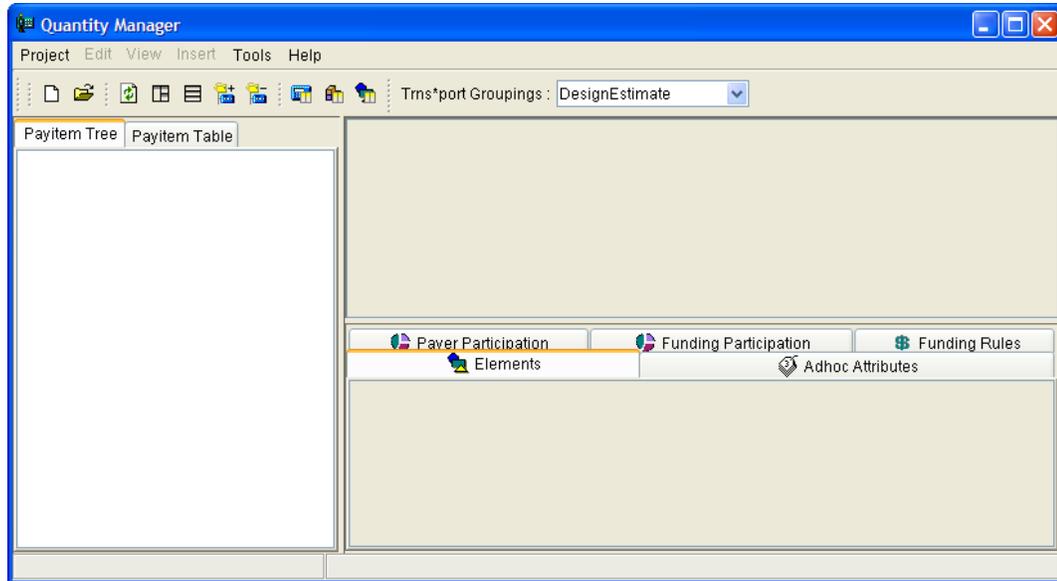


-OR-



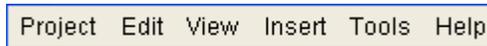
QUANTITY MANAGER DIALOG

Quantity Manager has three parts, as shown in the following figure: a **Menu bar**, a **Tool bar** and a **window area**. The window area is divided into three panes: **Payitems**, **Quantity**, and **Elements**.



MENU BAR

Quantity Manager has six menus as shown in the following figure.



PROJECT MENU

The Project menu contains the following commands.

- | | |
|--------------------------------|---|
| New | This creates a new database by opening Create Database. |
| Open | This opens an existing project via Connect to Database. Open accesses a previously created database, such as databases created using D&C Manager. |
| Close | Closes the current Project (database), but does not exit Quantity Manager. |
| New TRNS*PORT Groupings | Used to create new TRNS*PORT Groupings with a description. |
| Import | This imports Pay Items into a project from an aecXML file. |
| Export | Supports two export formats QM XML and aecXML. QM XML exports Pay Item information to a standard format. Exporting to TRNS*PORT requires using aecXML. |
| Merge Database | Provides a means to merge quantities created by multiple users and stored in separate databases, the databases should be merged together prior to exporting the quantities to TRNS*PORT or creating final reports. The databases must be the same version in order to complete the merge. |

Properties	This contains options to define properties for the project and database. It includes project number, description, units, spec year, Geometry Database, and aecXML Import Documents information.
Preferences	Quantity Manager preferences dialog provides a toggle for enabling adhoc editing, defining aecXML document file names and setting the accuracy rounding fields for distances, stations, and station format.
History list	This contains a list of previously opened projects.
Exit	This closes Quantity Manager.

EDIT MENU

Select All	This selects all items in the current Quantities view.
Unselect All	This unselects all items in the current Quantities view.
Delete	This deletes the selected Item or Category from the database.
Rename	This renames the selected database Item or Category.
TRNS*PORT Groupings	Opens TRNS*PORT Groupings Properties where TRNS*PORT Groupings can be created or deleted.
Funding	This contains two options, Payer and Rule. Payer opens a list of payers used for determining Funding Rules. Payers can be created, deleted, or imported. Rule opens a dialog box for defining payers and their respective percentages of participation. This option is no longer necessary for FDOT projects.

VIEW MENU

Refresh	Updates all displayed information from the database.
Columns	This displays a list of available viewable information. The user can choose which information displays in each view.
Expand Category	This expands all categories, sub-categories, and pay items in the Payitem Tree (not the Payitem Table).
Quantities	This command specifies the content of the quantity pane upon selection of a category. If Expand Category Quantities is on, the quantity of the selected category displays, along with all quantities in all subcategories. If it is off, the quantity pane only shows quantities in the current selected category, one level deep.
Expand Tree	Expands all categories, sub-categories, and pay items in the Payitem Tree (not the Payitem Table)
Collapse Tree	Collapses all categories, sub-categories, and pay items in the Payitem Tree (not the Payitem Table), so that only the highest category in the hierarchy displays.
Normal	This restores the interface to normal view.

Tile Horizontally Changes the interface layout to horizontal view, where the three tables are one above the other.

INSERT MENU

Category New Categories can be added anywhere within the database hierarchical structure and are inserted from the current selected Category. Three modes are supported: Above, Below, Sub-Category.

Payitem Insert a Payitem from the current selected Category or Payitem. Three modes are supported: Above, Below, In Category. New Payitems can be added anywhere within the database hierarchical structure.

Quantity Insert a quantity to the current selected pay item. Based on the source of the computations, some data may be dimmed and not available for modification. The quantity property dialog is divided into a general tab and a location tab.

TOOLS MENU

The Tools menu contains the Reports commands and a Graphic Viewer. The Reports submenu has two commands, **Create** and **Define** Styles.

Create Opens Create Report, which can be used to export information in several formats. FDOT supplies report formats for Comp Book forms that are utilized with this tool.

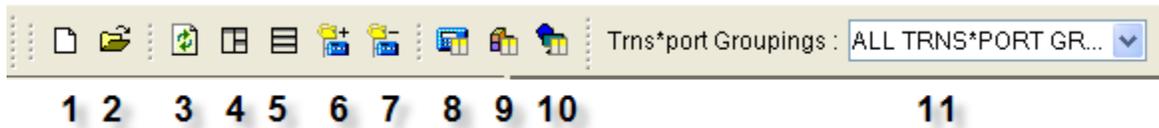
Define Opens Report Styles, wherein, new report styles may be added, and existing report styles may be modified and deleted.

HELP MENU

About Quantity Manager This displays the License Agreement and Version information.

Contents Opens Help for Quantity Manager

TOOL BAR



1	New Project	Opens Create Database.
2	Open Project	This opens Connect to Database for opening an existing project.
3	Refresh	Updates all displayed information.
4	Normal View	This changes the database layout to Normal View.
5	Tile Horizontally	This tiles the view to display the database with horizontal panes.
6	Expand Tree	This expands the Payitem Tree to display all Categories, and Payitems.
7	Collapse Tree	This collapses the Payitem Tree.
8	Hide/Show Pay Item Table Columns	Opens Payitem Table column controls.
9	Hide/Show Quantity Table Columns	This opens Quantity Table column controls.
10	Hide/Show Element Table Columns	This opens Element Table column controls.
11	TRNS*PORT Grouping drop down list	This sets the active TRNS*PORT Grouping.

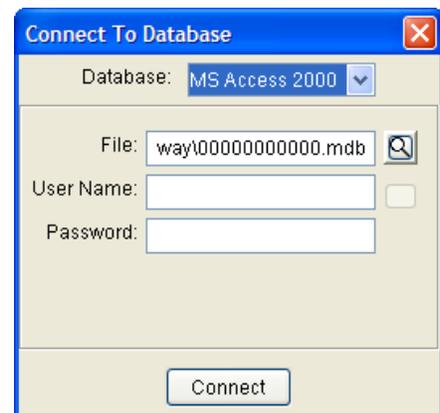
Exercise 6.1 Opening a Project

- From the MicroStation menu, select **Applications**, point to **GEOPAK Road**, and then select **Quantity Manager**.
- From the Quantity Manager menu, select **Project**, and then select **Open**. Connect to Database opens.

- In the *File* box, type the path to *00000000000.mdb*
--or-- click the **Browse** icon and navigate to the file.
- Leave the *User Name* and *Password* boxes **blank**.

Note The file *00000000000.mdb* was created in Chapter 5.

- Click the **Connect** icon. The database opens.



PROJECT PROPERTIES

Once a project opens in Quantity Manager, the Project Properties need to be set. There are two methods for setting the project properties. The preferred method is using the Designer Interface, unless the user does not have a TRNS*PORT login.

TO ACCESS PROJECT PROPERTIES

From the Quantity Manager menu, select **Project** and then select **Properties**. Project Properties opens.

Project Number This identifies the Quantity Manager project by the FIN Number of the project, with a maximum of 13 characters.

Description This allows for a brief description of the project, such as the associated road number.

Unit System This determines if the project uses English or Metric units.

Spec Year This specifies the governing Spec year for the project.

Exercise 6.2 Defining Project Properties

➤ To define project properties from within Quantity Manager

If user does not have a TRNS*PORT login, use this method.

1. From the Quantity Manager menu, select **Project** and then select **Properties**. Project Properties opens.
2. In the *Project Number* box, type **00000000000**.
3. In the *Description* box, type **SR817**.
4. In the *Unit System* box, select **English**.
5. In the *Spec Year* box, type **07**.

Note The Spec Year definition must match exactly to the Payitem aecXML file.

Project Properties

Project

General

General Information

Project Number: 00000000000

Description: SR817

Unit System: ENGLISH Spec Year: 07

Location Information

Project Chain:

Station Range

Begin: End:

Mile Post / Reference Point

Begin: End:

Midpoint Coordinates

Latitude: Longitude:

OK Cancel

➤ **To Define Project Properties using Designer Interface**

If user has a TRNS*PORT login, this is the preferred method for populating the Project Properties.

1. Once logged into Designer Interface, use **–export** to create XML file to import into Quantity Manager. This file contains the Quantity Manager project properties.

Project List for KNASDMG Control Group = CD*
1860 Records were found. Record 1 through 80. Page 1 of 24.

Search

Project Status	Project Number	aecXML Process	Description
<input type="button" value="Update"/>	00000000000	Import Export	CADD office testing only RESURFACING
<input type="button" value="Update"/>	09000015201	Import Export	SR 70 at US 27 Right Turn Lane EB/SB
<input type="button" value="Update"/>	12345675201	Import	MARTIN/ST.LUC/IND RV SIGNING/PAVEMENT

2. Save the file to your **C:** drive –or– **local network**.
3. In Quantity Manager, open the same project as selected in Designer Interface.
4. From Quantity Manager menu, select **Project** and then select **Properties**.
5. From Project Properties, select **Project** and then select **Import aecXML Infrastructure V33 Project**.

Project Properties

Project

Import aecXML Infrastructure v33 Project

General Information

Project Number:

Description:

Unit System: Spec Year:

Location Information

6. Select location and file name of XML file exported from Designer Interface.

Project Properties

Project

General aecXML Groups

General Information

Project Number: 0000000000

Description: CADD office testing only

Unit System: ENGLISH Spec Year: 07

Location Information

Project Chain:

Station Range

Begin: End:

Mile Post / Reference Point

Begin: End:

Midpoint Coordinates

Latitude: Longitude:

OK Cancel

7. Click **OPEN**, the Project Properties populates in Quantity Manager.
8. Select the **aecXML Groups** tab.

Project Properties

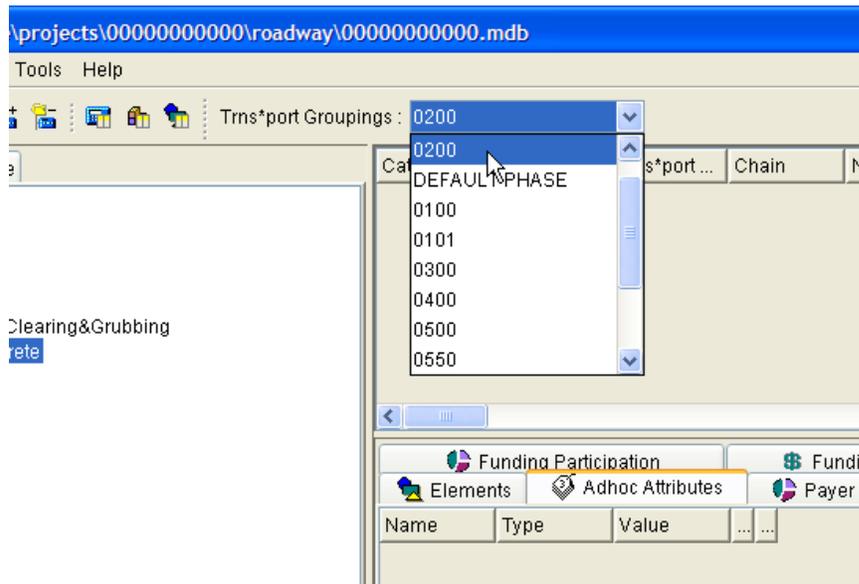
Project

General aecXML Groups

Import	Trns*port Groupings
<input checked="" type="checkbox"/>	0100 STRUCTURES
<input checked="" type="checkbox"/>	0101 STRUCTURES
<input checked="" type="checkbox"/>	0200 ROADWAY
<input checked="" type="checkbox"/>	0300 SIGNING
<input checked="" type="checkbox"/>	0400 LIGHTING
<input checked="" type="checkbox"/>	0500 SIGNALIZATION
<input checked="" type="checkbox"/>	0550 INTELLIGENT TRANSPORTATION SYSTEM
<input checked="" type="checkbox"/>	0600 LANDSCAPE / PERIPHERAL
<input checked="" type="checkbox"/>	0700 UTILITIES
<input checked="" type="checkbox"/>	0800 ARCHITECTURAL
<input checked="" type="checkbox"/>	0900 MASS TRANSIT

9. Select the **TRNS*PORT Groupings** applicable to your project. The default checks all on.
10. Select **OK**. Project Properties closes.

11. Select the drop down list for **TRNS*PORT Groupings**.

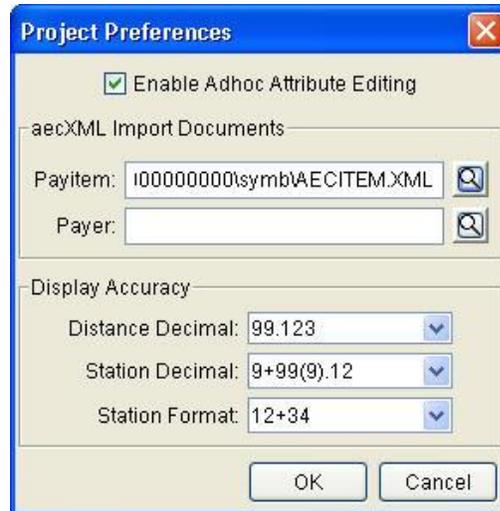


12. Notice the groupings are now created.

TRNS*PORT Grouping#	Description
0100 thru 0199	STRUCTURES
0200 thru 0299	ROADWAY
0300 thru 0399	SIGNING
0400 thru 0499	LIGHTING
0500 thru 0549	SIGNALIZATION
0550 thru 0599	INTELLIGENT TRANSPORTATION SYSTEM
0600 thru 0699	LANDSCAPE / PERIPHERAL
0700 thru 0799	UTILITIES
0800 thru 0899	ARCHITECTURAL
0900 thru 0999	MASS TRANSIT
9000 thru 9999	BID OPTIONS

PREFERENCES

The preferences are set to enable adhoc attribute editing, for the aecXML Import Documents file locations, the Display Accuracy of Distance Decimal, Station Decimal, and Station Format.

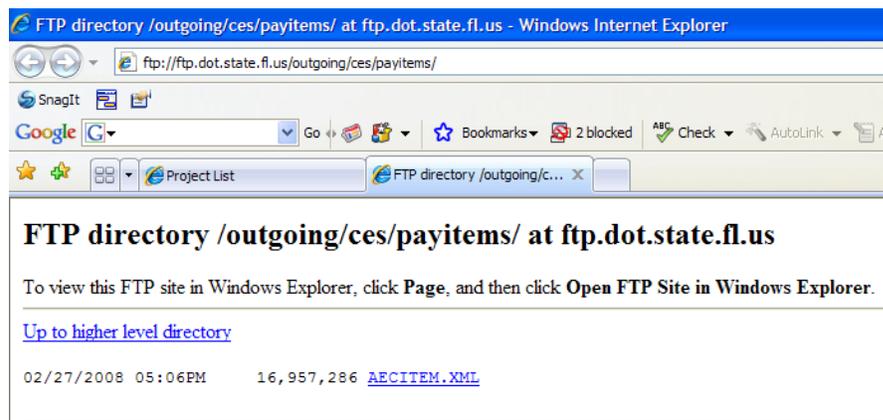


➤ To define project preferences

1. From the Quantity Manager menu, select **Project** and then select **Preferences**. Project Preferences opens.
2. Check on the **Enable Adhoc Attribute Editing**.
3. Download the TRNS*PORT master pay item list from the department's CADD ftp site. Save this in the project *Symb* folder.
4. In the *Payitem* box, type the path to **AECITEM.xml**, located in the project *Symb* folder -- or—click the **Browse** icon and navigate to the file.

Note The aecXML files are exported from TRNS*PORT. For designers without access to TRNS*PORT, FDOT maintains current aecXML files for download on their FTP site at <ftp://ftp.dot.state.fl.us/outgoing/ces/payitems/>.

5. In the *Payer* box, leave this field **blank** as TRNS*PORT no longer requires this information.

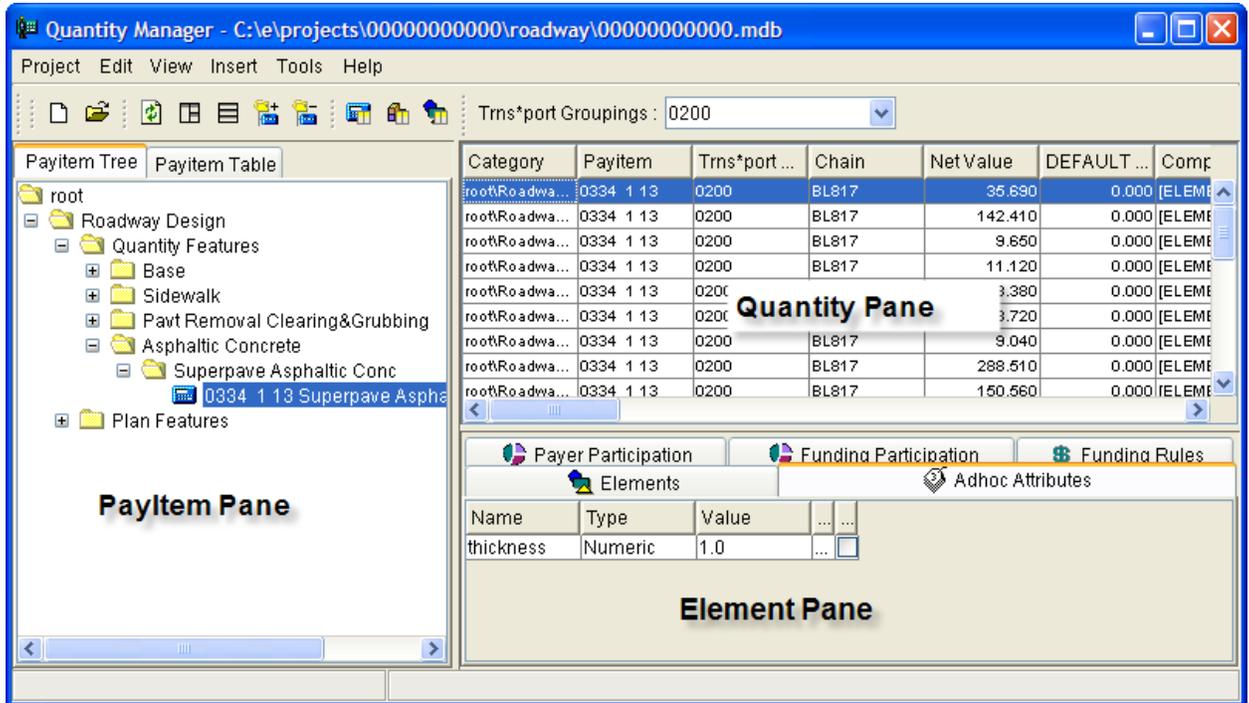


Note AECITEM.XML file is updated on the ftp site every weekend – may want to download periodically

6. Quantity Manager will now use the items contained in the file.
7. Click the **OK** icon. The information saves and Project Preferences closes.

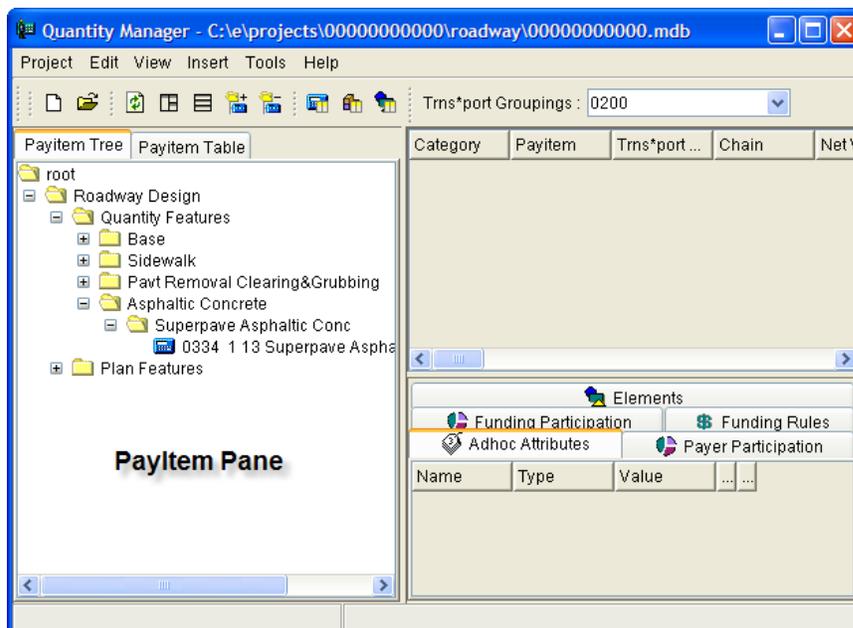
INTERFACE DETAILS

When a project is open, Quantity Manager activates. This interface provides several tools for manipulating the view and performing operations on the database. The main body of Quantity Manager comprises three panes: *Payitem*, *Quantity*, and *Element*.



PAYITEM PANE

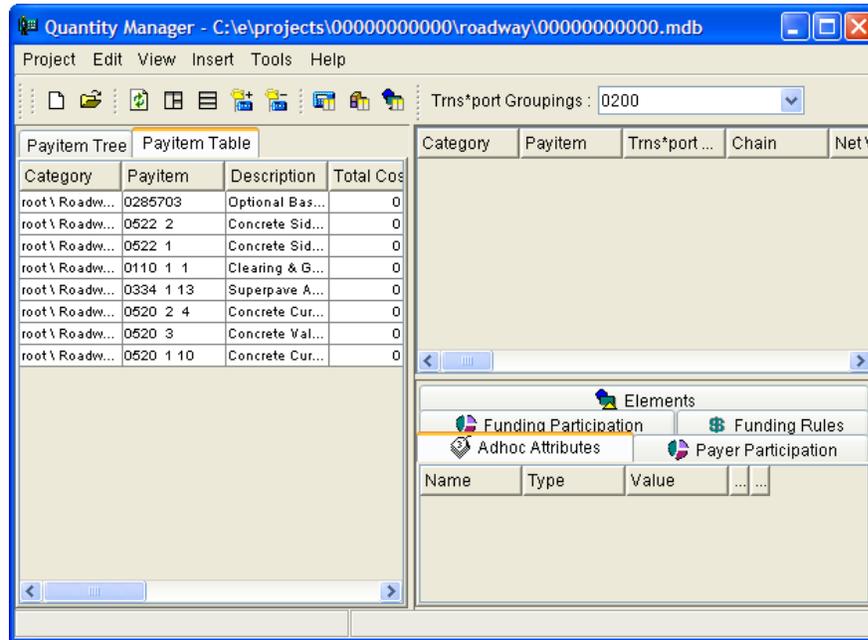
The Payitem pane is located on the left side of Quantity Manager in Normal View and is the top pane when tiled horizontally.



Two tabs control the display type for the Payitem pane:

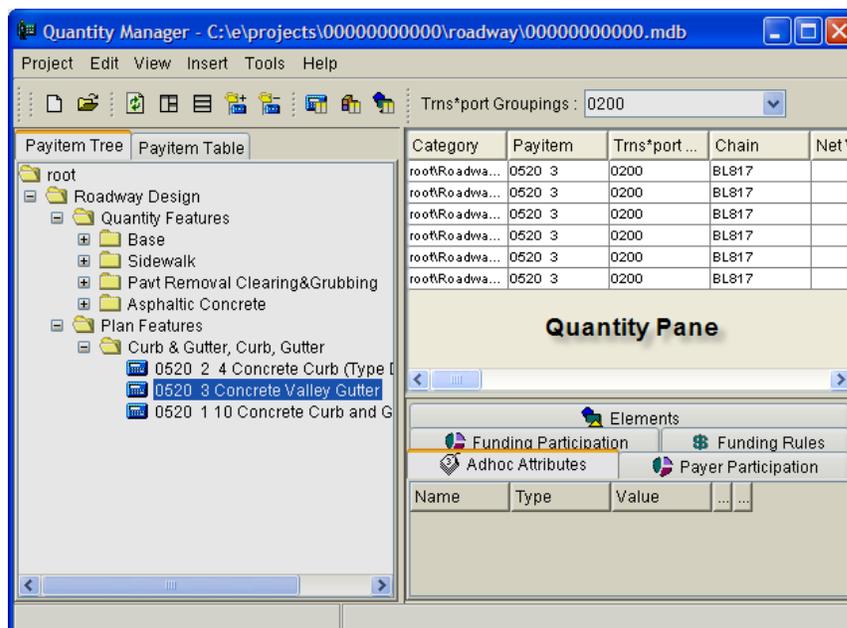
Payitem Tree This tab displays the contents in a hierarchical structure that is easily navigated in the same manner as D&C Manager.

Payitem Table This tab displays the Payitems in the database in a table format that displays more information about Payitems and is useful for selecting multiple items.



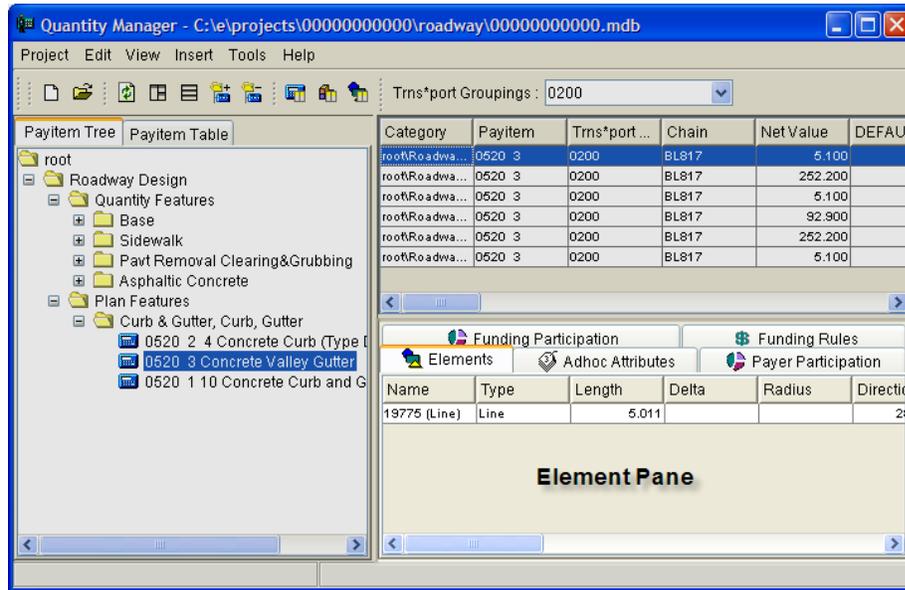
QUANTITY PANE

The Quantity pane displays quantity information about the selected Payitem or Category. The information displayed can be customized by selecting which columns to display. Quantity information can also be sorted by clicking on any of the column headers. Only Quantities under the current Phase, selected on the Tool bar, are displayed.



ELEMENT PANE

The Elements pane displays information specific to the selected Quantity. Each tab in the Elements pane displays different attributes. The Elements tab shows all the elements that make up that Quantity. Adhoc Attributes displays any AdHoc tags related to the Quantity. Funding Participation, Funding Rules, and Payer Participation, displays information related to funding sources.

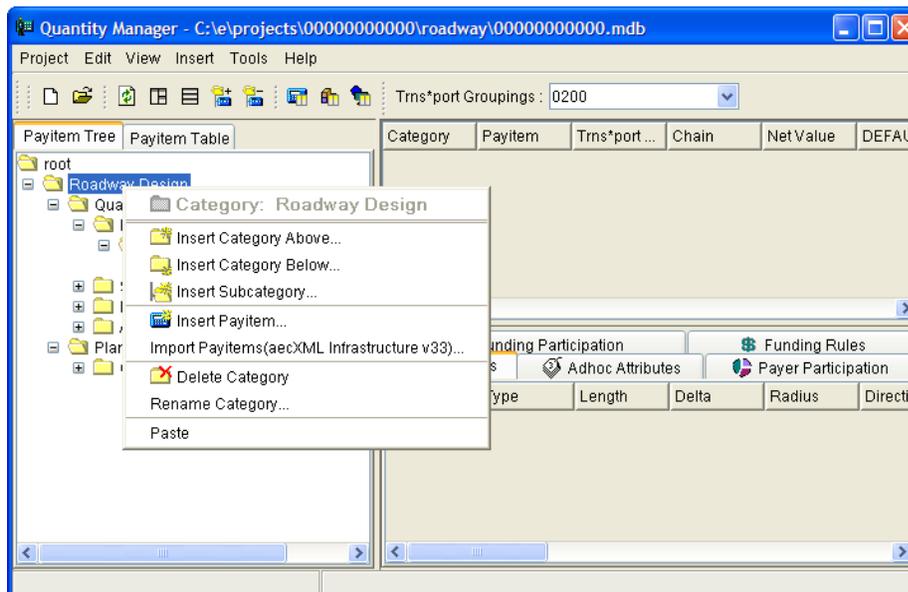


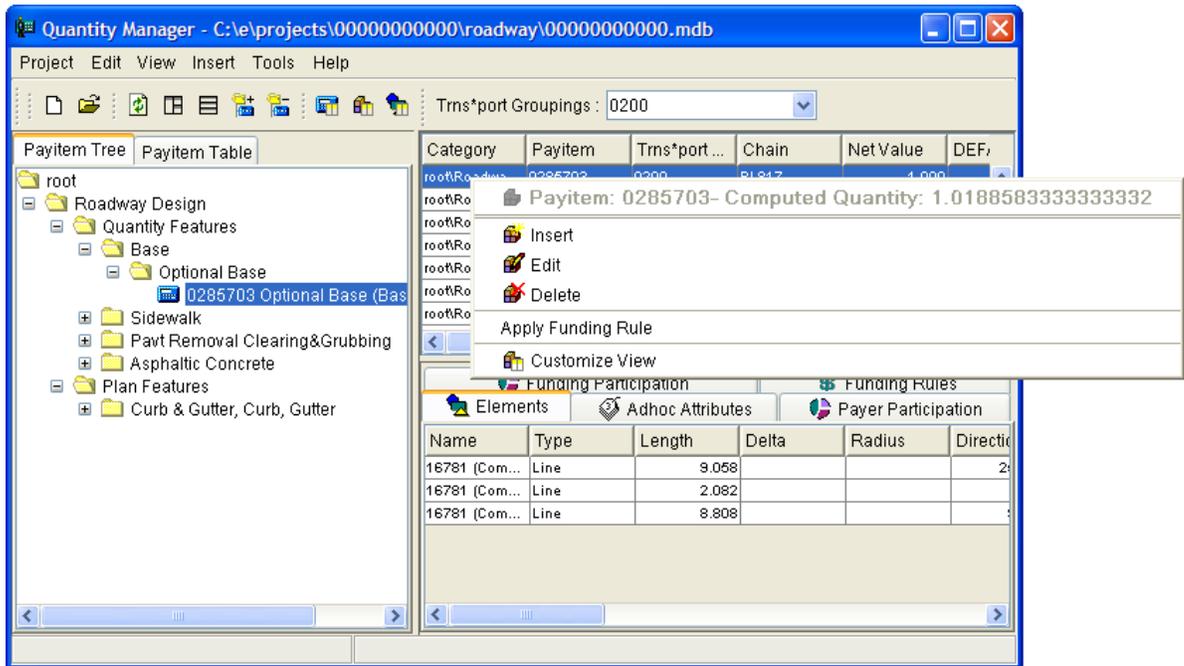
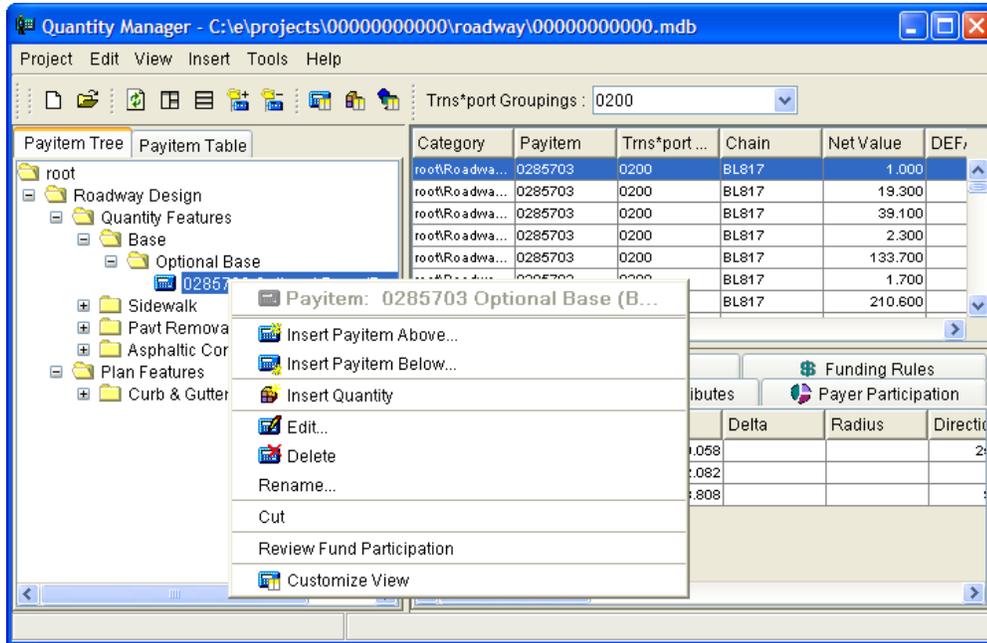
OTHER MENUS

Quantity Manager also has a menu that contains shortcuts to commonly used tools. This menu is available in the Payitem Pane and Quantity Pane. The shortcuts displayed change according to the location where the menu activates.

TO ACTIVATE A MENU

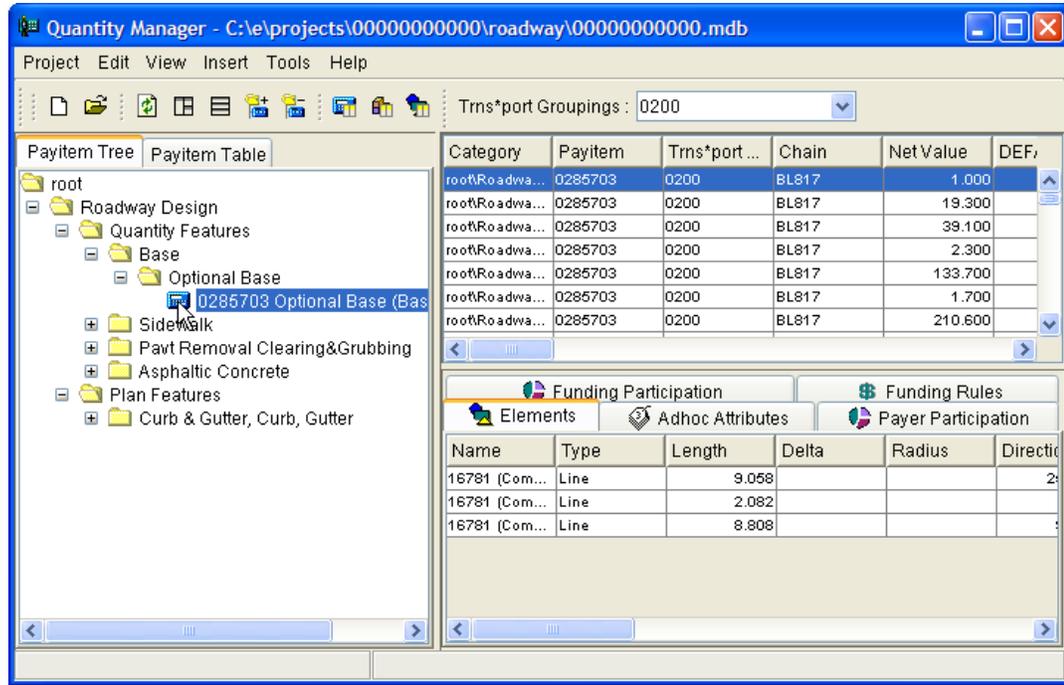
To open a menu, right-click in any view pane. A menu opens that has shortcuts to tools related to the pane.



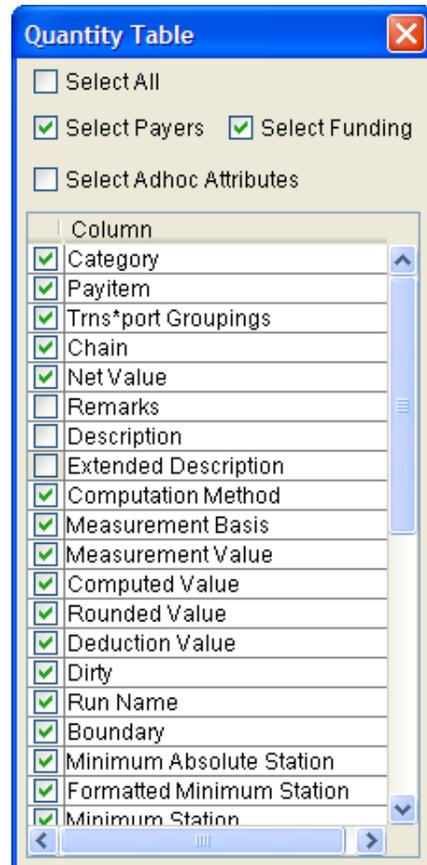


Exercise 6.3 Navigating Quantity Manager

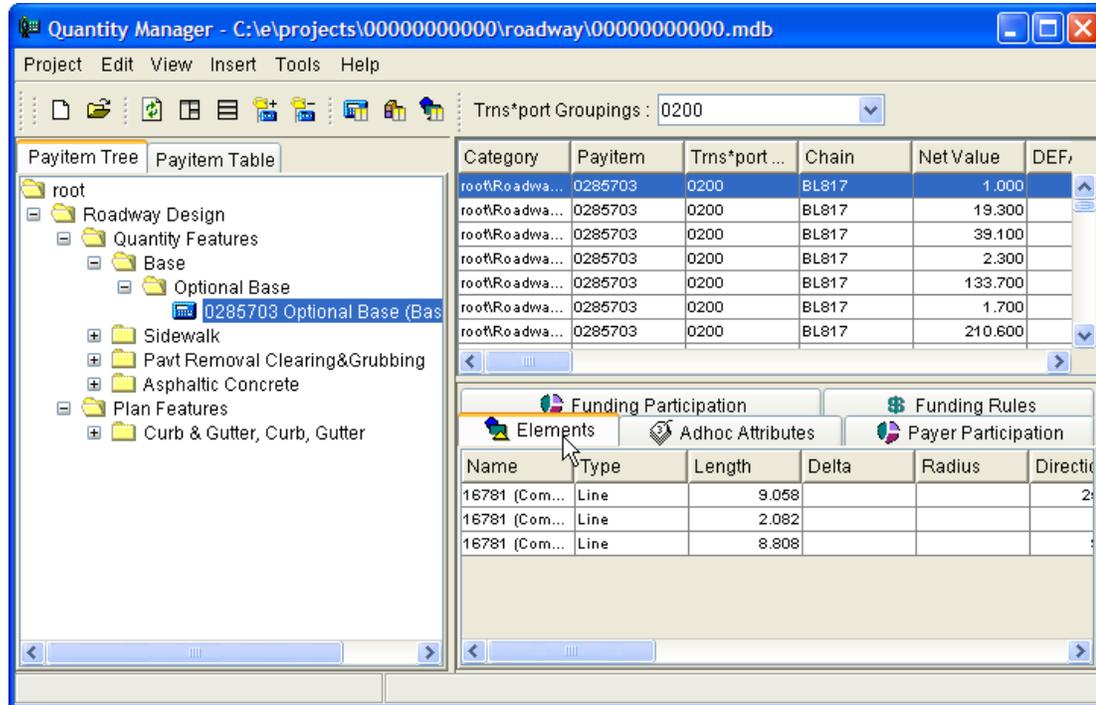
1. From Quantity Manager, select the **Payitem Tree** tab.
2. Navigate through the database and select **Pay Item 0285703**.



3. In the *Quantity Pane*, right click a column header. Quantity Table opens.
4. Clear the **Remarks** check box.
5. Clear the **Description** check box.
6. Clear the **Extended Description** check box.
7. Close Quantity Table.



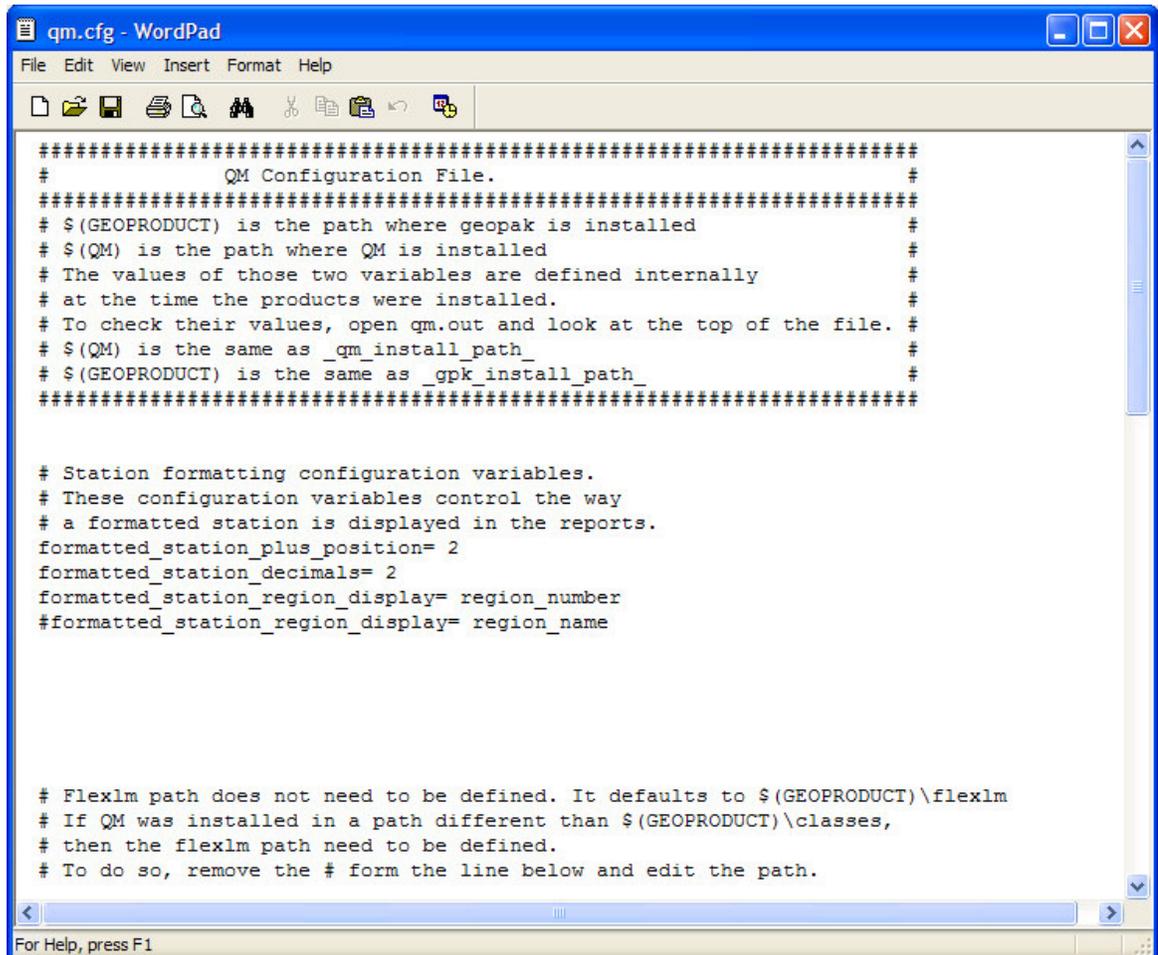
8. From Quantity Manager, select the first item in the *Quantity Pane*.
9. In the *Elements Pane*, select the **Elements** tab.
10. Review the components of the selected quantity.



11. In the *Payitem Pane*, select the **Payitem Tree** tab, and navigate the database to **Item 0520 1 8**.
12. Select the **quantity** that appears in the *Quantity Table*.
13. In the *Element Pane*, select the **Adhoc Attributes** tab. The *AdHoc* tags for this element display.

ADVANCED CONFIGURATION

Quantity Manager uses a configuration file to control the default settings of the interface. The configuration file contains variables for station formatting, report and export paths, and default locations of the aecXML files. The configuration file is located in the C:/Program Files/Bentley/Geopak/Classes. The file name is *Qm.cfg*. There are descriptions and instructions in the file for each variable.



```

#####
#                               QM Configuration File.                               #
#####
# $(GEOPRODUCT) is the path where geopak is installed                             #
# $(QM) is the path where QM is installed                                         #
# The values of those two variables are defined internally                         #
# at the time the products were installed.                                       #
# To check their values, open qm.out and look at the top of the file.           #
# $(QM) is the same as _qm_install_path_                                         #
# $(GEOPRODUCT) is the same as _gpk_install_path_                                #
#####

# Station formatting configuration variables.
# These configuration variables control the way
# a formatted station is displayed in the reports.
formatted_station_plus_position= 2
formatted_station_decimals= 2
formatted_station_region_display= region_number
#formatted_station_region_display= region_name

# Flexlm path does not need to be defined. It defaults to $(GEOPRODUCT)\flexlm
# If QM was installed in a path different than $(GEOPRODUCT)\classes,
# then the flexlm path need to be defined.
# To do so, remove the # form the line below and edit the path.

```

➤ To modify *qm.cfg*

1. In Windows Explorer, navigate to C:/Program Files/Bentley/Geopak/Classes.
2. Open *Qm.cfg* with a text editor application.
3. In *Qm.cfg*, locate the desired variable, and then change the value of the variable.
4. Save *Qm.cfg*.

7 CREATING CATEGORIES, PAYITEMS & QUANTITIES

OBJECTIVES

- Define Categories, Payitems and Quantities.
- Create new Categories, Payitems and Quantities.

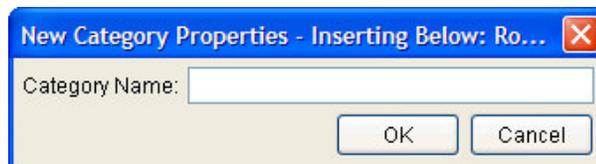
CATEGORIES

A Quantity Manager *Category* is comparable to a *Folder* in Microsoft Windows Explorer. Categories serve as containers for Subcategories and Pay Items in the same manner as an Explorer Folder can contain Subfolders and Files. In a standard FDOT Project, the Project Number folder compares to a Category, and the Roadway subfolder represents a Subcategory.

When quantities are generated using D&C Manager and exported to Quantity Manager, Categories automatically create that correspond to the hierarchical structure of D&C Manager. Categories can also be manually created Above, Below, or as a Subcategory to an existing Category. Categories created Above appear in the database hierarchy above the currently selected Category. Likewise, Below inserts a Category below the current Category. Subcategory creates a new Category one level lower in the hierarchy than the current Category.

➤ **To create any new category**

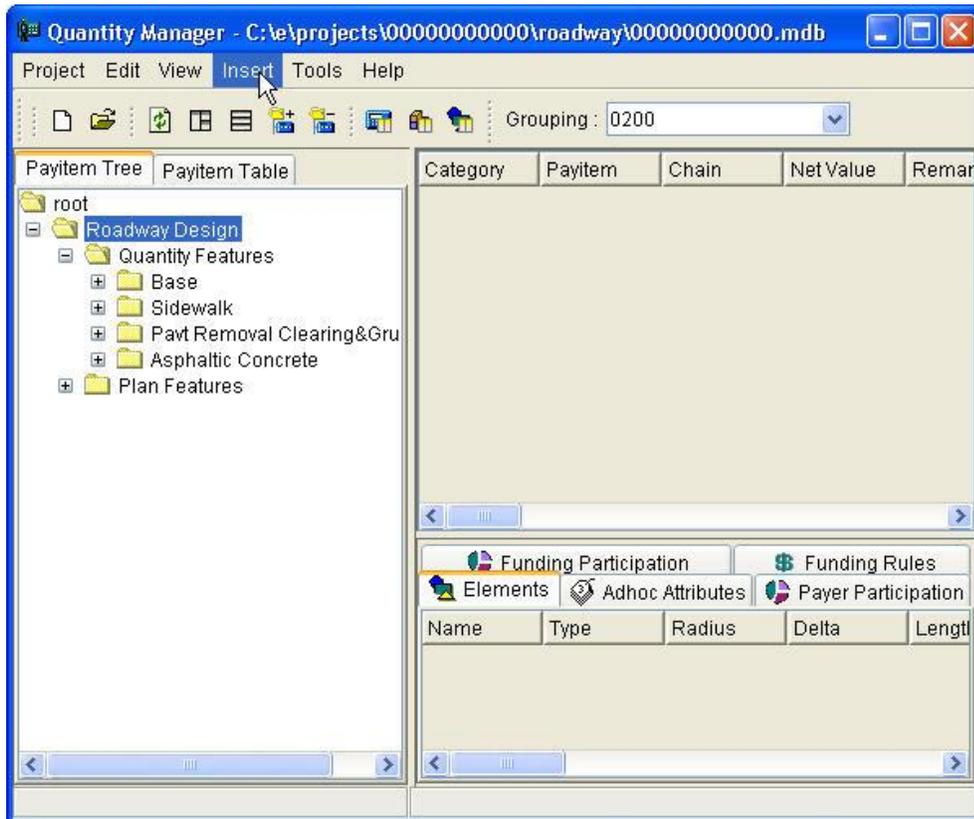
1. From Quantity Manager, select a **Category** in the *Payitem Tree* tab.
2. From the Quantity Manager menu, select **Insert**, point to **Category**, and then select one of the three commands: **Above**, **Below**, or **Subcategory**. New Category Properties opens.



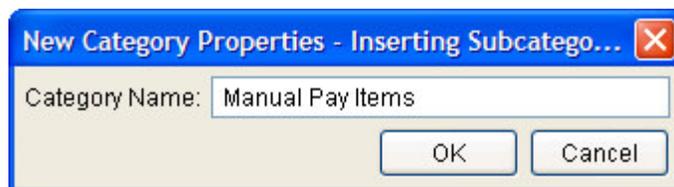
3. In New Category Properties, type a **Category Name**.
4. Click the **OK** icon. The new Category inserts into the database.

Exercise 7.1 Creating a Category

1. From Quantity Manager, select the **Payitem Tree** tab, and then select the **Roadway Design** Category.



2. From the Quantity Manager menu, select **Insert**, point to **Category**, and then select **Subcategory**. New Category Properties opens.
3. From New Category Properties, click the *Category Name* box and type **Manual Pay Items**.



4. Click the **OK** icon. The new Category is created.

PAYITEMS

A Quantity Manager Payitem is similar to a File inside a Folder in Windows Explorer. Both Payitems and Files exist to hold information. Payitems contain quantity information. There are three options for creating Payitems: Above, Below, and in Category. Payitems are created using new Payitem Properties.

➤ **To open New Payitem Properties**

1. From Quantity Manager, select the **Payitem Tree** tab, and then select a **Payitem** or **Category**.
2. From the **Quantity Manager** menu, select **Insert**, point to **Payitem**, and then select one of the available options: **Above**, **Below**, or **Category**. **New Payitem Properties** opens.

Description The Payitem description limited to 256 characters.

Unit Cost Cost of a single unit.

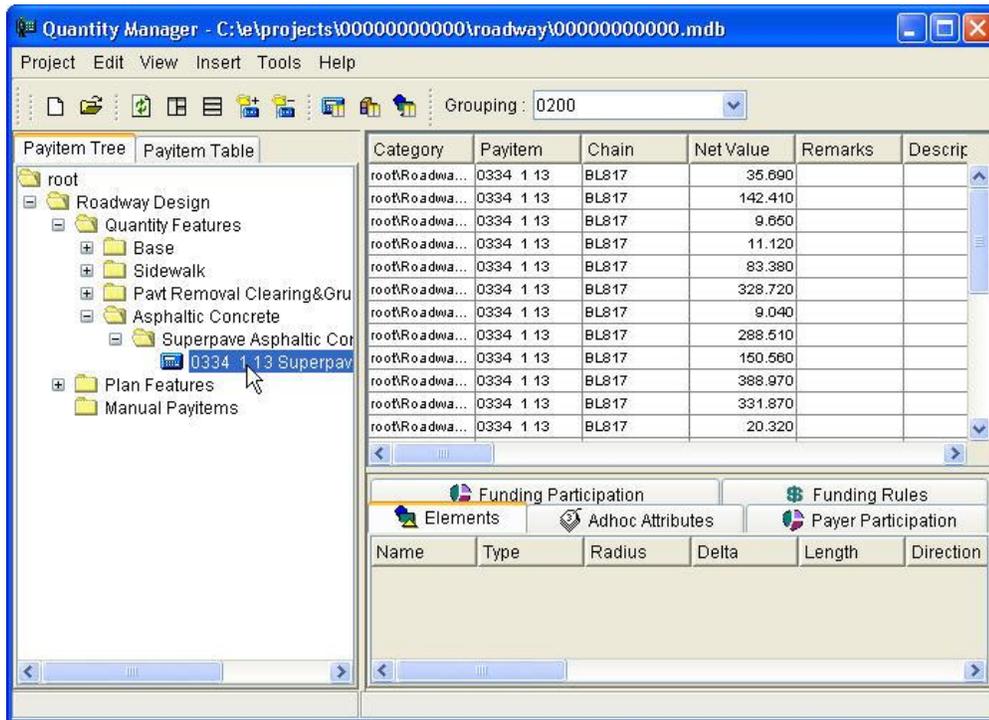
Lump Sum Check box defines the item as a Lump Sum unit of payment. There are two types of Lump Sum Payitems, True and Hybrid. A True Lump Sum pay item has the Unit = "LS" and the Lump Sum box checked. The Payitem will always total 1. (For example Mobilization) A Hybrid Lump Sum Payitem has the Unit not equal to "LS" (measurements in standard units (SY, LF etc.), but the Lump Sum box is checked. (For Example: Clearing and Grubbing)

Unit This is unit of measure for the Payitem (i.e. SF, SY, LF, TN etc.). The total quantity will still be measured in the specified Unit.

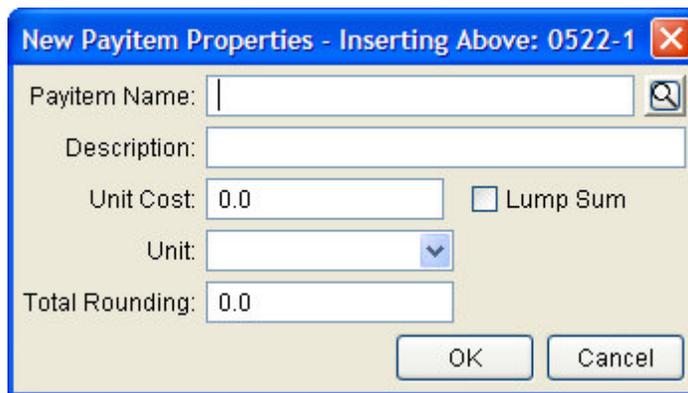
Total Rounding User defined decimal place to round the total quantity.

➤ **To create a Payitem Above or Below**

1. From Quantity Manager, select the **Payitem Tree**, and then select a **Payitem**.



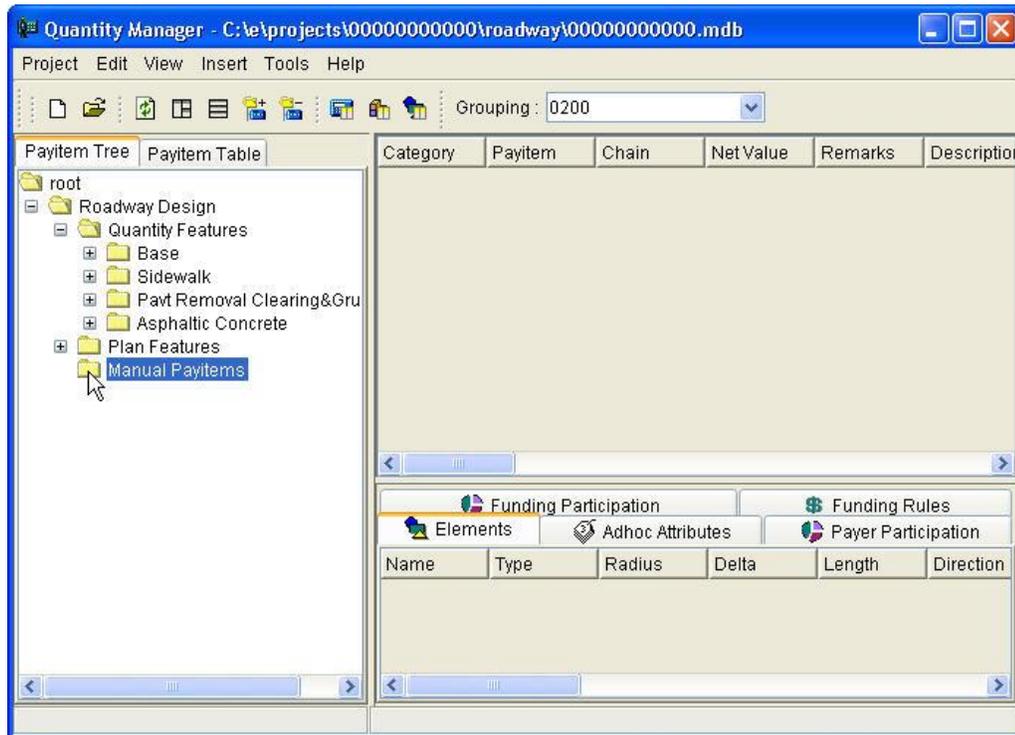
2. From the Quantity Manager menu, select **Insert**, point to **Payitem**, and then select either **Above** or **Below**. New Payitem Properties opens.



3. From New Payitem Properties, fill in the boxes with the appropriate information.
4. Click the **OK** icon. The *Payitem* adds to the database.

➤ **To create a new Payitem in a Category**

1. From Quantity Manager, select the **Payitem Tree** tab, and then select a **Category**.



2. From the Quantity Manager menu, select **Insert**, point to **Payitem**, and then select a **Category**. New Payitem Properties opens.

Payitem Name:

Description:

Unit Cost: Lump Sum

Unit:

Total Rounding:

OK Cancel

3. From New Payitem Properties, fill in the options with the appropriate information.
4. Click the **OK** icon. The *Payitem* adds to the database.

IMPORTING PAYITEMS

Payitems can also be imported from the Master Payitem List, which is defined by the Payitem aecXML file specified in Project Properties. Payitem are imported using Select Payitems

➤ **To open Select Payitems using the Insert menu**

1. From Quantity Manager, select the **Payitem Tree** tab, and then select a **Payitem** or **Category**.
2. From the Quantity Manager menu, select **Insert**, point to **Payitem**, and then select one of the available options: **Above**, **Below**, or **Category**. New Payitem Properties opens.
3. From New Payitem Properties, click the **Browse Master Payitem Document** icon. Select Payitems opens.

Browse Master Payitem Document

New Payitem Properties - Inserting in Category: ...

Payitem Name:

Description:

Unit Cost: Lump Sum

Unit:

Total Rounding:

➤ **To open Select Payitems from the Payitem Tree tab**

1. From Quantity Manager, select the **Payitem Tree** tab, and then select a **Category**.
2. Select the **Payitem Tree** tab, right-click, and then select **Import Payitems (aecxml Infrastructure v33)**. Select Payitems opens and displays a table of Payitems that are available for use.

Select Payitems

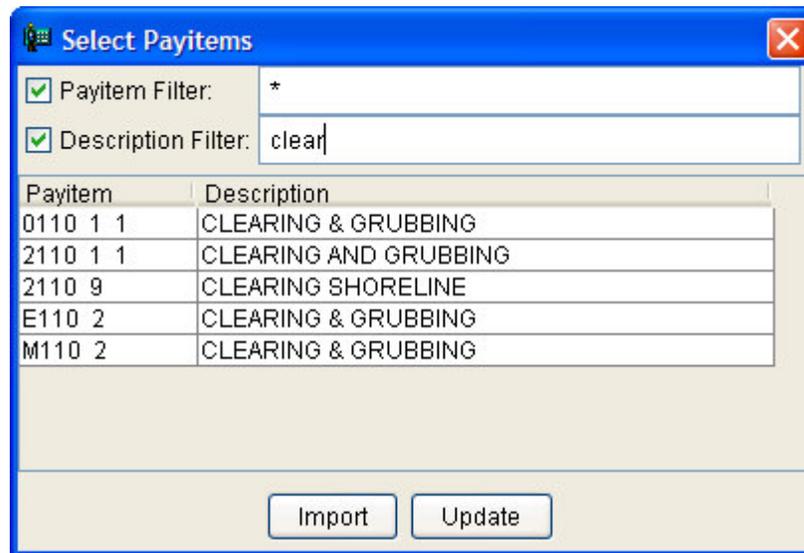
Payitem Filter: *

Description Filter: *

Payitem	Description
0 50 0 10	DESIGN / BUILD (ENGINEERING SERVICES)
0 50 0 11	DESIGN / BUILD (SURVEY)
0 50 0 20	DESIGN / BUILD (GEOTECHNICAL SERVICES)
0 50 0 30	DESIGN / BUILD (PERMITTING)
0 50 0 40	DESIGN / BUILD (CEI)
0 50 1	DESIGN / BUILD (RESURFACING)
0 50 2	DESIGN / BUILD (ROADWAY CONSTRUCTION)
0 50 2 1	DESIGN / BUILD (RDWY) (MOBILIZATION)

➤ **To import a Payitem**

1. From Select Payitems, type the **Payitem** or **Description** into the appropriate *Filter*. The Payitem is located in the list.



The screenshot shows the 'Select Payitems' dialog box. It has two filter fields: 'Payitem Filter' with a checkmark and the value '*', and 'Description Filter' with a checkmark and the value 'clear'. Below the filters is a table with two columns: 'Payitem' and 'Description'. The table contains the following data:

Payitem	Description
0110 1 1	CLEARING & GRUBBING
2110 1 1	CLEARING AND GRUBBING
2110 9	CLEARING SHORELINE
E110 2	CLEARING & GRUBBING
M110 2	CLEARING & GRUBBING

At the bottom of the dialog are two buttons: 'Import' and 'Update'. The 'Import' button is highlighted with a yellow border.

2. From the list, select the **Payitem**.



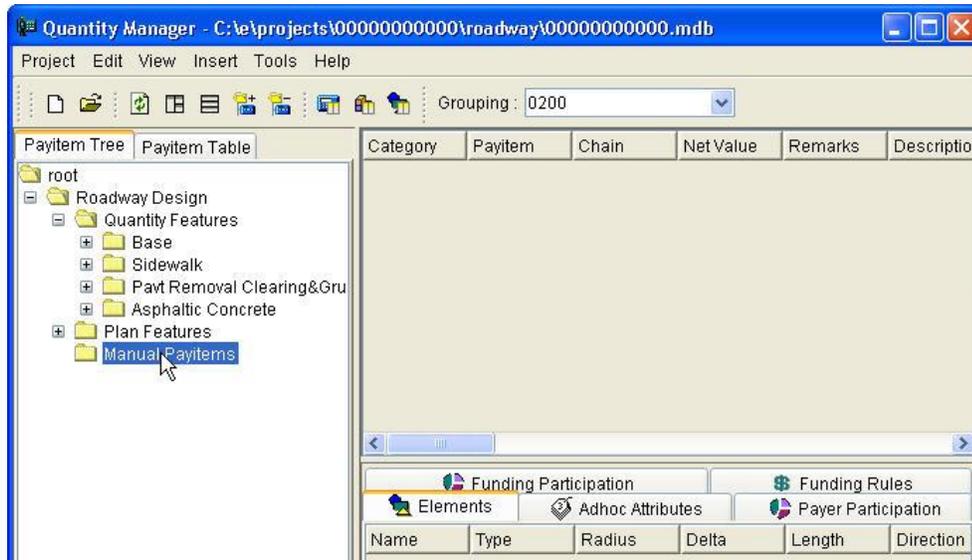
The screenshot shows the 'Select Payitems' dialog box. The filters are the same as in the previous screenshot. The table now has the first row, '0110 1 1 CLEARING & GRUBBING', highlighted in blue. The 'Import' button is highlighted with a yellow border and a mouse cursor is pointing at it.

3. Click the **Import** icon. The Payitem adds to the database.

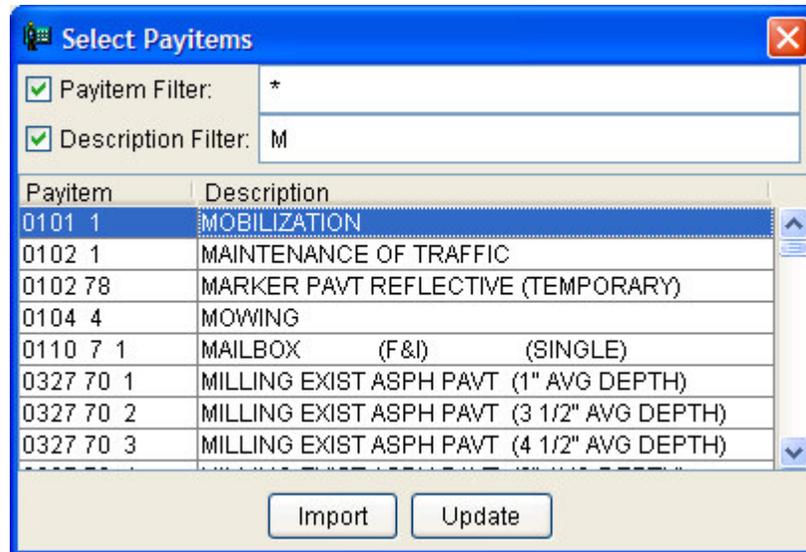
Note Importing Payitems is the preferred method for adding Payitems to the database, because it ensures that the new Payitems exactly match that which is defined in TRNS*PORT.

Exercise 7.2 *Importing Payitems*

1. From Quantity Manager, select the **Payitem Tree** tab, and then select the **Manual Payitems Category**.



2. From the *Payitem Tree* tab, right-click and select **Import Payitems (aecxml Infrastructure v33)** from the popup menu. Select **Payitems** opens.
3. From **Select Payitems**, clear the **Description Filter** box, and then type **M**. All *Payitems* that have a description beginning with **M** display.



4. In the table, select **0101 1 Mobilization**.
5. Click the **Import** icon. The *Mobilization Payitem* adds to Quantity Manager.
6. Repeat steps 4 through 6 to import **Payitem 0102 1 Maintenance of Traffic** and **Payitem 0102 61 Business Signs**.
7. Close **Select Payitems**.

QUANTITIES

New Quantity Properties define *Quantities* for Payitems. New Quantity Properties comprises two tabs, *General* and *Location*. These two tabs contain information that defines properties of the Quantity. Although most of the options in New Quantity Properties are not required, supply as much information as is available.

➤ **To open New Quantity Properties**

1. From Quantity Manager, right click on a **Payitem** in the *Payitem Pane*.
2. Click **Insert Quantity**. New Quantity Properties opens.

GENERAL TAB

The screenshot shows a dialog box titled "New Quantity Properties - For Payitem: 0101 1". It has three tabs: "General", "Location", and "Adhoc Attributes". The "General" tab is selected. The fields and their values are as follows:

- Measurement Basis: Each (dropdown)
- Measurement Value: 0.000 (text box)
- Computed Quantity: 0.000 (text box)
- Rounded Quantity: 0.000 (text box)
- Deduction Quantity: 0.000 (text box)
- Net Quantity: 0.000 (text box)
- Boundary Type: None (dropdown)
- Boundary Name: (text box)
- Run Name: (text box)
- Trns*port Groupings: 0200 (dropdown)
- Date / Time: 2008-03-17 14:50:35 (text box)
- Remarks: (text box)
- Description: (text box)
- Extended Description: (text box)

Buttons on the right side include "Create", "Close", "Boundary", "Trns*port Gr...", and "Set Current". A printer icon is located at the bottom right.

Measurement Basis The type of element used to derive the quantity. There are three supported measurement types: Each, Linear and Area. (For example, cells are typically measured per each.)

Measurement Value The actual measurement with no formulas, adjustments, or rounding. (For example, pavement computations are measured in square feet or square meters of the closed area.)

Computed Quantity Is the result of a computation of an applied formula. (For example, Pavement measures in square feet to which a formula can be applied to convert to a Computed Quantity in tons.)

Rounded Quantity	Rounded quantity based on the Computed Quantity.
Deduction Quantity	Is a quantity to be deducted from the Rounded Quantity.
Net Quantity	This is the results of the Rounded Quantity minus the Deduction Quantity, which contributes to the total quantity for the pay item.
Boundary Type	Choose the type of boundary used: Fence, View, Sheet, Station Range, or Element.
Boundary Name	The name of either a sheet or station range created by selecting the Boundary icon and defining the titles and parameters prior to using.
Run Name	A user defined grouping mechanism to permit segregation of quantities under the same pay item.
TRNS*PORT Groupings	An option icon to allow the review of quantity phase properties, from which funding rules may be reviewed, added and/or changed.
Date / Time	Date and Time the quantity was computed or updated. The Set Current icon resets to the current system Date / Time.
Remarks	This a box for user comments, limited to 256 characters.
Description	This a box for quantity description, limited to 256 characters.
Extended Description	This a box for additional description, limited to 256 characters.

LOCATION TAB

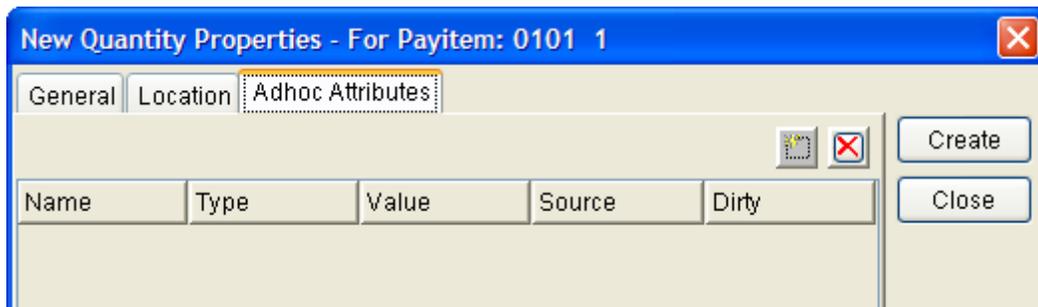
The screenshot shows a software dialog box titled "New Quantity Properties - For Payitem: 0101 1". It has three tabs: "General", "Location" (which is selected and highlighted with a yellow border), and "Adhoc Attributes". The "Location" tab contains the following fields:

- "Baseline Chain:" followed by a dropdown menu.
- A section titled "Minimum Station" containing:
 - "Station:" followed by a text input field.
 - "Region:" followed by a dropdown menu.
 - "Offset:" followed by a text input field.
- A section titled "Maximum Station" containing:
 - "Station:" followed by a text input field.
 - "Region:" followed by a dropdown menu.
 - "Offset:" followed by a text input field.

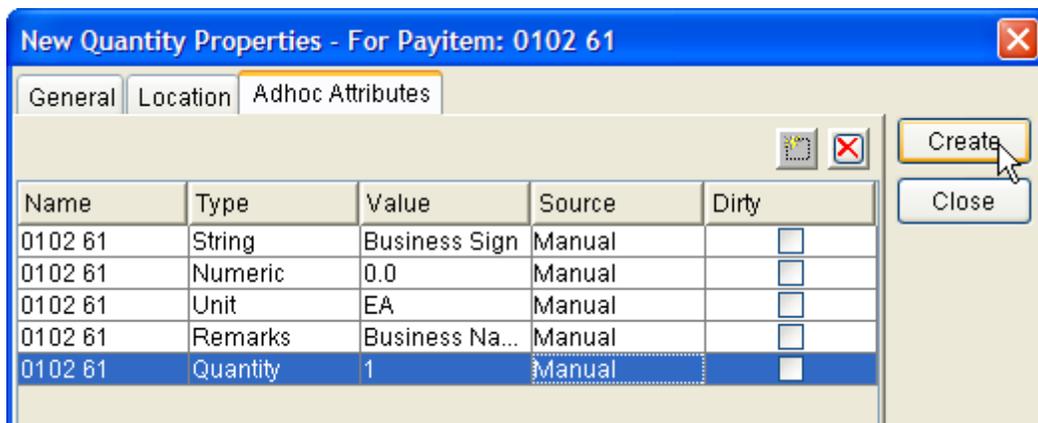
On the right side of the dialog, there are two buttons: "Create" and "Close".

Baseline Chain	A list of all chains found in the Quantity Manager database.
Minimum Station	This is the lowest station point in relation to the baseline. This does not always correspond to beginning station.
Region	The region number at this point if the chain has equations.
Offset	This is the distance from the baseline to the lowest station point.
Maximum Station	This is the highest station point in relation to the baseline. This does not always correspond to ending station.
Region	The region number at this point if the chain has equations.
Offset	This is the distance from the baseline to the highest station point.

ADHOC ATTRIBUTES TAB

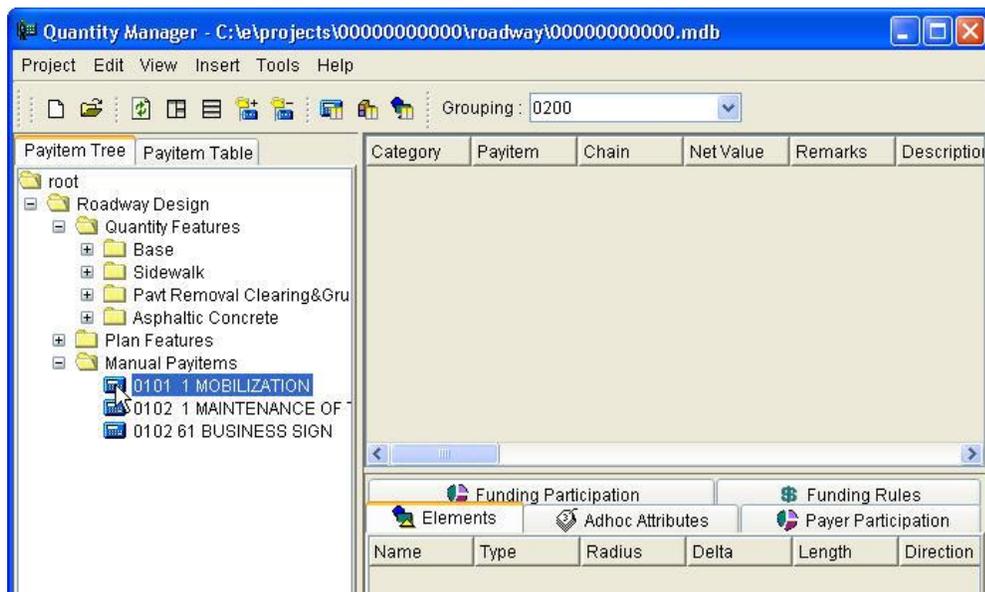


The Adhoc Attributes tab allows the user to add Adhoc Attributes to manually created payitems. Attachable Adhocs are *String*, *Numeric*, *Unit*, *Remarks*, and *Quantity*.

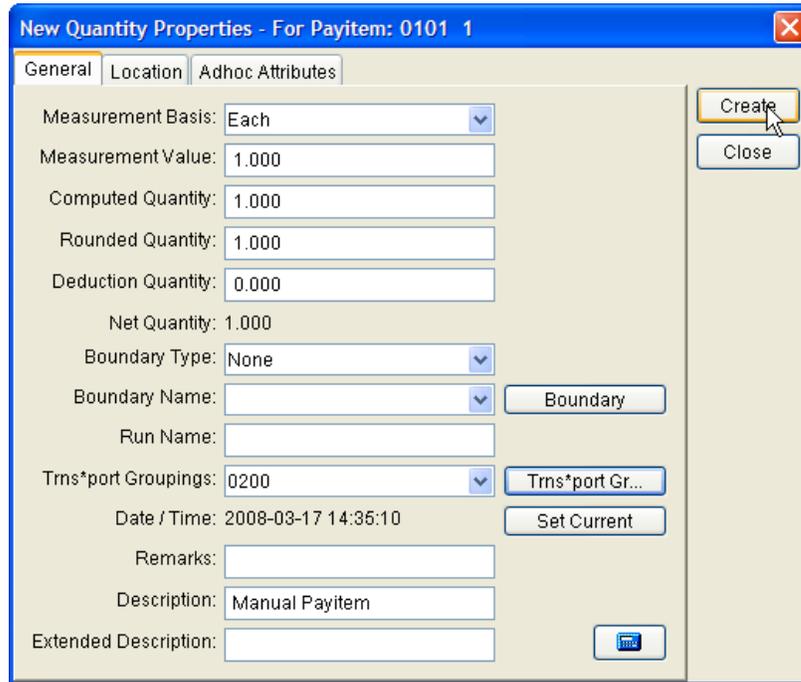


Exercise 7.3 Creating Quantities

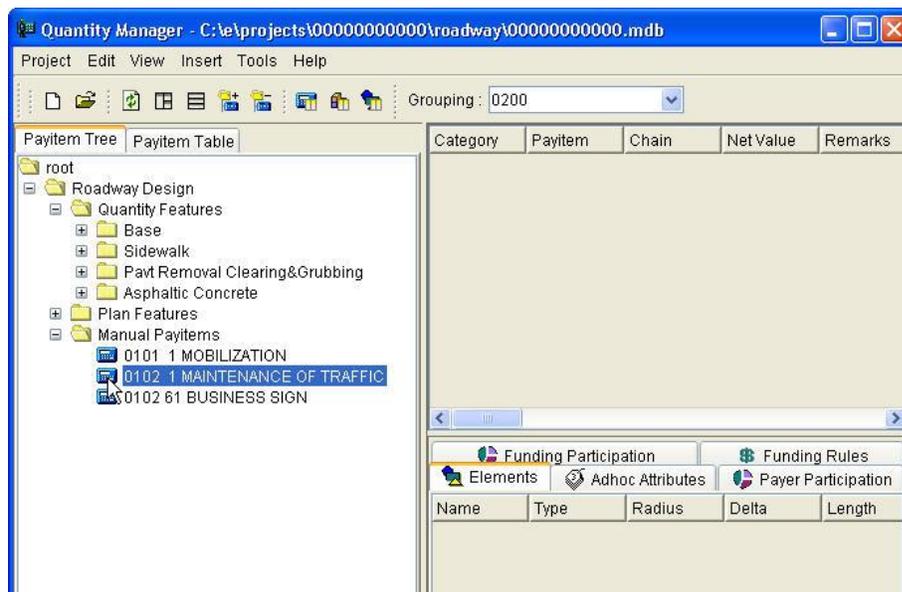
1. From Quantity Manager, select the **Payitem Tree** tab, and then select *Payitem 0101 1 Mobilization*.



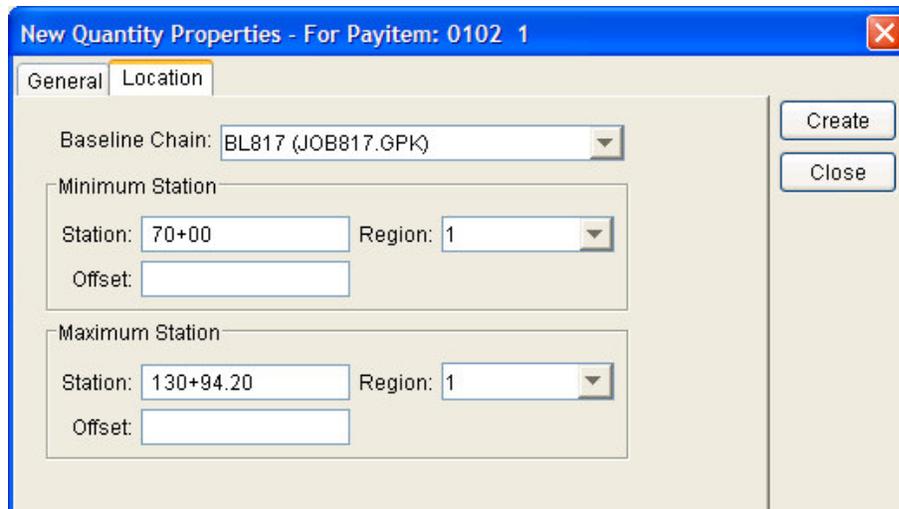
2. In the *Payitem Tree* tab, right-click and select **Insert Quantity**. New Quantity Properties opens.
3. In the *Measurement Basis* box, select **Each**.
4. In the *Measurement Value* box, type **1**.
5. In the *Computed Quantity* box, type **1**.
6. In the *TRNS*PORT Grouping* box, select **0200**.
7. In the *Description* box, type **Manual Payitem**.



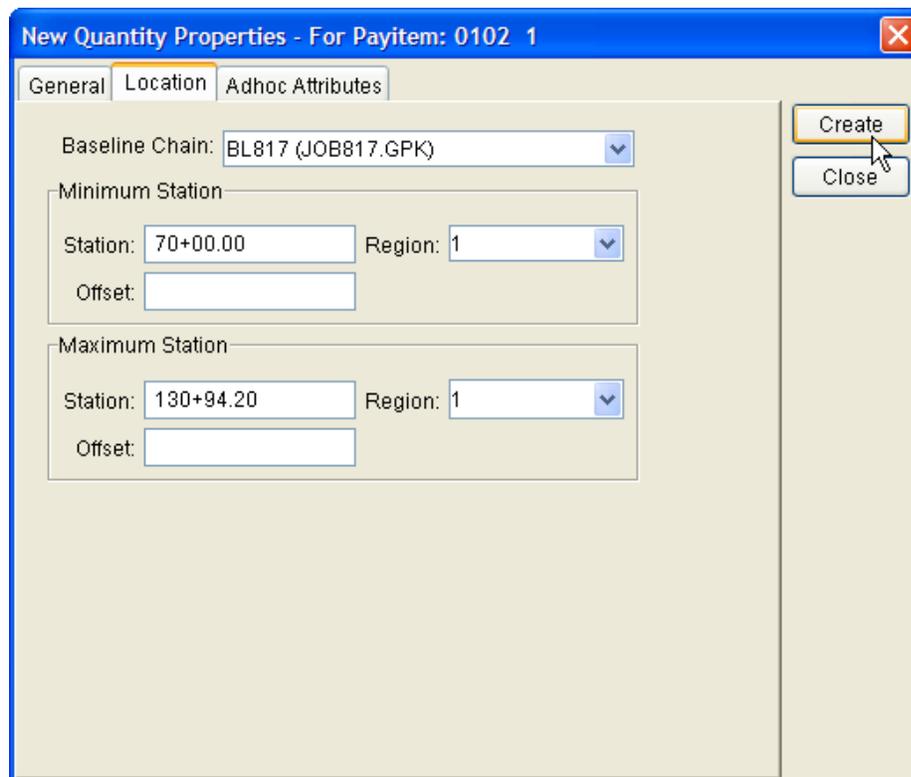
8. Click the **Create** button. The new Quantity adds to Quantity Manager.
9. In the *Payitem Tree* tab, select *Payitem 0102 1 Maintenance of Traffic*.



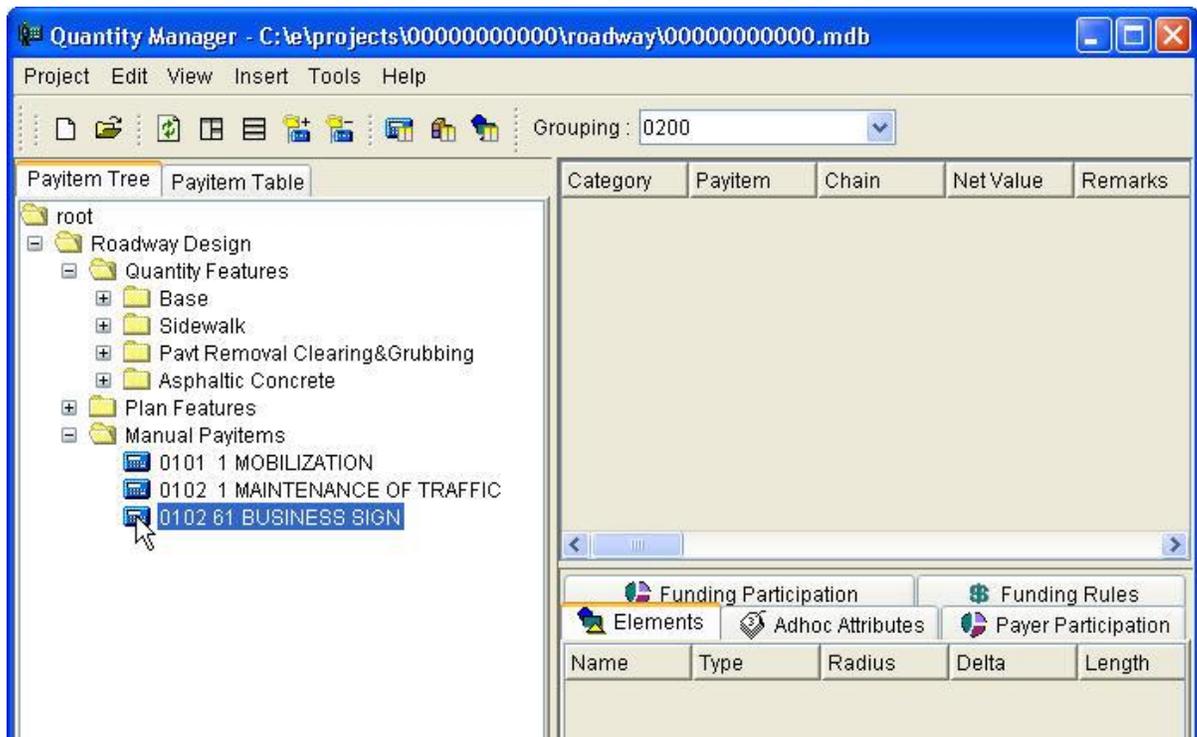
10. From **New Quantity Properties**, in the *Measurement Value* box, type **60**. This value is the number of days for the project.
11. In the *Computed Quantity* box, type **1**. This Payitem is an example of a *Hybrid Lump Sum Quantity*.
12. Select the **Location** tab.



13. In the *Baseline Chain* box, select **BL817 (JOB817.GPK)**.
14. Under *Minimum Station*, type **70+00** in the *Station* box.
15. Under *Maximum Station*, type **130+94.20** in the *Station* box.
16. Click the **Create** icon. The Quantity adds to Quantity Manager.



17. From Quantity Manager, in the *Payitem Tree* tab, select *Payitem 0102 61 Business Signs*.



18. From New Quantity Properties, select the **General** tab.

19. In the *Measurement Value* box, type **1**.

20. Select the **Location** tab.

21. Under *Minimum Station* on the *Location* tab, type **76+00** in the *Station* box.

22. In the *Offset* box, type **100**.

23. Under *Maximum Station*, type **76+00** in the *Station* box.

24. In the *Offset* box, type **100**.

25. Click the **Create** icon. The Quantity adds to Quantity Manager.

26. Under *Minimum Station*, type **82+00** in the *Station* box.

27. In the *Offset* box, type **-100**.

28. Under *Maximum Station*, type **82+00** in the *Station* box.

29. In the *Offset* box, type **-100**.

30. Click the **Create** icon. The Quantity adds to Quantity Manager.

31. Under *Minimum Station*, type **91+00** in the *Station* box.

32. In the *Offset* box, type **100**.

33. Under *Maximum Station*, type **91+00** in the *Station* box.

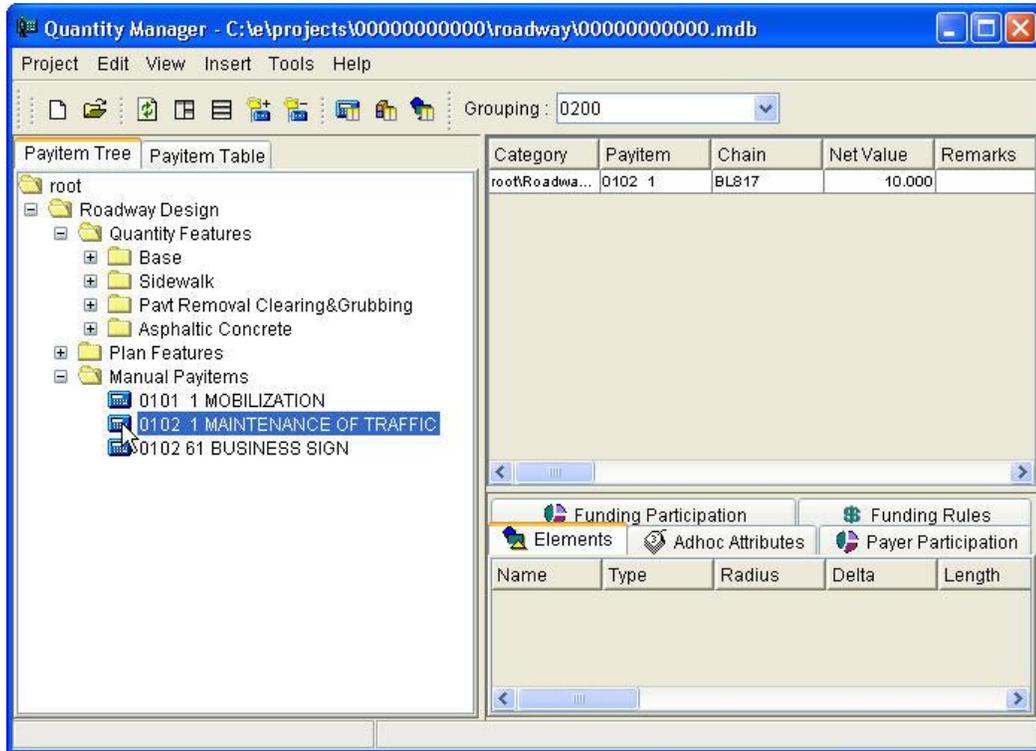
34. In the *Offset* box, type **100**.

35. Click the **Create** icon. The Quantity adds to Quantity Manager.

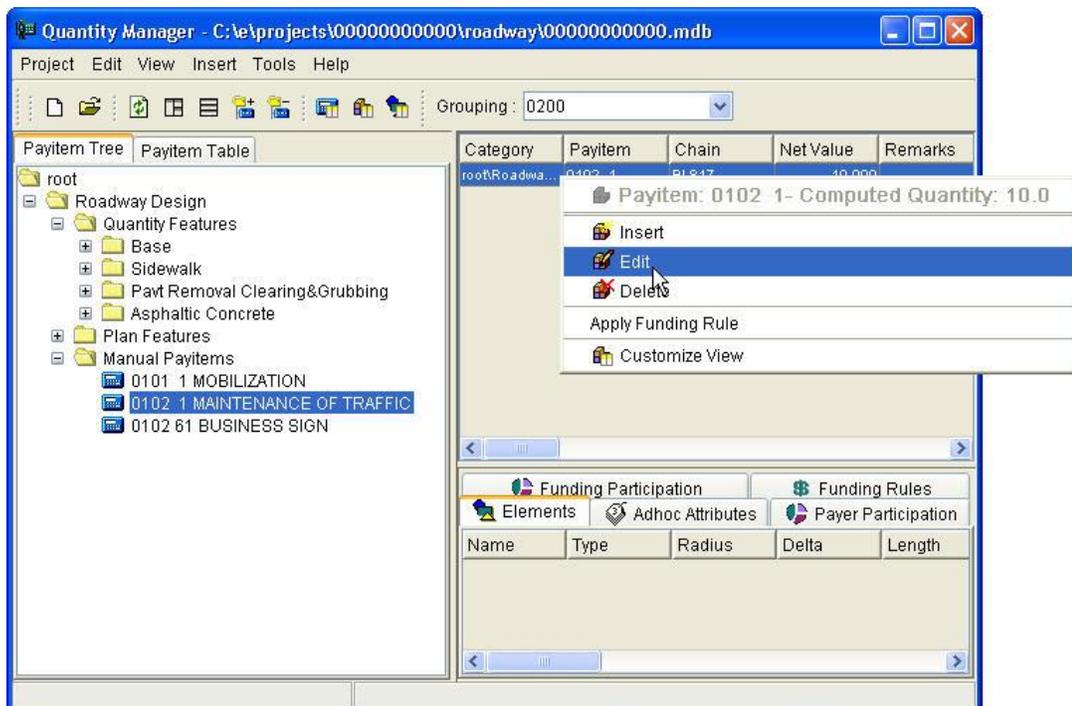
36. Close New Quantity Properties.

Exercise 7.4 Editing a Quantity

1. From Quantity Manager, select the **Payitem Tree** tab, and then select **Payitem 0102 1 Maintenance of Traffic**.



2. In the *Quantity Pane*, right-click and select **Edit** from the popup menu. Edit Quantity Properties opens.



1. From Edit Quantity Properties, select the **General** tab.

The screenshot shows a dialog box titled "Edit Quantity Properties - Payitem: 0102 1 - Computed Quantity: 1.0". It has two tabs: "General" (selected) and "Location". The "General" tab contains the following fields and controls:

- Measurement Basis: Each (dropdown)
- Measurement Value: 60.0 (text box)
- Computed Quantity: 1.0 (text box)
- Rounded Quantity: 1.0 (text box)
- Deduction Quantity: 0.0 (text box)
- Net Quantity: 1.0 (text box)
- Sheet Number: (text box)
- Sheet Name: (text box)
- Run Name: (text box)
- Phase: DesignEstimate (dropdown)
- Date / Time: 2004-09-09 03:44:01 (text box)
- Remarks: Page 127-134 (text box)
- Description: Manual Payitem (text box)
- Extended Description: (text box)

On the right side of the dialog, there are two buttons: "Update" and "Close". Below the "Phase" dropdown, there are two buttons: "Phase" and "Set Current".

2. In the *Remarks* box, type **Page 127-134**.
3. Click the **Update** button to save the changes made to the Quantity.
4. Close Edit Quantity Properties.

8 QUANTITY MANAGER STYLES & REPORTS

OBJECTIVES

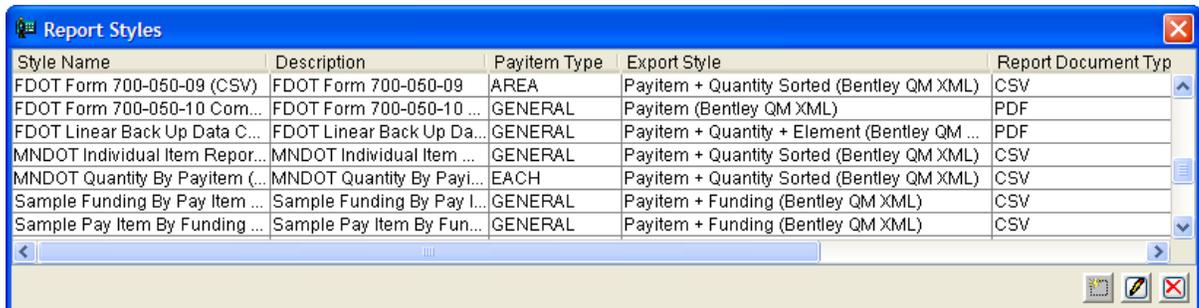
- Detail Reports and Report Styles
- Create a Report Style
- Create Reports for a Comp Book

REPORT STYLES

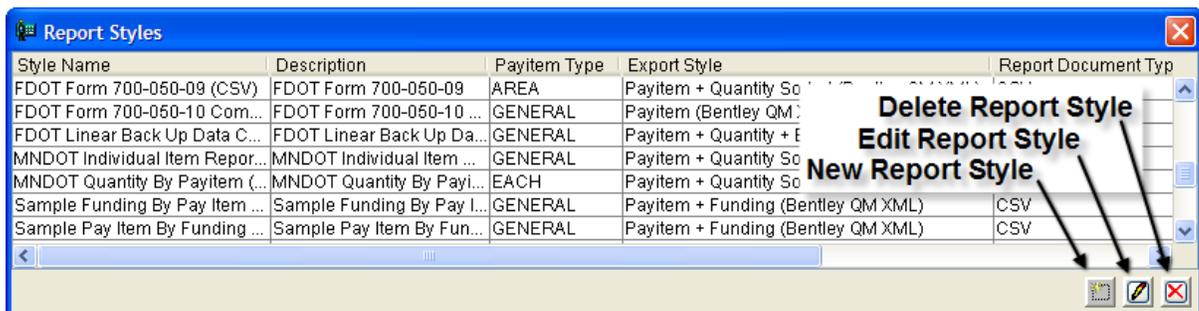
A Report Style is a template that defines what information is gathered from Quantity Manager and how that information is formatted in a Report. Report Styles that create Reports on standard FDOT Comp Book Forms are delivered with GEOPAK. These Comp Book Reports should cover the Report needs for most projects. Report Styles are created, reviewed, modified, or deleted from the Report Styles dialog box.

➤ *To open Report Styles*

From the Quantity Manager menu, select **Tools**, point to **Reports**, and then select **Define Styles**. Report Styles opens.



Report Styles displays a table of available Styles, and has three icons in the lower right corner. These icons are *New Report Style*, *Edit Report Style*, and *Delete Report Style*.



- New Report Style** This opens New Report Style.
- Edit Report Style** This opens Edit Report Style.
- Delete Report Style** This deletes the Report Style that is highlighted in Report Styles.

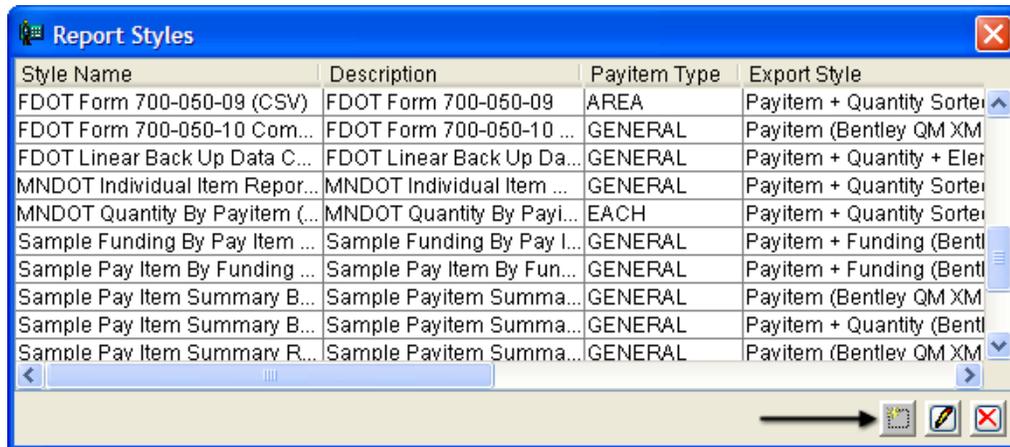
NEW REPORT STYLE

The New Report Style dialog box contains all the information needed to create a new report style and add the new style to the list on Report Styles.

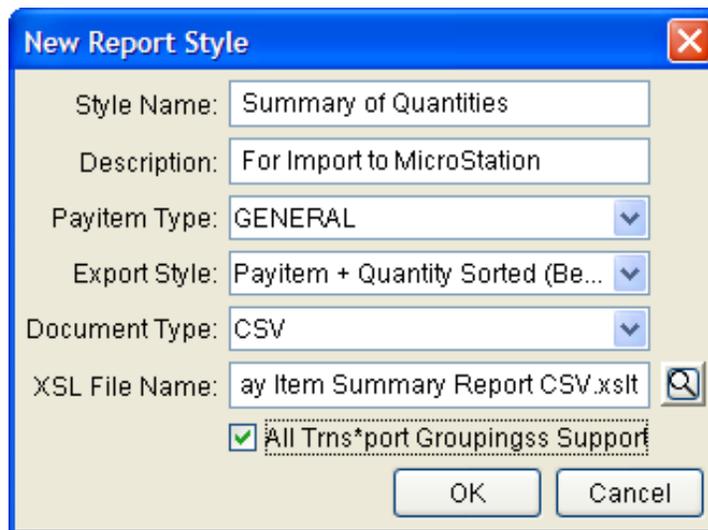
- Style Name** Name of Style, limited to 256 characters.
- Description** Description of Style, limited to 256 characters.
- Payitem Type** Specifies the pay item type listed in the report. There are four supported options: EACH, LINEAR, AREA and GENERAL.
- Export Style** This controls the amount of data in the report. There are four supported options: **Payitem**, **Payitem + Funding**, **Payitem + Quantity**, **Payitem + Quantity + Element**, and **Payitem + Quantity Sorted**. Specify the minimum data needed for the report.
- Document Type** PDF, CSV and HTML are the supported document types.
- XSL File Name** Name of the XSL style sheet used for formatting.

➤ **To create a new Report Style**

1. From the Quantity Manager menu, select **Tools**, point to **Reports**, and then select **Define Styles**. Report Styles opens.



2. From Report Styles, click the **New Report Style** icon. New Report Style opens.
3. From New Report Style, in the *Style Name* box, type **Summary of Quantities**.
4. In the *Description* box, type **For Import to MicroStation**.
5. In the *Payitem Type* box, select **General**.
6. In the *Export Style* box, select **Payitem + Quantity Sorted**.
7. In the *Document Type* box, select **CSV**.
8. In the *XSL File Name* box, click the **Browse** icon and navigate to **Sample Pay Item Summary Report CSV.xslt**.
9. Check on the **All TRNS*PORT Groupings Support** box.

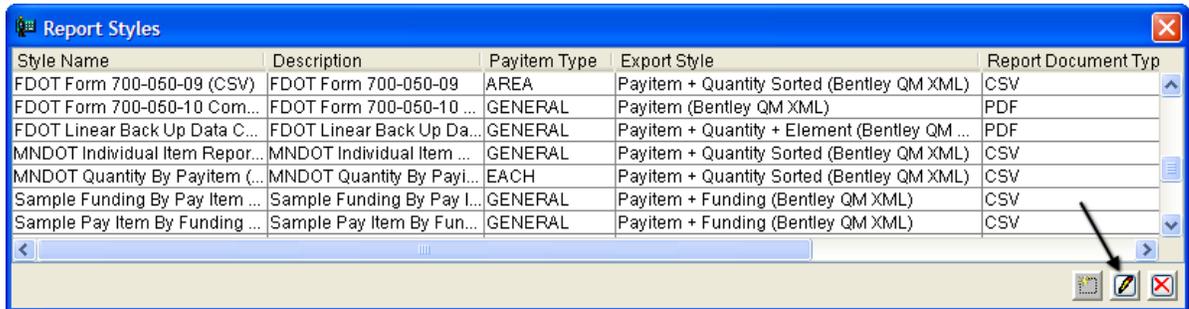


10. Click the **OK** icon. The Report Style creates, and New Report Style closes.
11. Close Report Styles.

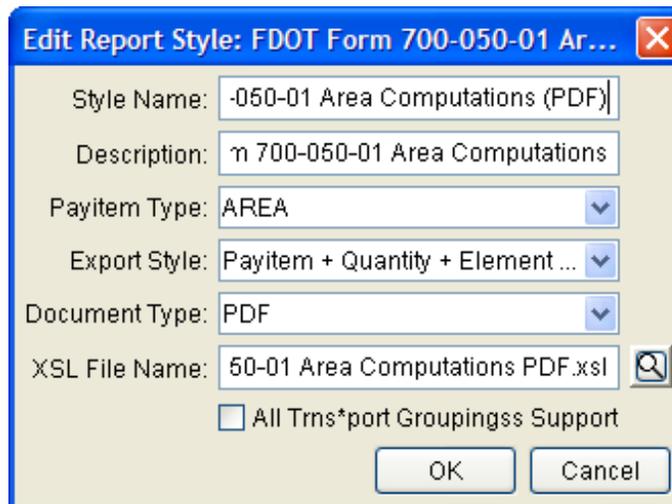
EDIT REPORT STYLE

➤ To edit a Report Style

1. From the Quantity Manager menu, select **Tools**, point to **Reports**, and then select **Define Styles**. Report Styles opens.
2. On Report Styles, select an existing **Report Style**.



3. With a *Report Style* selected, click the **Edit Report Style** icon. Edit Report Style opens.

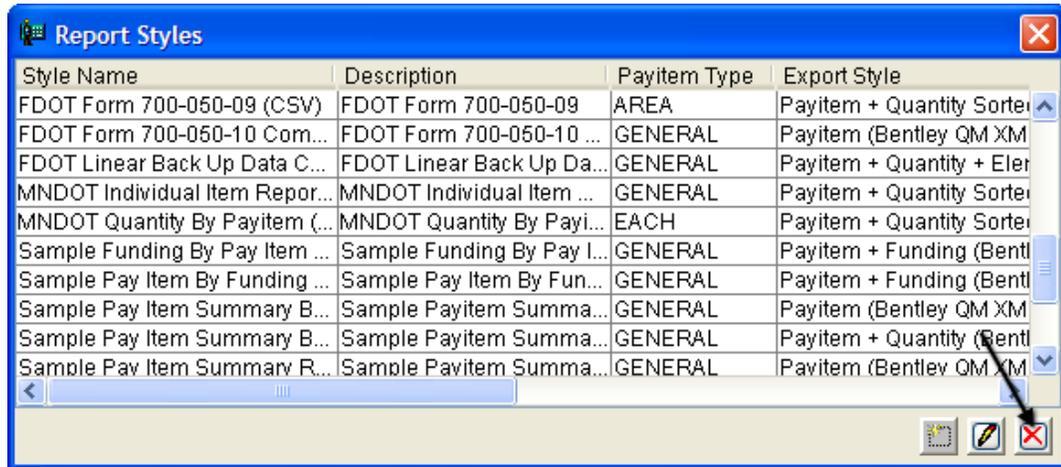


4. From Edit Report Style, make any desired changes.
5. Click the **OK** icon. The changes to the Report Style save and Edit Report Style closes.

DELETE REPORT STYLE

➤ **To delete a Report Style**

1. From the Quantity Manager menu, select **Tools**, point to **Reports**, and then select **Define Styles**. Report Styles opens.
2. From Report Styles, select an existing **Report Style**.



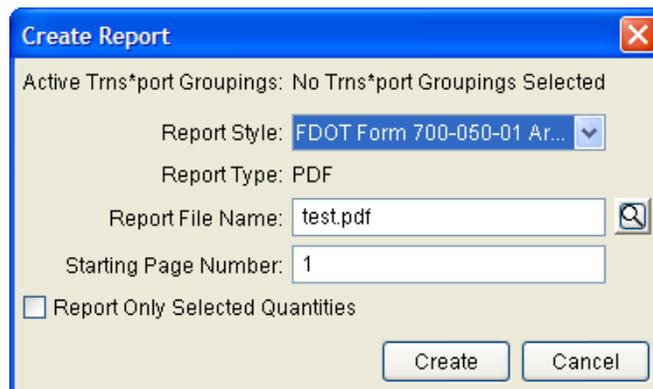
3. With a *Report Style* selected, click the **Delete Report Style** icon. The selected Report Style deletes from the list.

REPORTS

Reports are created using one of the available Styles to mine the database for information and then place the data in the desired format. Reports can be generated by Category, Payitem, or multiple Categories and Payitems. Only Payitems for the active Phase are included in the Report.

➤ **To Create a Report**

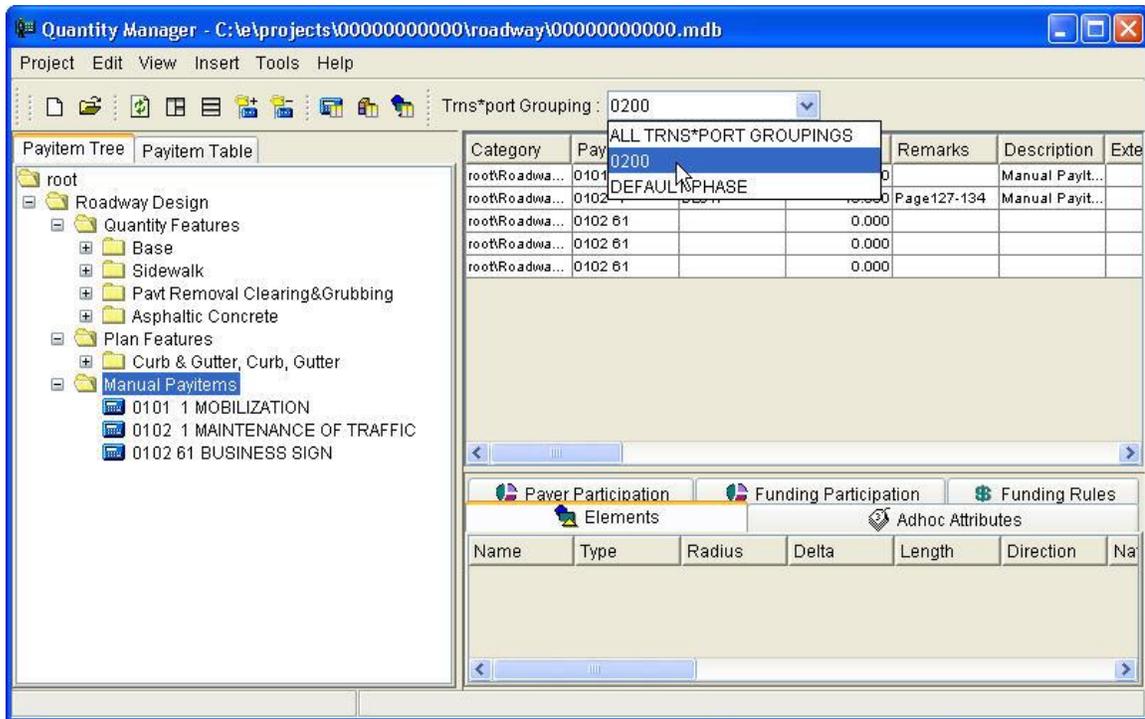
1. From the Quantity Manager menu, select **Tools**, point to **Reports**, and then select **Create**. Create Reports opens.



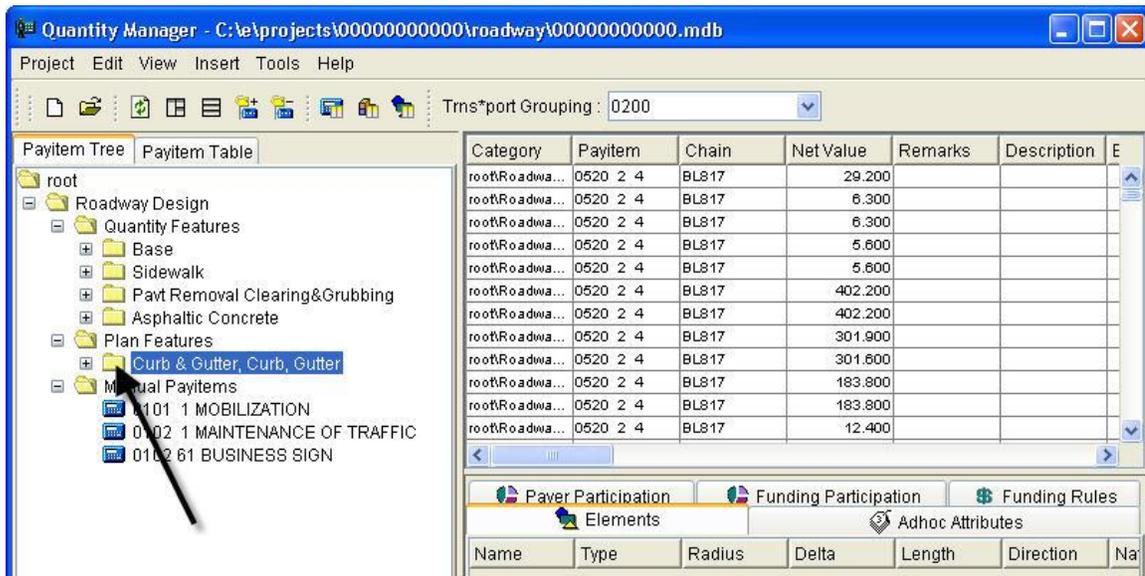
2. From Create Report, in the *Report Style* list, select a **Report Style**.
3. In the *Report File Name* box, type the **name** of the output file.
4. In the *Starting Page Number* box, type the **page number** of the first sheet.
5. Click the **Create** icon. The report begins processing, and the report opens for review when processing finishes.

Exercise 8.1 Creating Curb & Gutter Reports

1. From Quantity Manager, in the *TRNS*PORT Groupings* list, select **0200** to set as the active TRNS*PORT Grouping.



2. From Quantity Manager, select the **Payitem Tree** tab, and then select **Curb & Gutter, Curb, Gutter Category**.



3. From the Quantity Manager menu, select **Tools**, point to **Reports**, and then select **Create**. Create Report opens.

- From Create Report, select **FDOT Form 700-050-02** in the *Report Style* box.

- In the *Report File Name* box, type **Curb.pdf**.
- In the *Starting Page Number* box, type **12**.
- Click the **Create** icon. The report begins to process and opens in Adobe Reader when processing finishes.
- Review the results, and then close the report file.

STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION
CURB AND/OR GUTTER COMPUTATION

Page No. 12
FORM 700-050-02
CONSTRUCTION
06/02

PAY ITEM NO. 0520 2 4

STATION TO STATION	SIDE	PAY ITEM DESCRIPTION Concrete Curb (Type D)					CONSTRUCTION FINAL				
		DESIGN ORIGINAL			REMARKS	GROSS LENGTH (LF)	DEDUCTIONS		NET LENGTH (LF)	OVER / UNDER RUN	REMARKS
		GROSS LENGTH (LF)	TYPE	LENGTH			TYPE	LENGTH			
0+00 - 0+00 (0.0)		25		0	25						
0+00 - 0+00 (0.0)		23		0	23						
73+00.00 - 73+78.00 (BL&17)	LT	78		0	78						
73+00.00 - 73+78.00 (BL&17)	LT	79		0	79						
73+77.96 - 73+77.96 (BL&17)	LT	7		0	7						
75+32.66 - 75+33.32 (BL&17)	LT	1		0	1						
75+32.66 - 75+33.32 (BL&17)	LT	1		0	1						
75+33.32 - 75+60.33 (BL&17)	LT	34		0	34						
75+60.33 - 80+11.92 (BL&17)	LT	452		0	452						
75+61.96 - 78+80.00 (BL&17)	RT	319		0	319						
75+62.00 - 78+80.00 (BL&17)	RT	318		0	318						
75+62.00 - 75+62.00 (BL&17)	RT	7		0	7						
80+11.92 - 80+11.92 (BL&17)	LT	1		0	1						
80+11.92 - 80+11.92 (BL&17)	LT	1		0	1						
81+88.64 - 81+93.55 (BL&17)	LT	6		0	6						
81+88.64 - 81+93.55 (BL&17)	LT	6		0	6						
				1358	PAGE TOTAL						
				5425	PROJECT GRAND TOTAL						

If the above item is under the Plan Quantity Concept, then the block below must be appropriately filled out.

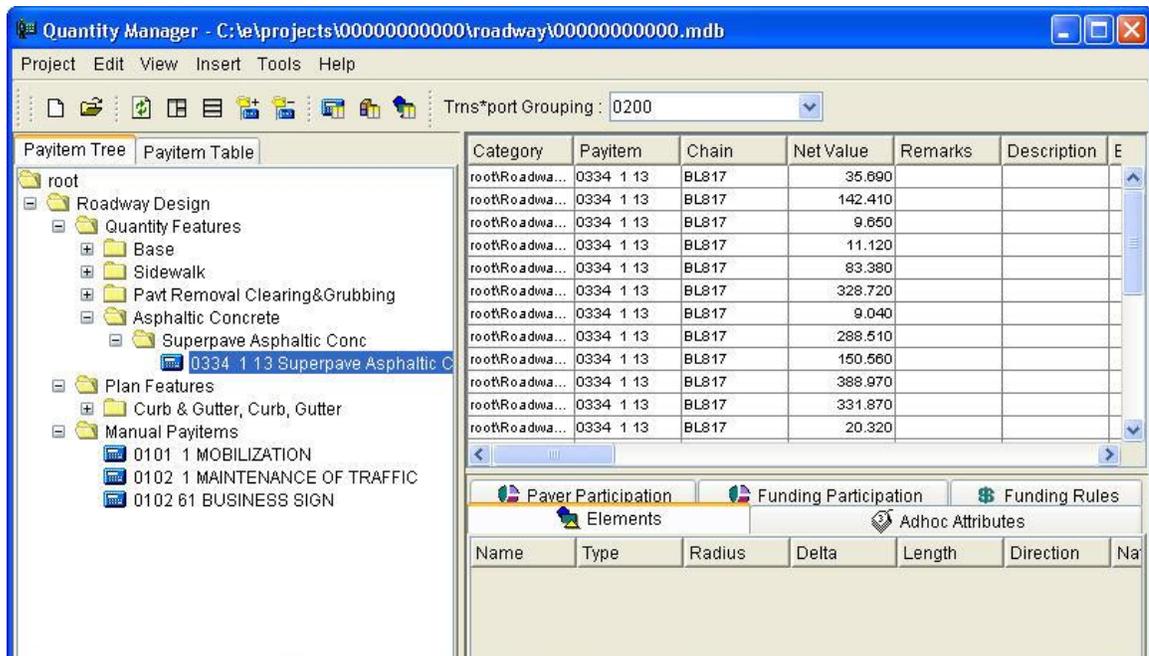
Plan Quantity Concept Signature Block
 Design/Engineers Responsible for Calculations: All support measurements and computations have been included for this Plan Quantity item. Signature: _____ Print Name: _____

NOTES FOR EXPLANATION OF OVER/UNDER RUN: _____

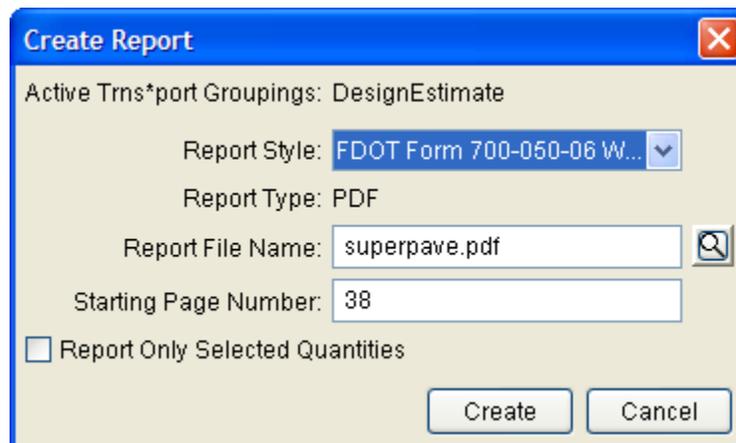
- Close Create Report.

Exercise 8.2 Creating Tonnage Reports

1. From Quantity Manager, select the **Payitem Tree** tab, navigate to and select **Payitem 0334 1 13 Superpave Asphalt Concrete (Traffic C)**.



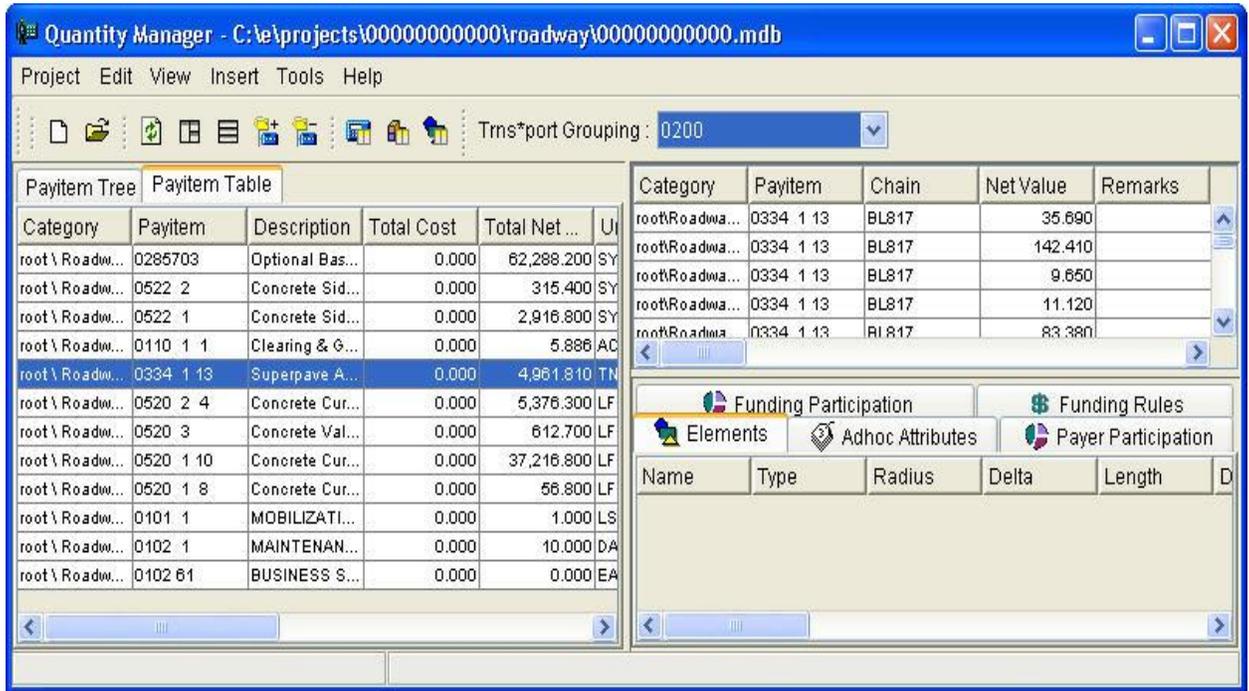
2. From the Quantity Manager menu, select **Tools**, point to **Reports**, and then select **Create**. **Create Report** opens.



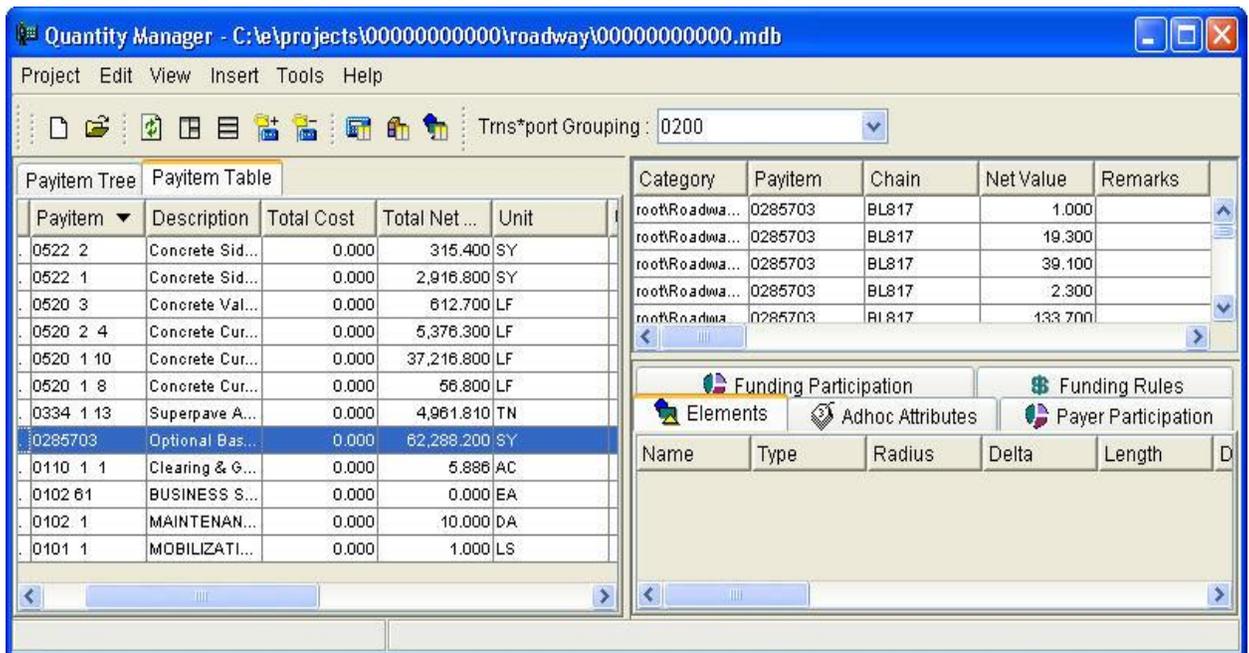
3. From Create Report, select **FDOT Form 700-050-06** in the *Report Style* list.
4. In the *Report File Name* box, type **Superpave.pdf**.
5. In the *Starting Page Number* box, type **38**.
6. Click the **Create** icon. The report begins to process and opens in Adobe Reader when processing finishes.
7. Review the report and then close the report file.
8. Close Create Report.

Exercise 8.3 Creating Area Reports

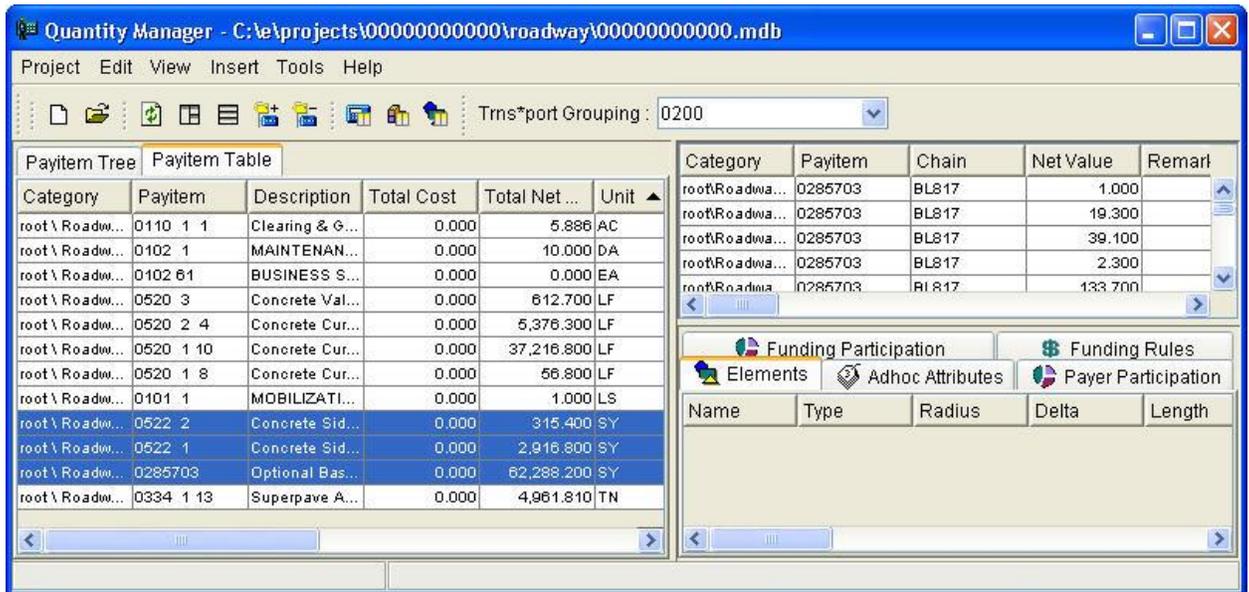
1. From Quantity Manager, select the **Payitem Table** tab. The table view appears.



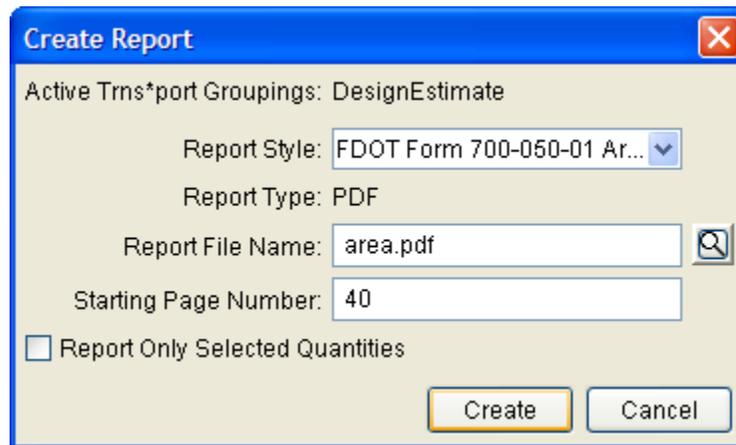
2. From the *Payitem Table* tab, in *Unit* column, look for the items with units of SY and AC.
3. In the *Payitem Table*, select the first **Payitem** that appears in the table with a *unit* of SY.



4. Hold down the **Shift** key on the keyboard, then click the last item in the *Payitem Table* with the *Unit* of **SY**. All Payitems between the two highlight.



5. From the Quantity Manager menu, select **Tools**, point to **Reports**, and then select **Create**. Create Report opens.



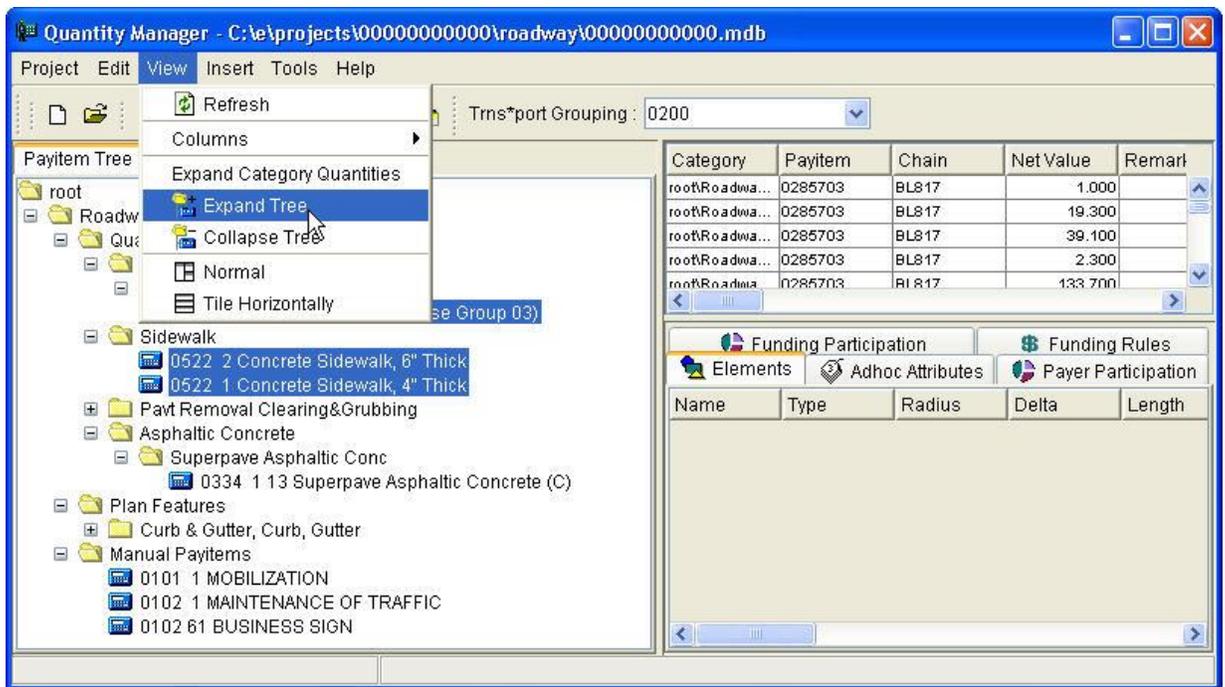
6. From Create Report, select **FDOT Form 700-050-01** in the *Report Style* list.
7. In the *Report File Name* box, type **Area.pdf**.
8. In the *Starting Page Number* box, type **40**.
9. Click the **Create** icon. The report begins to process and opens in Adobe Reader when processing finishes.
10. Review the report and then close the report file.
11. Do *not* close Create Report.

Exercise 8.4 To create Backup Data Reports

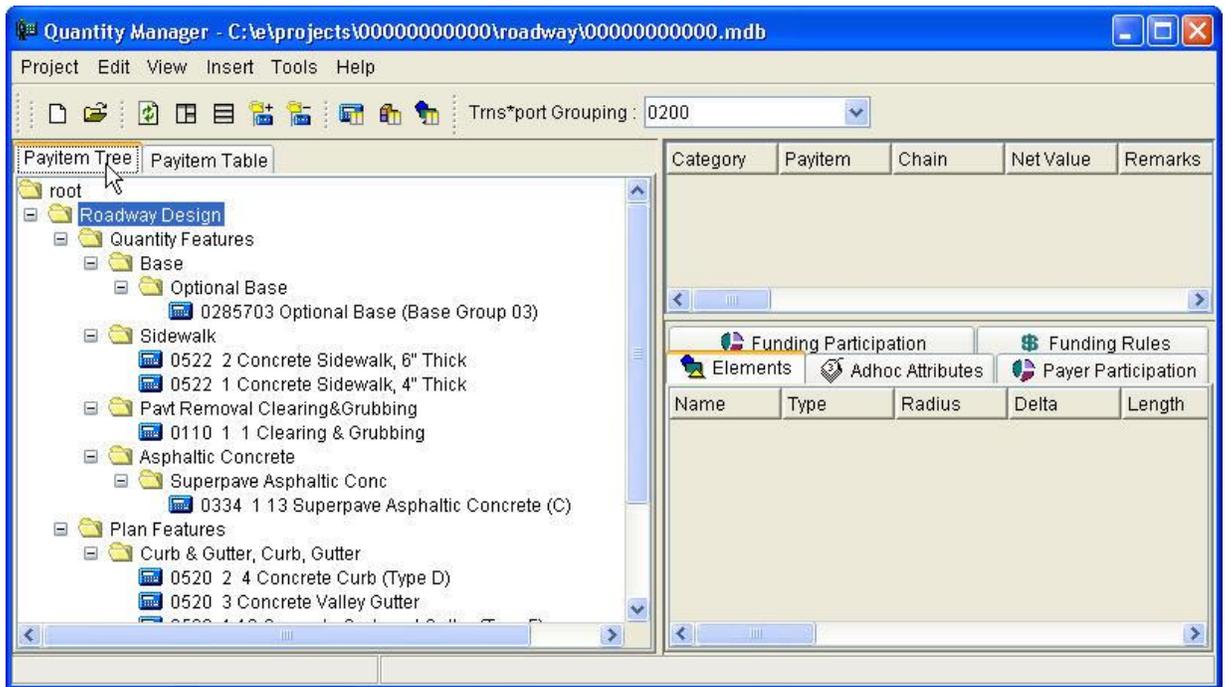
1. In Create Reports, select **FDOT Linear Backup Data Computations (PDF)** in the *Report Style* list.
2. In the *Report File Name* box, type **Backup.pdf**.
3. Click the **Create** icon. The report begins to process and opens in Adobe Reader when processing finishes.
4. Report processing may take several minutes.
5. Review the **Backup Data Report** and then close the report.
6. Close Create Report.

Exercise 8.5 Creating a CSV Report

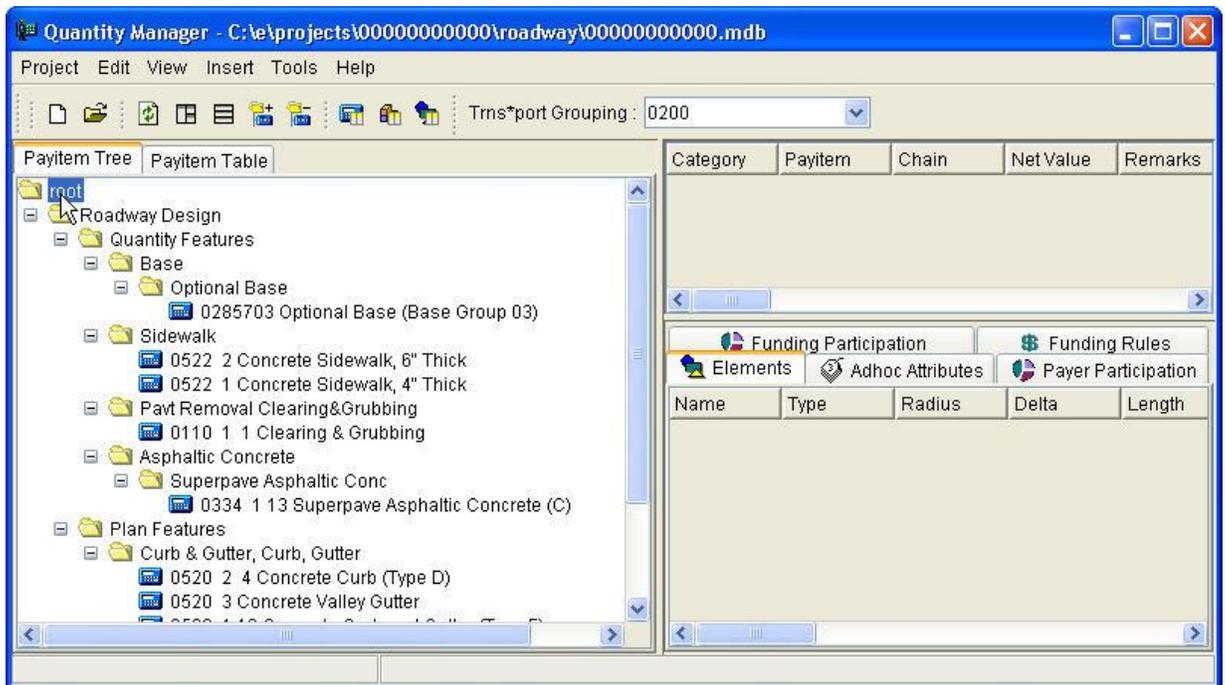
1. From the Quantity Manager menu, select **View**, and then select **Expand Category Quantities** if not already selected.



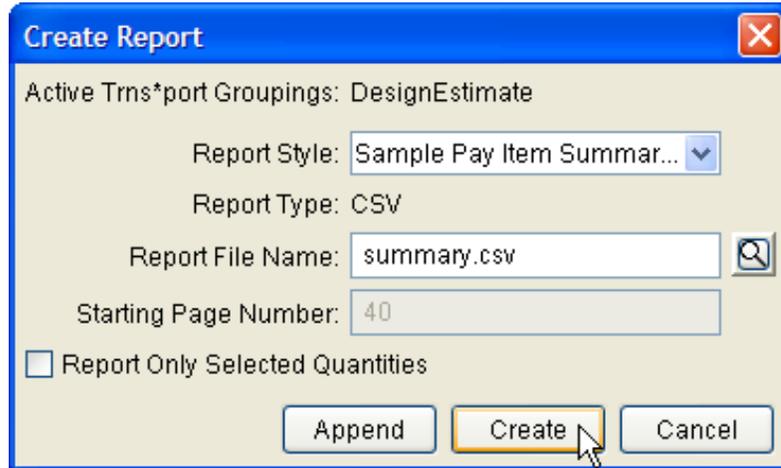
2. Select the **Payitem Tree** tab.



3. From the *Payitem Tree* tab, select the **root** Category.



- From the Quantity Manager menu, select **Tools**, point to **Reports**, and then select **Create**. Create Report opens.



- From Create Report, select **Sample Payitem Summary Report (CSV)** in the *Report Style* list.
- In the *Report File Name* box, type **Summary.csv**.
- Click the **Create** icon. The report begins to process and opens in Microsoft Excel when processing finishes.
- Review the **Summary.csv** file, and then close the file and Excel.
- Close Create Report.

9 TRNS*PORT GROUPINGS

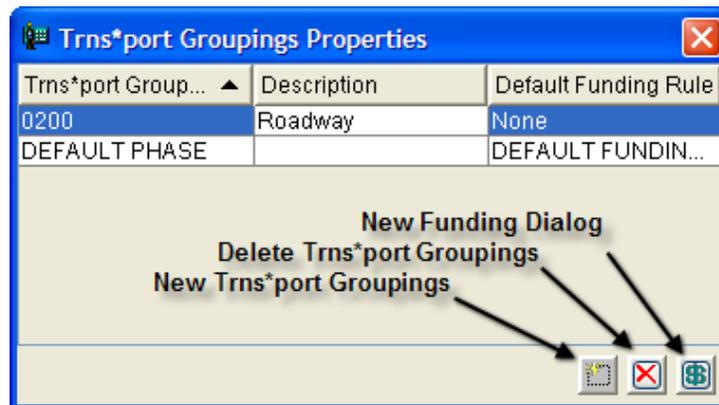
OBJECTIVES

- Detail the TRNS*PORT Grouping tool
- Create a new TRNS*PORT Group

TRNS*PORT GROUPINGS

TRNS*PORT Groupings in Quantity Manager are utilized for sorting quantities, creating reports, and assigning default Funding Rules to quantities. All Quantity Manager projects create with Default Phase available for use. In the case of databases created through computing quantities with D&C Manager, the Grouping defined during export carries over into Quantity Manager. In addition, other Groupings can be created to help divide the project into smaller parts for reporting and cost comparisons. Groupings are managed through the TRNS*PORT Groupings Properties dialog box. TRNS*PORT Groupings Properties contains a table of available Groupings and displays the Default Funding Rule assigned to each Grouping.

The three icons in the lower right corner of TRNS*PORT Groupings Properties are from left to right: *New TRNS*PORT Grouping*, *Delete TRNS*PORT Grouping*, and *Open Funding Dialog*.



New TRNS*PORT Groupings

This places a new entry in the table named New TRNS*PORT Grouping1. The new TRNS*PORT Grouping has None defined as the Default Funding Rule.

Delete TRNS*PORT Groupings

Deletes the TRNS*PORT Grouping that is selected in the table.

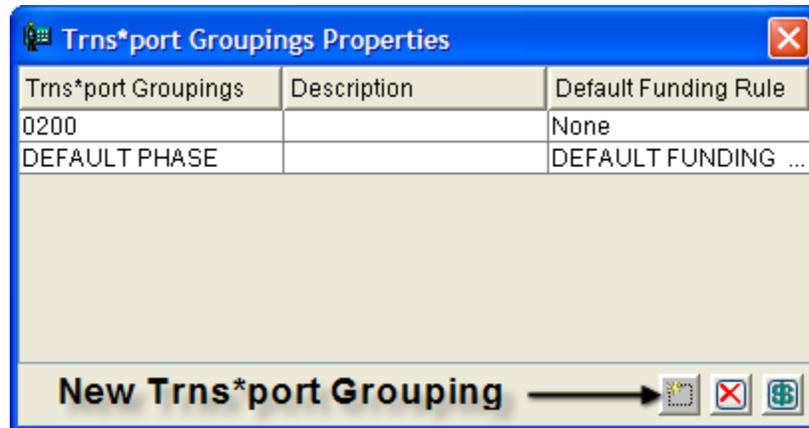
Open Funding Dialog

This opens Funding Properties for creating and editing Funding Rules. The Designer designing FDOT projects does not use this option. The district estimates office will set these values.

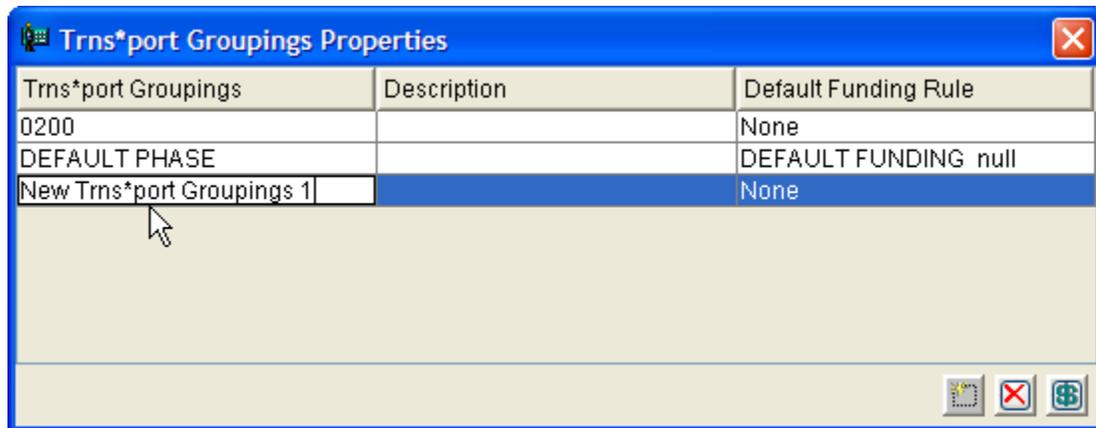
For quantity data to be exported to TRNS*PORT, the TRNS*PORT Groupings in Quantity Manager must match the TRNS*PORT version. (TRNS*PORT numbering is 0100, 0200, etc. If you attempt to import a TRNS*PORT Grouping as 100, 200, etc. you will receive an error report.)

➤ **To create a new Grouping**

1. From the Quantity Manager menu, select **Edit**, and then select **TRNS*PORT Groupings**. TRNS*PORT Groupings Properties opens.



2. From TRNS*PORT Groupings Properties, click the **New TRNS*PORT Grouping** icon. A new **TRNS*PORT Grouping** is created.
3. Double click in the **TRNS*PORT Grouping** name box and edit the new *grouping* to **0300**.



CREATE FUNDING RULES IN QUANTITY MANAGER

There is no longer a need to create funding rules. Funding rules in Quantity Manager are now represented by the *TRNS*PORT Groupings*.

10 EXPORTING TO TRNS*PORT

OBJECTIVE

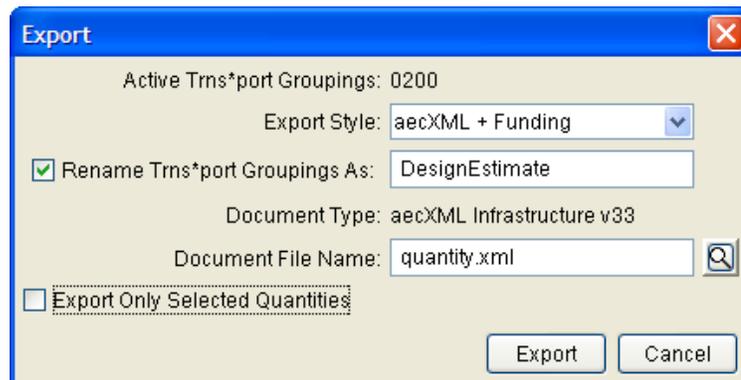
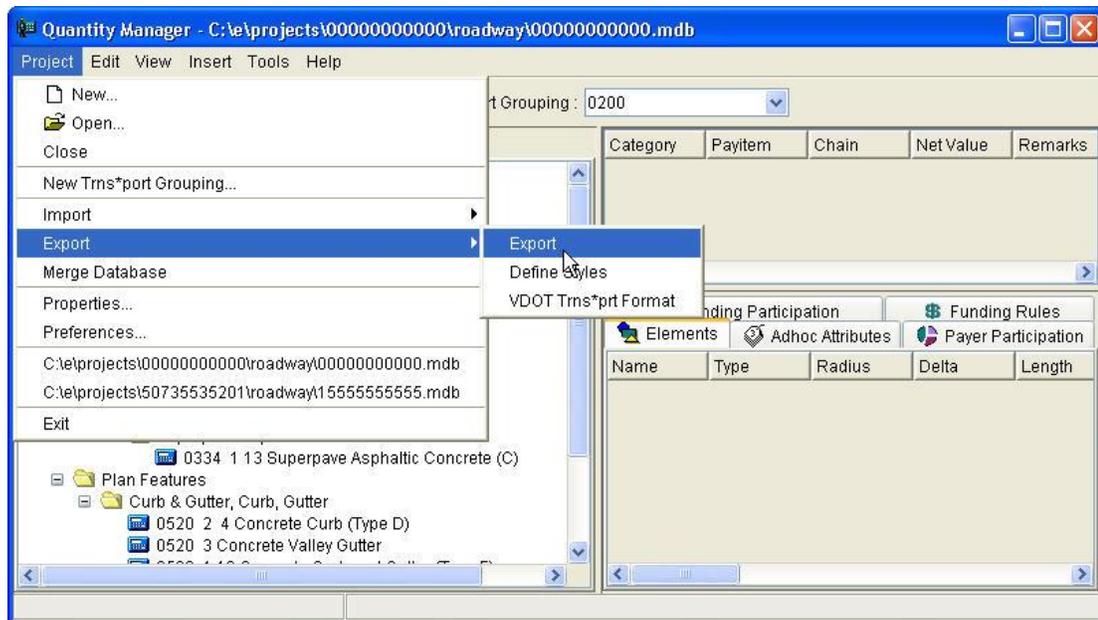
- Detail Export to TRNS*PORT
- Export Data to TRNS*PORT

EXPORT

Quantity Manager includes a utility that facilitates exporting various database information. This Information is formatted in an .XML file that TRNS*PORT can import.

➤ *To open Export*

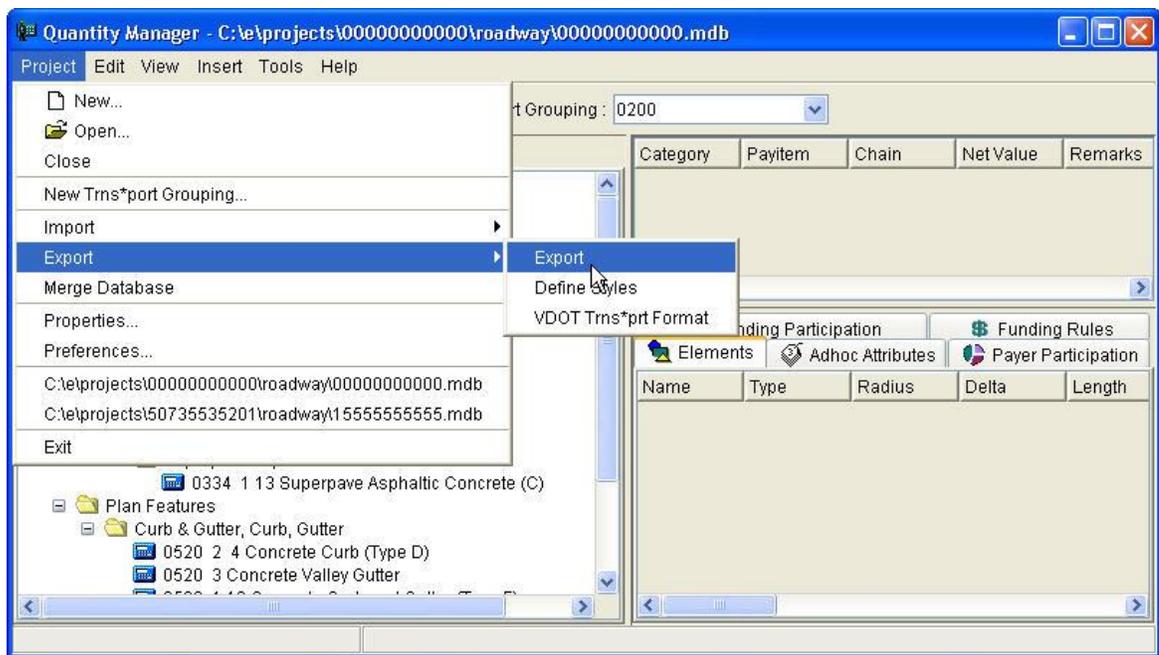
From the Quantity Manager menu, select **Project**, point to **Export**, then select **Export**. Export opens.



- Active TRNS*PORT Groupings** Only a single TRNS*PORT Grouping may be exported at one time. If All TRNS*PORT Groupings is selected, the Export icon is disabled.
- Export Style** Four modes are supported for the GEOPAK QM XML type: Standard, Payitem, Payitem + Quantity (Includes pay items and total quantities), Payitem + Quantity + Element (Includes pay items, quantities and associated data from the Element table). Only two modes are supported for TRNS*PORT: Payitem + Quantity (Includes pay items and total quantities) and Payitem + Quantity + Funding (Includes pay items, total quantities organized by funding categories.)
- Document Type** There are two supported export schemes, but GEOPAK QM XML is the standard schema used for creating custom reports. The schema is delivered with Quantity Manager.
- Document File Name** The file name including directory path to which the report will export.

EXPORTING DATA TO TRNS*PORT

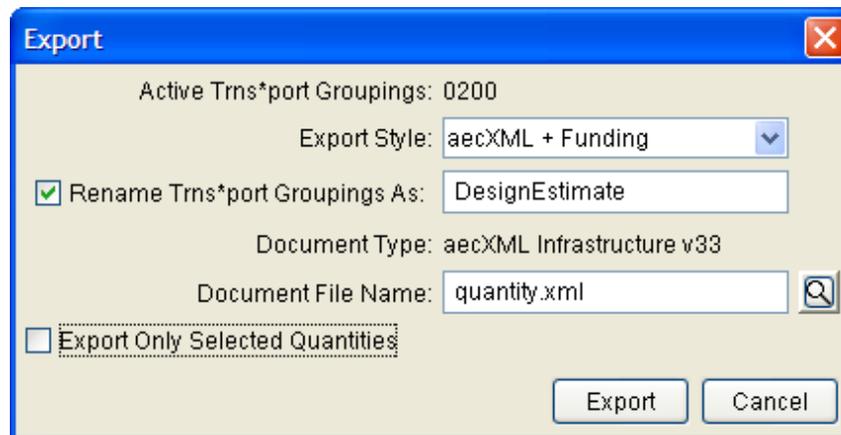
From the Quantity Manager menu, select **Project**, point to **Export**, then select **Export**. Export opens.



Only the items displayed in the Quantity Manager pay item quantity window will be exported. The Quantity Manager project export XML file is used for the PES Designer Interface "Import" option of which will add/update the pay items, their quantities and add project categories into TRNS*PORT PES..

Exercise 10.1 Exporting Data to TRNS*PORT

1. From the Quantity Manager menu, select **Project**, point to **Export**, then select **Export**. Export opens.
2. In the *Export Style* box, select **aecXML + Funding**.
3. Check the **Rename TRNS*PORT Groupings As** box and type **DesignEstimate**.
4. In the *Document File Name*, type **quantity.xml**. The file will be used by the Designer Interface project IMPORT option.



5. Click the **Export** button.
6. Navigate to the *Quantity.xml* file just created and review.

```

.....<ProjectOverview>¶
.....<aec:ProjectName>0000000000</aec:ProjectName>¶
.....<aec:ProjectNumber>0000000000</aec:ProjectNumber>¶
.....<aec:Description>CADD·office·testing·only</aec:Description>¶
.....</ProjectOverview>¶
.....<DefaultUnitSystem>Imperial</DefaultUnitSystem>¶
.....<SpecBookVersion>07</SpecBookVersion>¶
.....<Location·locationId="Project">¶
.....<MinimumCoordinate·coordinateScheme="ReferencePost">¶
.....<FirstCoordinate/>¶
.....<SecondCoordinate/>¶
.....</MinimumCoordinate>¶
.....<CenterCoordinate·coordinateScheme="LatitudeLongitude">¶
.....<FirstCoordinate/>¶
.....<SecondCoordinate/>¶
.....</CenterCoordinate>¶
.....<MaximumCoordinate·coordinateScheme="ReferencePost">¶
.....<FirstCoordinate/>¶
.....<SecondCoordinate/>¶
.....</MaximumCoordinate>¶
.....</Location>¶
.....<PayItemGroup·groupId="0200">¶
.....</PayItemGroup>¶
.....<PayItemGroup·groupId="0101">¶
.....<Description>STRUCTURES</Description>¶
.....</PayItemGroup>¶
.....

```

7. Close .xml file.

IMPORT PROJECT PAYITEM TO DESIGNER INTERFACE

This process imports that XML file you saved from the Quantity Manager project *Export* function. The XML file should contain the project pay items, quantities and the PES Designer Interface project categories the pay items are to be applied to.

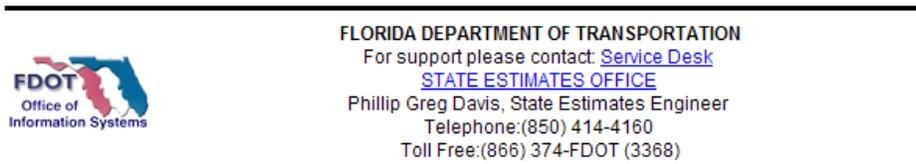
Note Note: update of PES will only occur if no errors exist in the Quantity Manager export XML file.

➤ **To Import Project Payitem to Designer Interface**

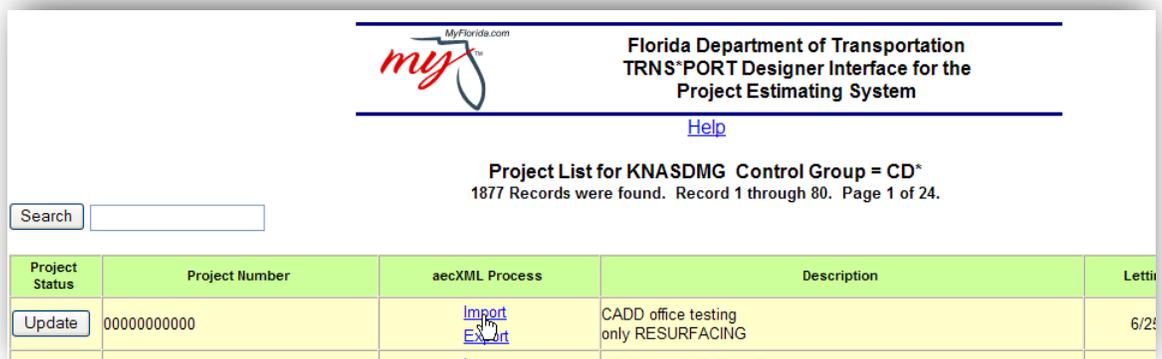
1. Close Quantity Manager prior to running the import process for TRNS*PORT. If Quantity Manager is not closed an error occurs.



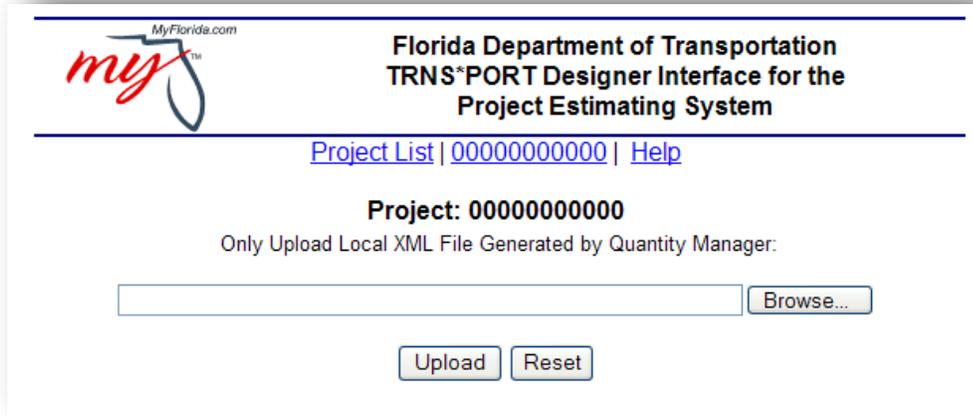
ERROR: CONTENT-TYPE INCORRECT. CONTENT-TYPE MUST BE TEXT/XML. FOR DETAILS SEE XMLERRORINFO. -2147220499



2. Select appropriate project number from Designer Interface for the same project you performed the Quantity Manager Export.
3. Click the **Designer Interface IMPORT** link.



4. Click the **BROWSE** icon and select the **XML file location** and name of where you saved the file from Quantity Manager *Export* function.

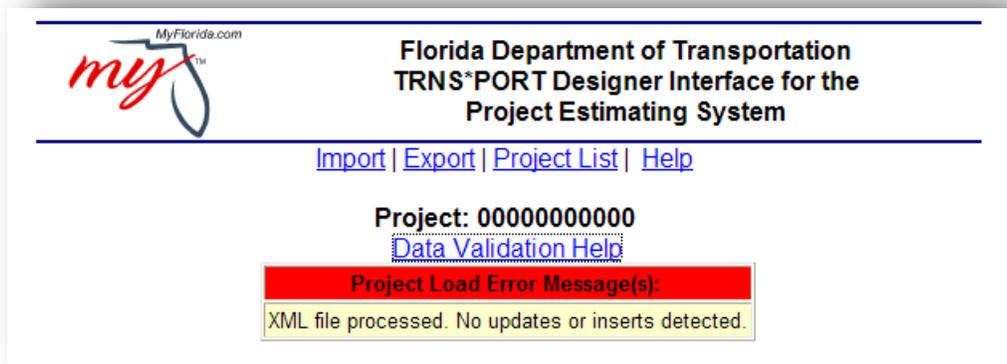


5. Click the **UPLOAD** button to process the XML file.

Other updates may be required using Designer Interface once the Payitems and quantities import to PES (i.e. mark item non-participating, structure info ...)

If errors exist, you will get a *Data Validation Error* page (red highlighted title below) listing all errors contained in the XML file. It is required to correct all errors in Quantity Manager, re-exported, and then re-imported into Designer Interface before applying any updates/additions to the PES database. There are Error Number links to Help Messages to assist in error corrections. You may save this page or print.

If no errors exist, you will get a *Project Load Log Message* page (green highlighted title below), listing all updates or inserts performed in PES for the project. You may save this page or print.





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[Help](#)

Data Validation Help:		
Error Number	Error Description	Error Action
E0	Processing not allowed for project. aecXML project not same as project selected (E0).	Select the correct Designer Interface Project which matches the Project exported from Quantity Manager or export Project from Quantity Manager which matches the Project selected in Designer interface.
E1	Project does not exist in XML file. Ensure Project exist in the XML upload file (E1).	The Project does not exist in the XML file imported. Go to Quantity Manager Project Properties and verify there is a Project number entered.
E2	Pay Item Group does not exist in XML file. Ensure Pay Item Group exist in XML upload file (E2).	Go to Quantity Manager and verify the Export Style is set to 'aecXML + Funding.'
E3	Item number must be associated to a valid Project Pay Item Category. Check the XML upload file (E3).	Go to Quantity Manager and ensure the Item is associated with a PES Group code.
E4	Unit of Measure does not exist in XML file. Ensure Unit of Measure exist in the XML upload file (E4).	Go to Quantity Manager and verify Pay Item Unit of Measure is indicated for Item.
E5	Spec Year does not exist in the XML upload file. Ensure the Spec Year exist in the XML upload file (E5).	Go to Quantity Manager and populate project properties spec year value.



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[Import](#) | [Export](#) | [0000000000](#) | [Help](#)

Project: 0000000000

Project Load Log Messages:		
0000000000	Data validation successful.	Project successfully loaded.
INSERT Project Item	Project: 0000000000 Category: 0200 Item Number: 0285703	
INSERT Project Item	Project: 0000000000 Category: 0200 Item Number: 0522 2	
INSERT Project Item	Project: 0000000000 Category: 0200	