CDOT Customizing the Pay Items Database

This document guides you through the customization of the CDOT Pay-Items.mdb file using the InRoads Pay Item Manager. When figuring quantities, it is possible that two or more features will use the same pay item but require different values for some formula variables. For example, the same paving material may be used for both the roadway and driveways but the thickness of that material can vary.

Pay Item Manager will be used to copy a pay item and edit that copy for use with different variables or formulas.

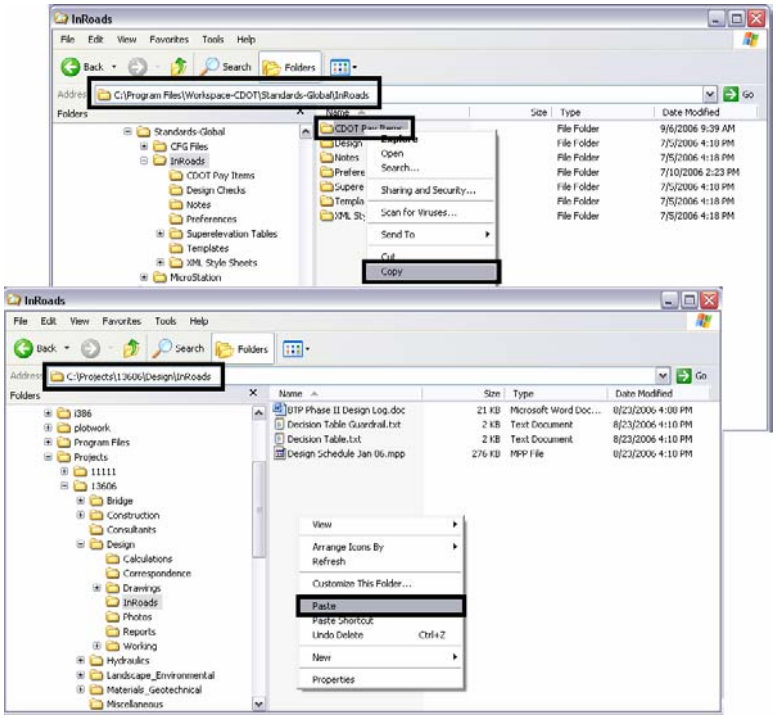
Copying The CDOT Pay-Items.mdb:

Because the changes made to the pay items database will be unique to the project, a copy of the CDOT Pay-Items.mdb should be placed in the project directory.

Making The Copy

1. Open an Explore window to the C**:\Program Files\Workspace-CDOT\Standards-Global\InRoads** directory and copy the entire **CDOT Pay Items** folder.

2. Change the directory to **C:\Projects\JPC#\Design\InRoads** and paste.



Copying A Pay Item:

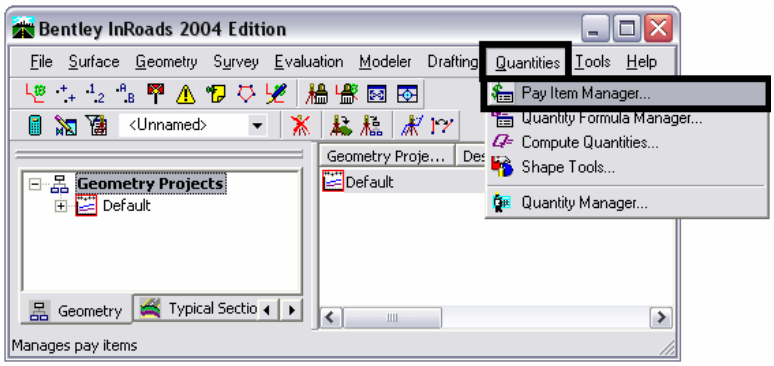
Now that a copy of the master database has been made, customizing the copy for the particular project can be accomplished.

Open InRoads

3. Start MicroStation (and InRoads), opening the; **C:\Projects\JPC#\Design\Working\XXXJPC#QuantityModel##.dgn** file.

Open Pay Item Manager And Load The Database

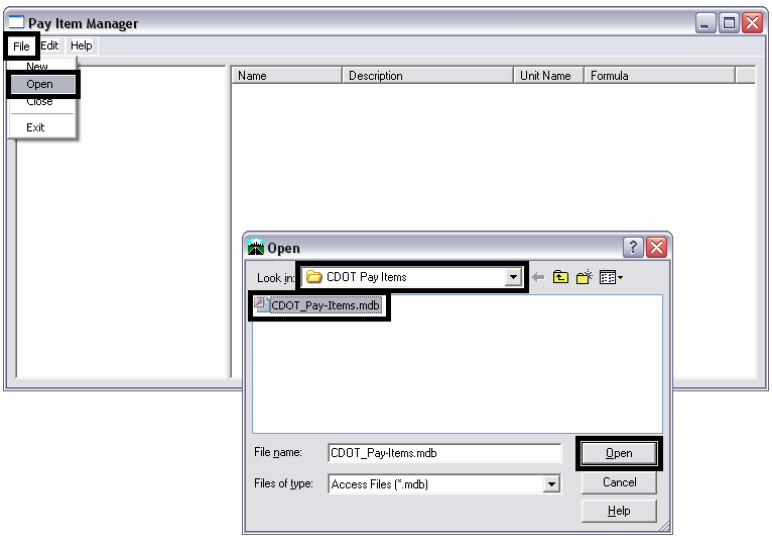
4. From the InRoads menu, select **Quantities > Pay Item Manager**. This displays the Pay Item Manager dialog box.



5. From the Pay Item Manager dialog box, select **File > Open**.

6. In the Open dialog box, Set the directory path to: **C:\Projects\JPC#\Design\InRoads\CDOT Pay Items\.**

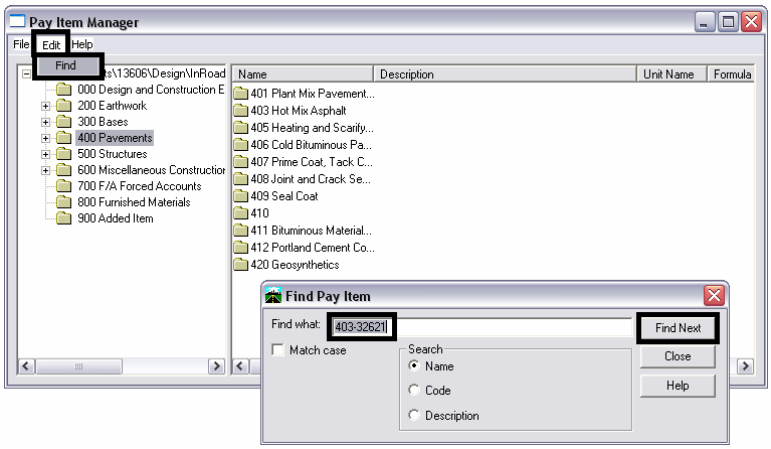
7. Select **CDOT Pay-Items.mdb** and **Open.**



Locate The Pay Item To Be Copied

8. Select **Edit > Find** from the Pay Item Manager dialog box. This displays the Find dialog box.

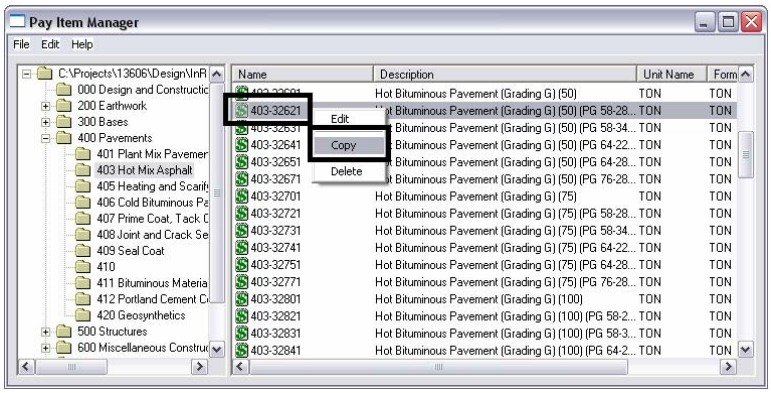
9. In the **Find What** field of the Find dialog box, key in the desired ***Pay Item Code***. And select **Find Next**. The desired pay item will be displayed, highlighted in the right pane of the Pay Item Manager dialog box.



10. Select **Close** from the Find dialog box.

Making The Copy

11. In the right pane of the Pay Item Manager window, **<R>** on the desired Pay Item Name. **Note:** be sure that the cursor is in the Name column. Select **Copy** from the menu that is displayed.



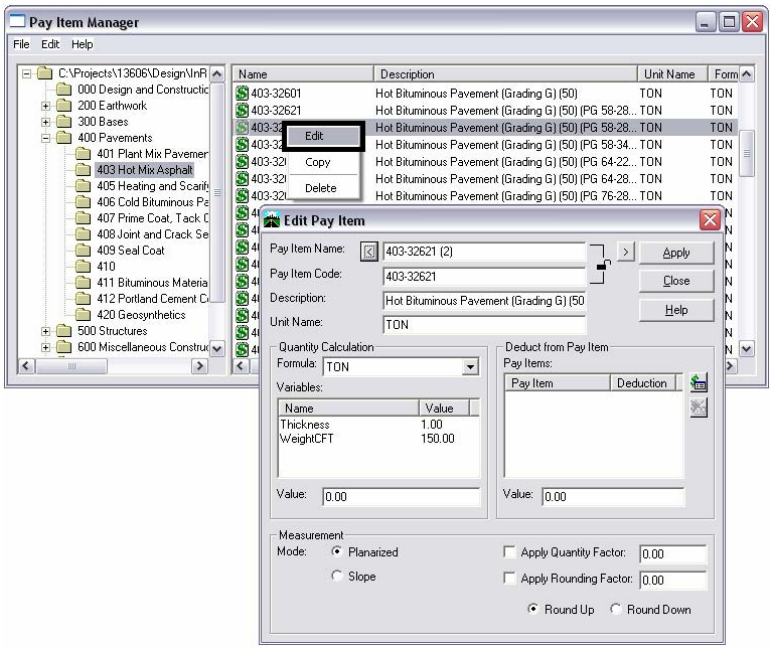
12. Move the cursor to the Description column, **<R>** and select **Paste**. A copy of the pay item (with (2) appended to the name is placed under the original.

Editing The Pay Item:.

Opening The Edit Dialog Box

13. In the right pane of the Pay Item Manager window, **<D>** on the copied Pay Item Name. **Note:** be sure that the cursor is in the Name column. This will highlight the copied Pay Item.

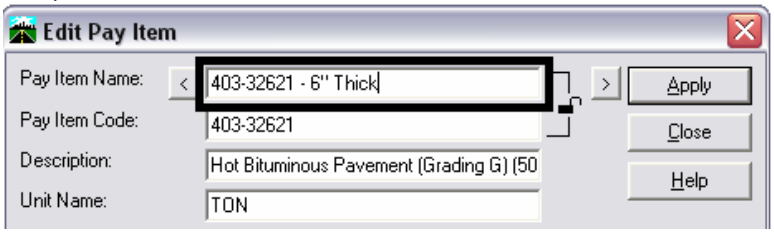
14. **<R>** on the Pay Item Name and select **Edit**. This displays the Edit Pay Item dialog box.



Editing The Pay Item Data

15. **<D>** just to the left of the '(2) in the Pay Item Name field. Key in a brief , descriptive addition to the name. Delete the '(2)'

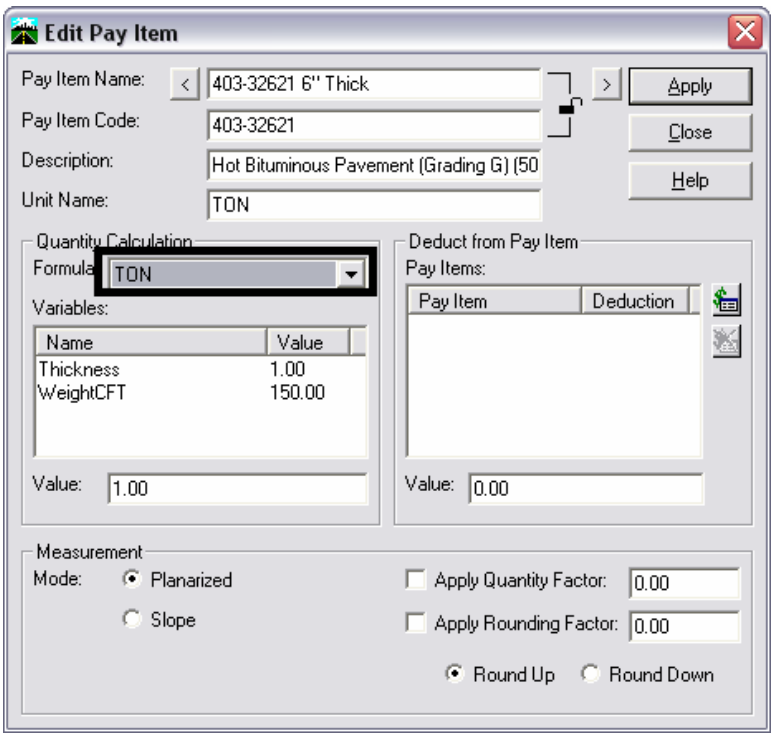
    For Example, for pay item 403-32621 that is to be laid down 6" thick, the name could read, "403-32621 – 6" Thick".



16. Do not change the Pay Item Code, Description, or Unit Name. Doing so will result in errors in the pay quantity calculations.

17. A different formula may be selected from the **Formula** pull-down in the Quantity Calculation area.

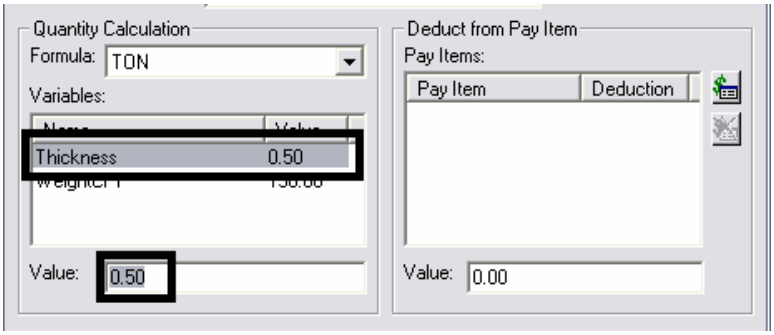
    For example, there are two formulas for computing tons; 'Ton' and 'Ton – L'. 'Ton' uses the area of a feature and the variables Thickness and WeightCFT. 'Ton – L' uses the length of the feature and the variables Width, Thickness, and WeightCFT.



Editing Formula Variables

18. <D> on the desired variable from the Variables list in the Quantity Calculation area.

19. Highlight the data in the Value field directly below the Variables list and *key in* the desired value. Press the Tab key to accept the value.

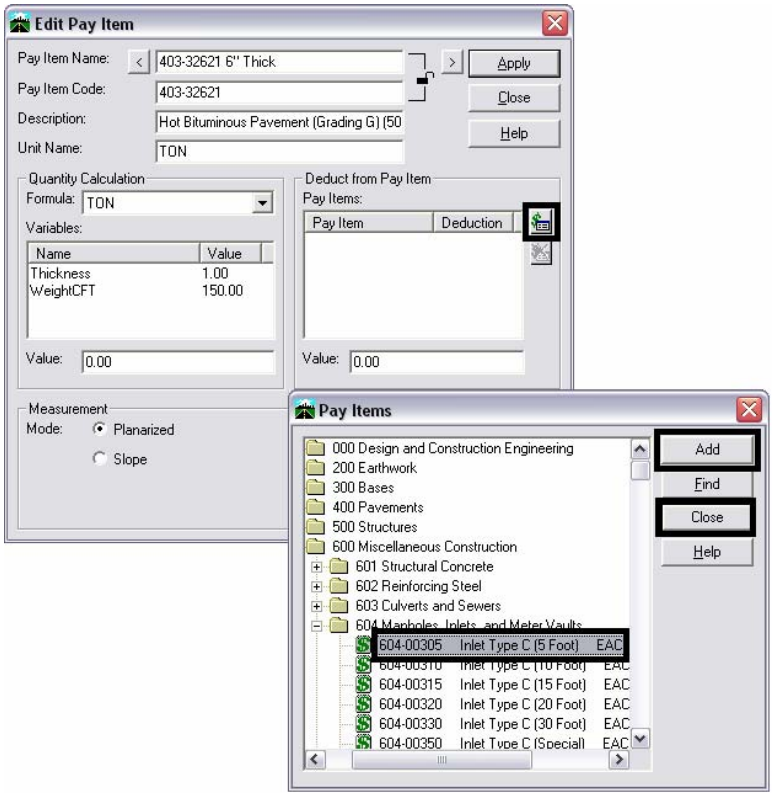


Deduction From Pay Items

This option is used when two features occupy the same location (are coincident) and one of those features can reduce the quantity of the other. For example, suppose a curb feature is stored as a continuous Breakline and an inlet feature is stored as random points on the curb Breakline. For each occurrence of an inlet on the curb, the quantity of the curb can be reduced by a defined value.

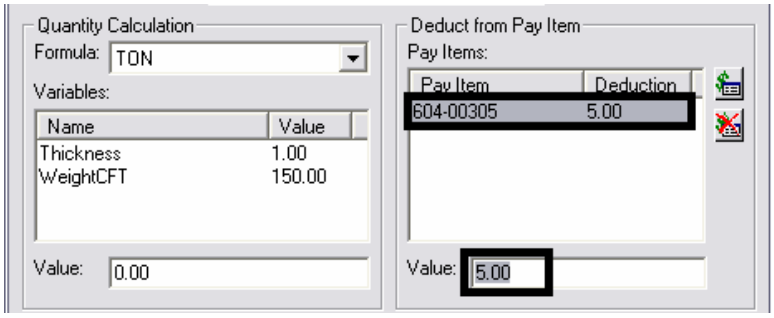
20. To add a pay item for deduction **<D>** on the **Pay Item Browser** button. This displays the Pay Item browser dialog box.

21. **<D>** on the desired pay item and select **Add**. The Pay Item is add to the Deduct From Pay Items list. **<D>** on the **Close** button to dismiss the Pay Item browser dialog box.



22. **<D>** on the desired pay item from the list in the Deduct From Pay Items area.

23. Highlight the data in the Value field directly below the Pay Items list and *key in* the desired value. Press the Tab key to accept the value.

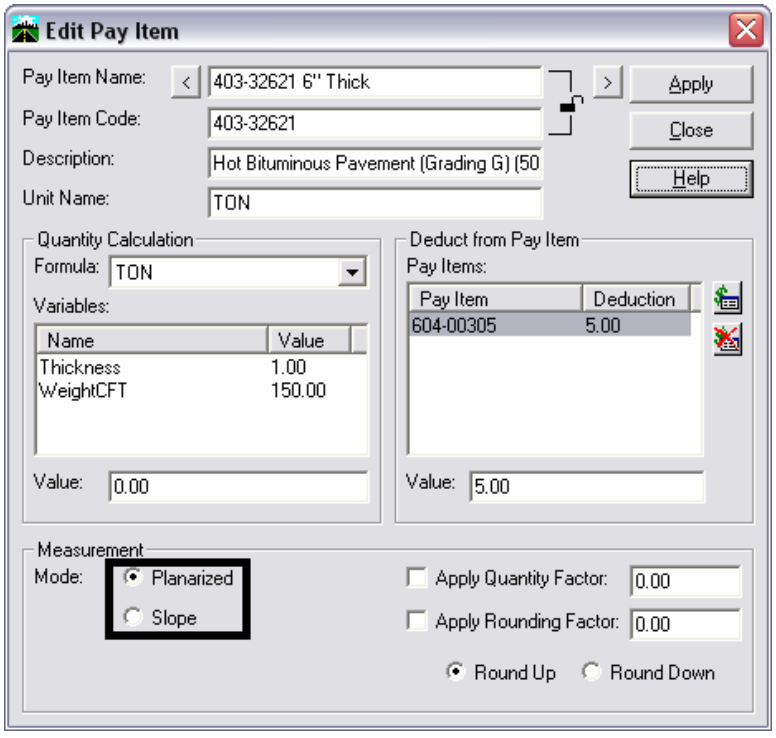


The Measurment Area

The options in this area are used to determine how areas and lines are measured. It is also used to specify quantity factors and rounding.

There are two mode of measurement; Planarized and Slope. Planrized projects the shape to a flat (2D) plane for measurement. Slope measures the actual (3D) shape.

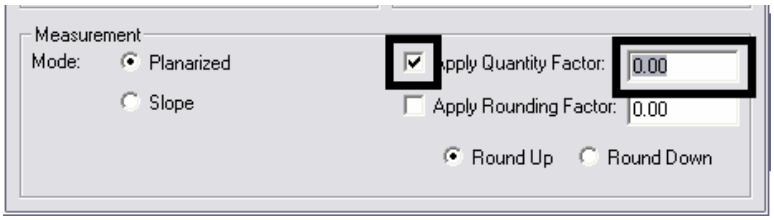
20. **<D>** on the desired radio button to select the measurement **Mode**.



A Quantity Factor is a multiplier applied to the calculated quantity.

21. If a Quantity Factor is to be used, **<D>** the check box to the left of **Apply Quantity Factor**.

22. Highlight the data in the field to the right of **Apply Quantity Factor** and *key in* the desired value. Press the Tab key to exit the field.

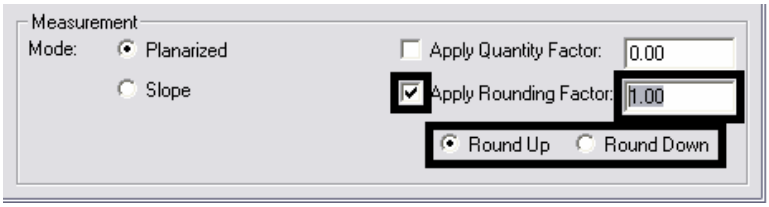


A Rounding Factor is used to modify the computed value to the nearest specified increment.
There is also the option to round up or down.

23 If a Rounding Factor is to be used, **<D>** the check box to the left of **Apply Rounding Factor**.

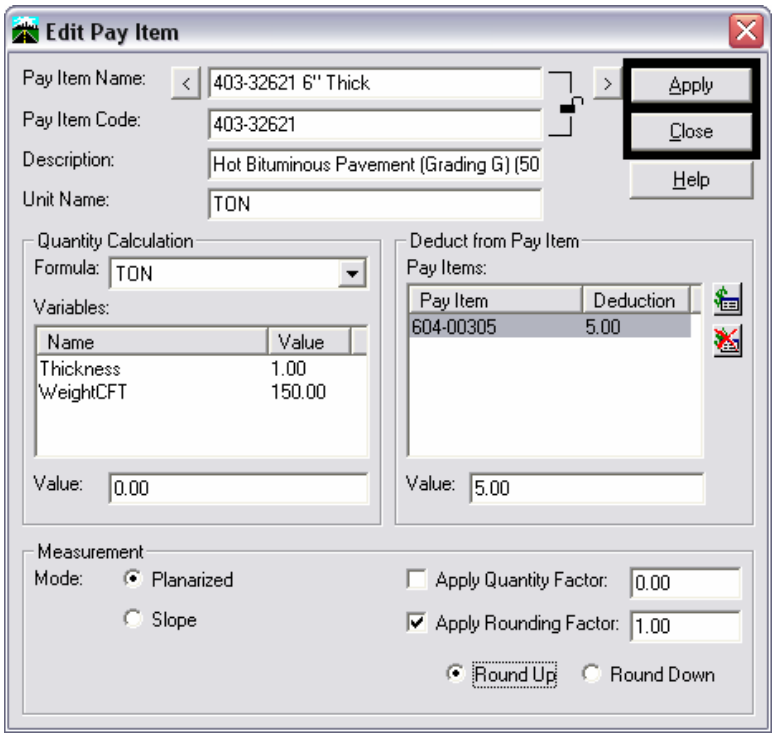
24 Highlight the data in the field to the right of **Apply Rounding Factor** and *key in* the desired value. Press the Tab key to exit the field.

25. Select the desired rounding option from the two radio buttons below **Apply Rounding Factor**.

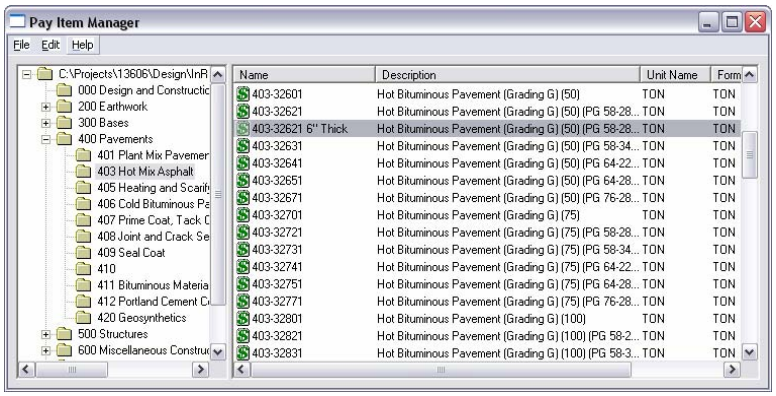


26. **<D>** the **Apply** button to accept all of the changes made to the pay item.

27. **<D>** the **Close** button to dismiss the Edit Pay Item dialog box.



28. This completes the edit.

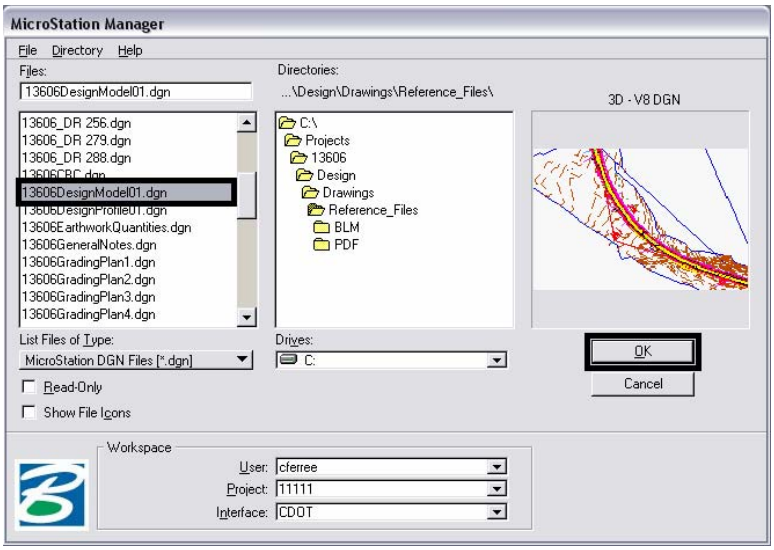


Importing Graphics To surface

This document guides you through the use of the InRoads Import Surface From Graphics command. This command takes the X, Y, and Z coordinate information from a MicroStation element and stores it in a DTM file. This command will be primarily used for creating pay quantity data. Because of the high level of data control required, the Load From Fence option is inappropriate and will not be described.

Opening MicroStation And InRoads

3. Start InRoads (and MicroStation). Set the directory path and highlight the desired file. Select **OK**.

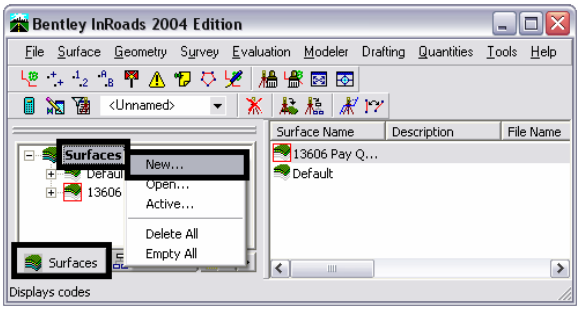


Creating Or Opening The Surface

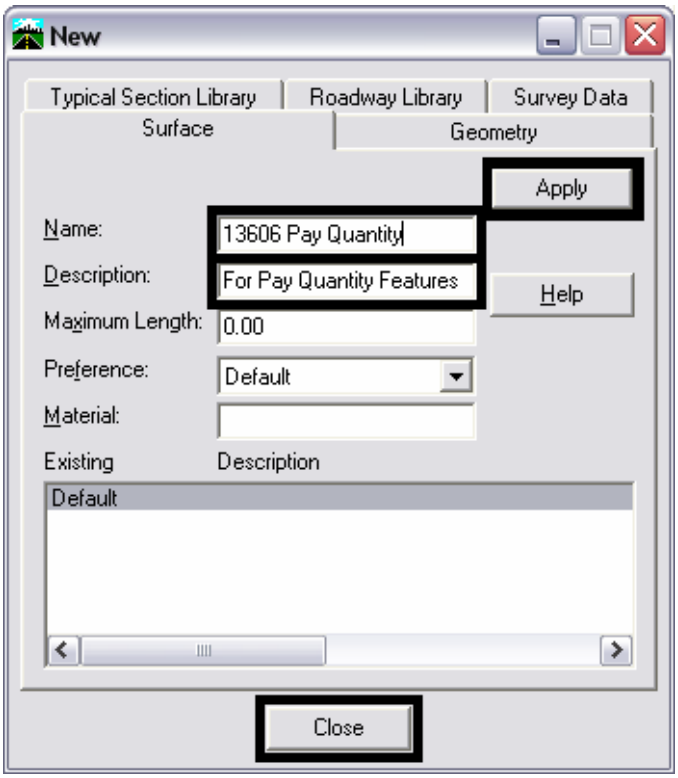
Data imported from graphics can be either loaded into a new or existing surface.

Creating A Surface

2. In the InRoads menu, **<D>** on the bottom **Surfaces** tab. **<R>** on the word '**Surfaces**' at the top of the left pane then select **New** from the menu.

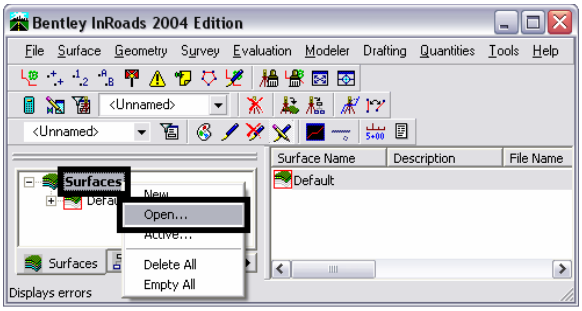


3. In the **Name** field of the **New** window, k*ey in* the desired name.
4. In the **Description** field, *key in* the desired description.
5. **<D>** the **Apply** button then **<D> Close**.



Opening An Existing Surface

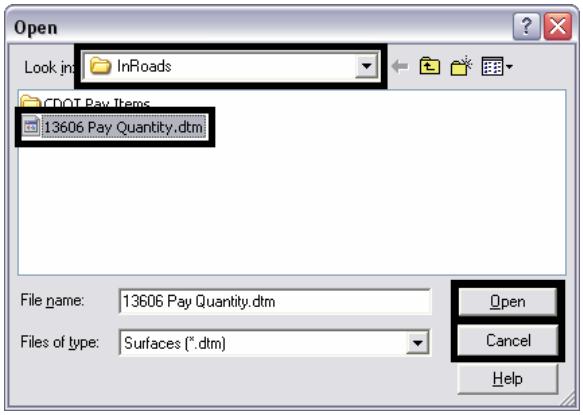
6. In the InRoads menu, **<D>** on the bottom **Surfaces** tab. **<R>** on the word '**Surfaces**' at the top of the left pane then select **Open** from the menu.



7. In the Open dialog box, use the **Look In** pull down menu to select the desired directory path.

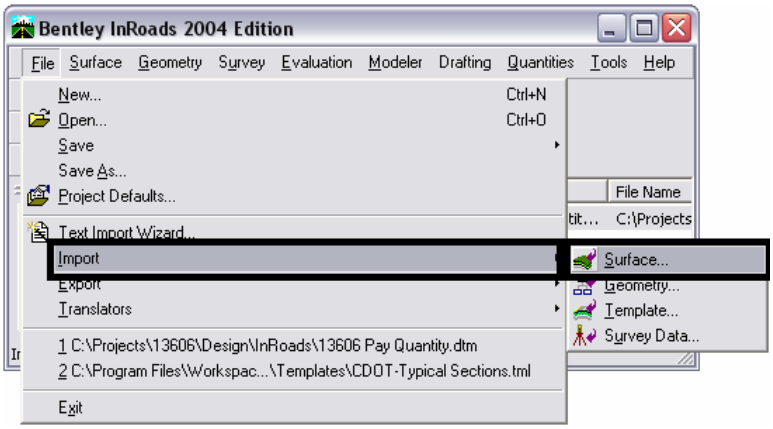
8. **<D>** on the desired file name.

9. <**D**> on the **Open** button, then **<D>** on the **Cancel** button to dismiss the Open dialog box.



Importing Graphic Data

10. In the InRoads menu, select **File > Import > Surface**. The Import Surface dialog box will be displayed.



11. Using the **Surface** pull down menu, select the desired surface.

12. With the **Load From** pull down menu, select the desired method.

    a. If all of the elements on a particular level are to be imported, select **Level**.

    b. If some elements on a level are to be imported and others are not, then select **Single Element**.

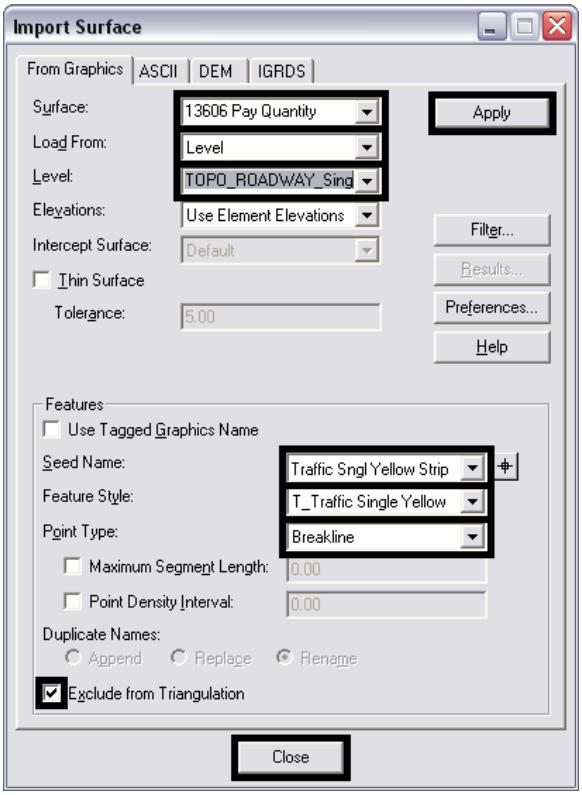
13. If **Load From** is set to **Level**, then with the **Level** Pull down menu select the desired level. If **Load From** is set to **Single Element** this field is inactive.

14. In the **Seed Name** field, key in the desired name. This will be used to name the features imported from the graphic elements. **Note:** this field may be populated if an existing surface is being used.

15. Use the **Feature Style** pull down menu to select the desired feature style.

16. Select the desired **Point Type** from the pull down menu. **Note:** when importing graphics for pay quantities, **Random should** be used for items paid for as each. **Breakline** is used for items whose quantity is figured from a linear measurement.

17. **<D>** the **Apply** button.



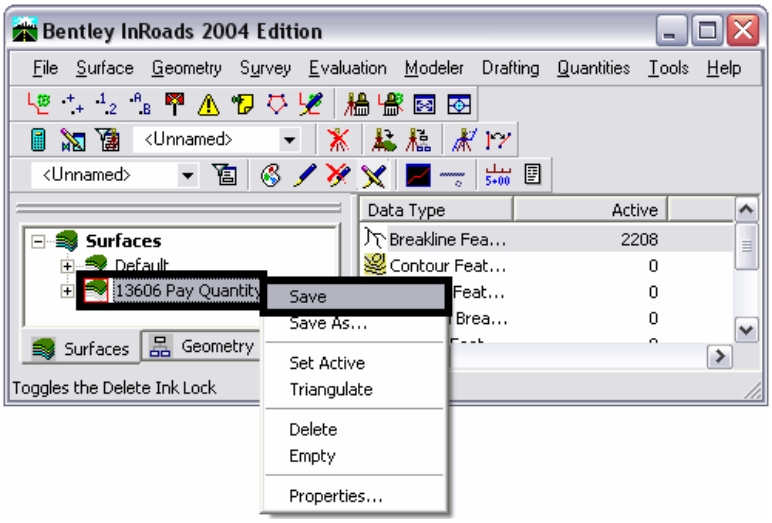
a. If the **Load From** is set to **Level**, all elements on the selected level are imported.

b. If **Load From** is set to **Single Element,** then **<D>** on the desired element. **<D>** a second time to Accept the selection.

18. After all Levels and Elements are imported, **<D>** the **Close** button.

Saving The Surface

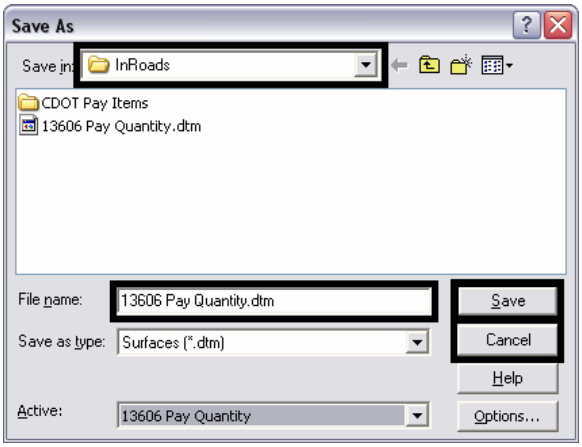
10. In the InRoads menu, **<R>** on the surface name in the left pane then select **Save** from the menu. If the file existed prior to importing data then the data is saved to that file and no further action is required.



11. If the file was new then the **Save As** dialog box will appear. Select the directory path using the **Save In** pull down menu.

12. In the **File Name** field, *key in* the desired name.

13**, <D>** on the **Save** button, then **<D>** on the **Close** button.



Using The Shapes Tool

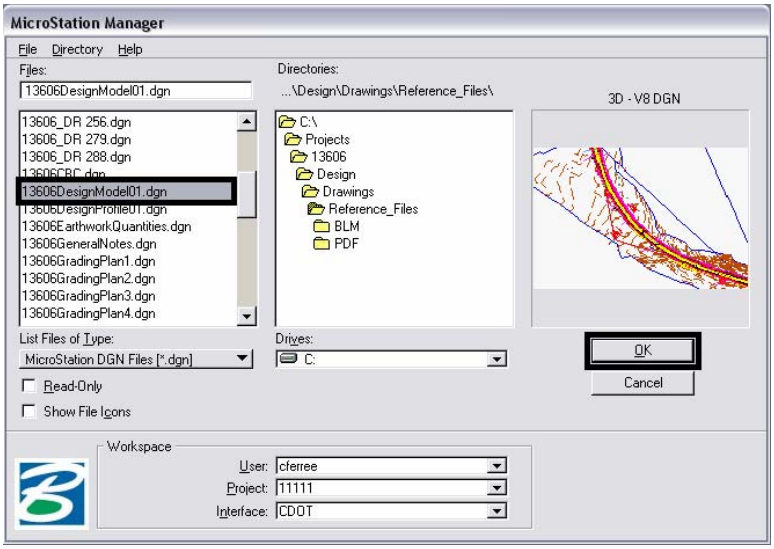
This document guides you through the process of creating area surface features for pay quantity calculations. The Shapes Tool is used to create dtm features that define an area. The advantage of this tool is that it does not affect the graphic elements used to create the features. So, some of the same elements used to define an area feature can also be used to define linear features as well.

Creating A Working DGN file:

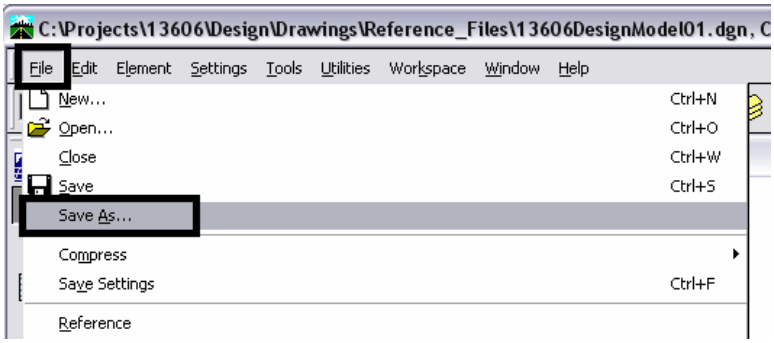
Because the Shapes Tool may require additional graphic elements to be added to the JPC#Modelxx.dgn file, or existing elements to be modified, a copy of this file should be used.

Creating A Copy of the DGN File

4. Start InRoads (and MicroStation). Set the directory path and highlight the desired file. Select **OK**.

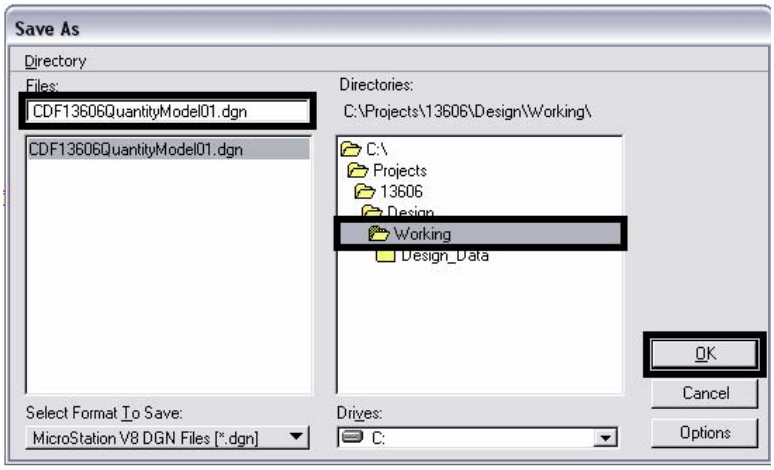


5. Select File > Save As from the MicroStation Menu.



6. In the **Save As** dialog box, set the directory to the **Working** directory.

4. Key in the new name for the copied file and select **OK**. The copied file is now open in MicroStation.

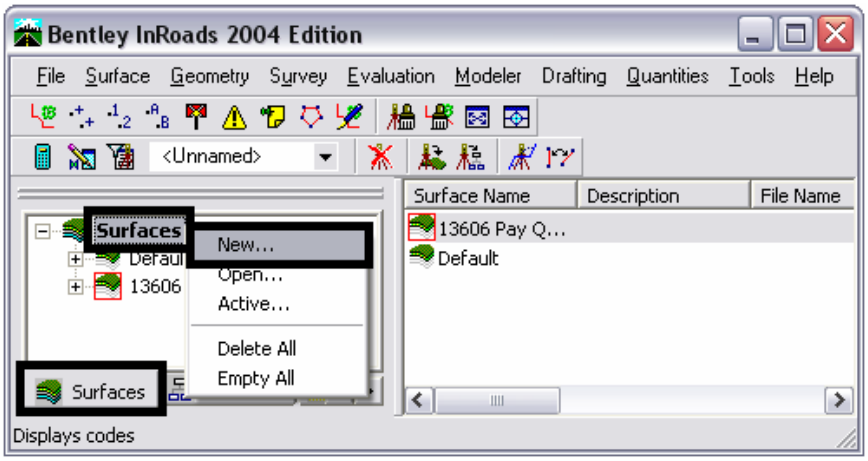


Preparations For Using The Shapes Tool:

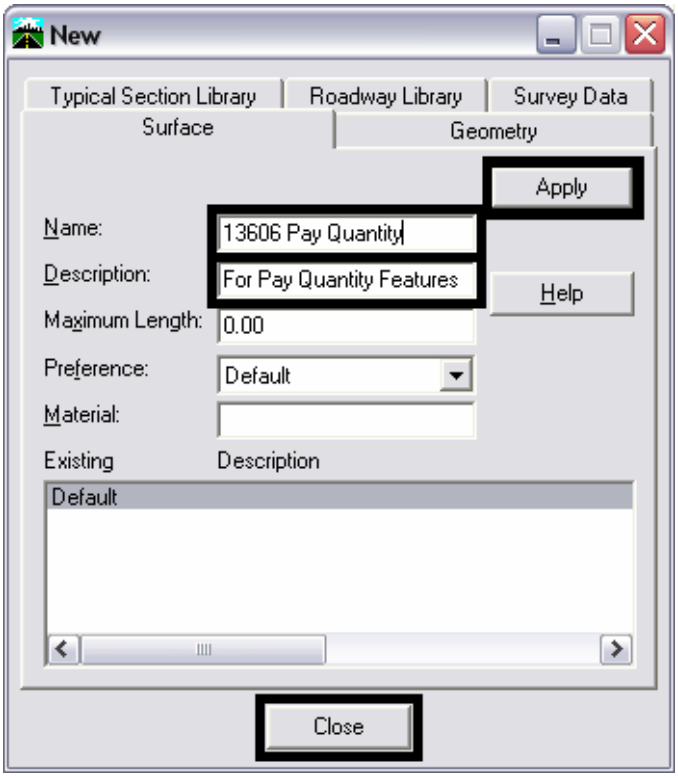
Creating A surface For Quantity Data

The design DTM will contain a large number of features that will not be used for quantity calculation. Using this surface could produce unwanted or erroneous quantity data. To avoid this problem a surface will be created to contain only pay quantity data.

5. In the InRoads menu, **<D>** on the bottom **Surfaces** tab. **<R>** on the word '**Surfaces**' at the top of the left pane then select **New** from the menu.



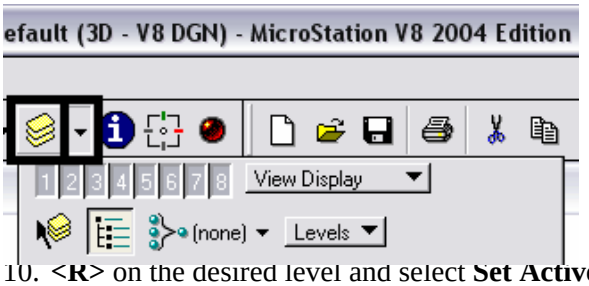
6. In the **Name** field of the **New** window, k*ey in* the desired name.
7. In the **Description** field, *key in* the desired description.
8. **<D>** the **Apply** button then **<D> Close**.



Setting The Level Display

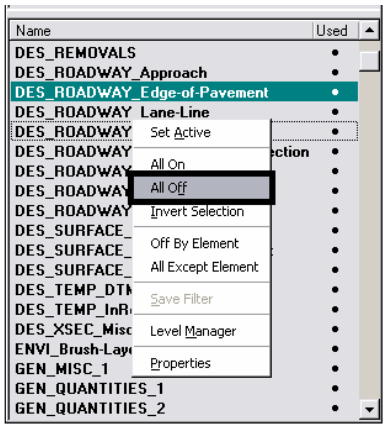
The Shapes Tool works with all of the visible graphic elements. Therefore, it is necessary to turn off those levels that do not contain elements that will be used define the area feature.

9. Select the Level Display. **Note:** if the down arrow next to the Level Display button is selected, the Level Display menu will be automatically dismissed when the cursor is moved off the menu.



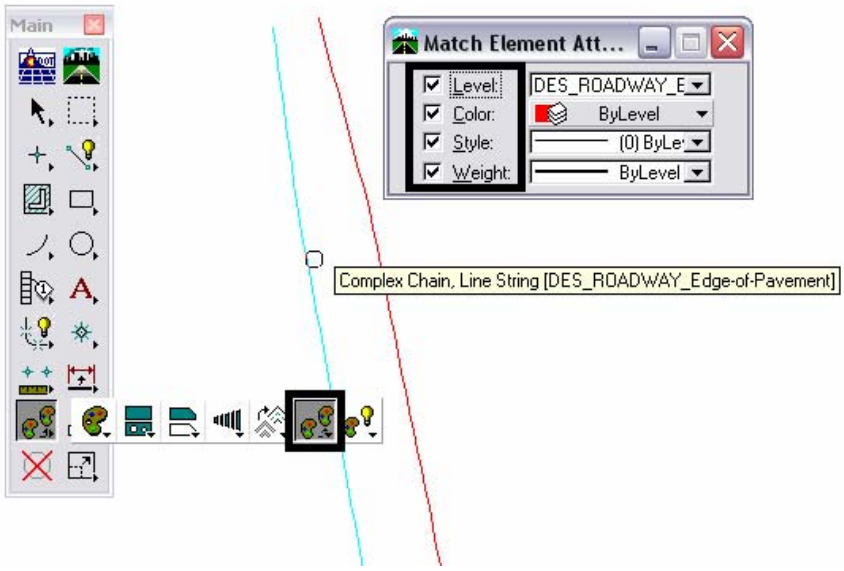
10. **<R>** on the desired level and select **Set Active** from the menu.

11. **<R>** on the Level Display and select **All Off** from the menu. This will leave only the desired elements displayed.



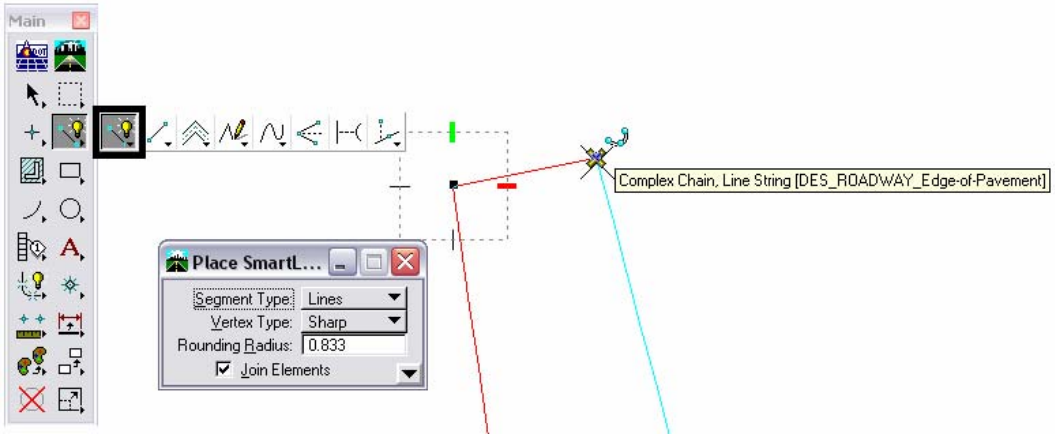
Closing The Area

12. Use the Match Element Attributes command. Turn on all of the check boxes. <D> on the desired element to match its attributes.

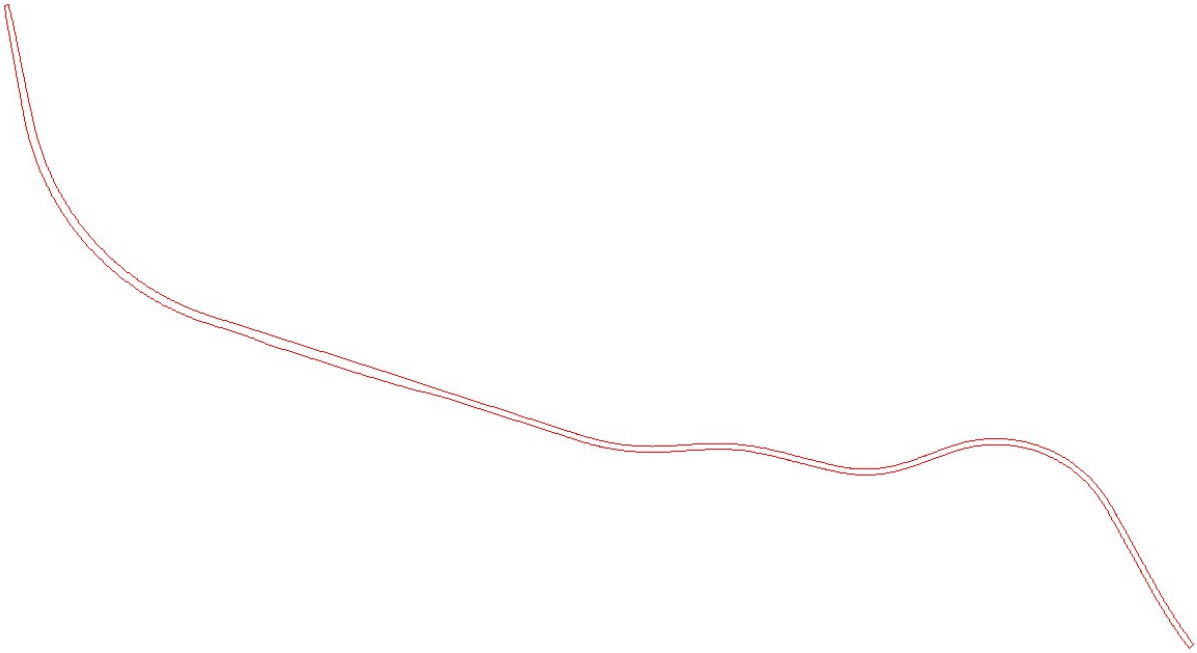


13. Select the **Place Smartline** (or Place Line) command. **<T>** to the end of one of the elements that will form the area then **<D>.**

14. **<T>** to the end of the next element that will form the area then **<D>.**

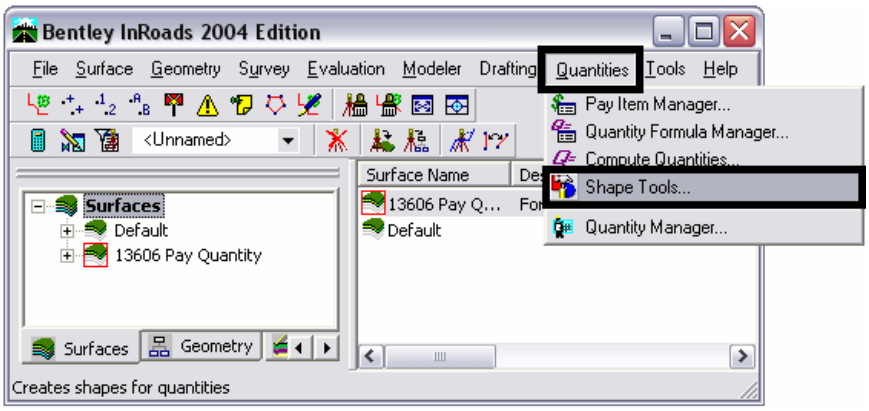


15. Repeat this process until all of the gaps in the area are filled. Below is an example of a closed area.



Creating The Area Feature

16. From the InRoads menu, select **Quantities > Shapes Tool**. The Shapes Tool dialog box will be displayed.



17. On the Shapes Tool dialog box, select **Fill** for the **Shape** entry.

18. Using the **Surface** pull down menu, select the surface created above.

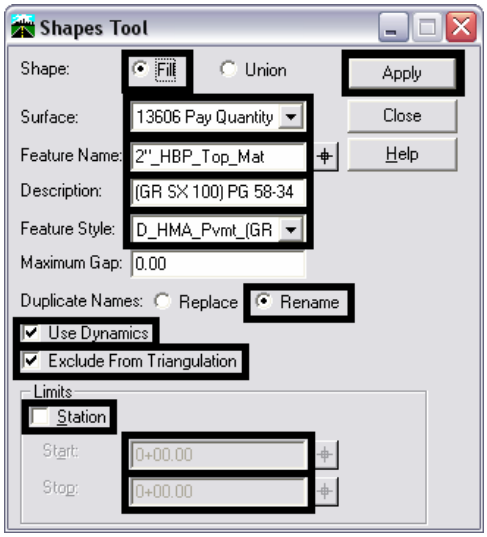
19. In the **Feature Name** field, *key in* the desired feature name.

20. In the **Description** field, *key in* the desired text.

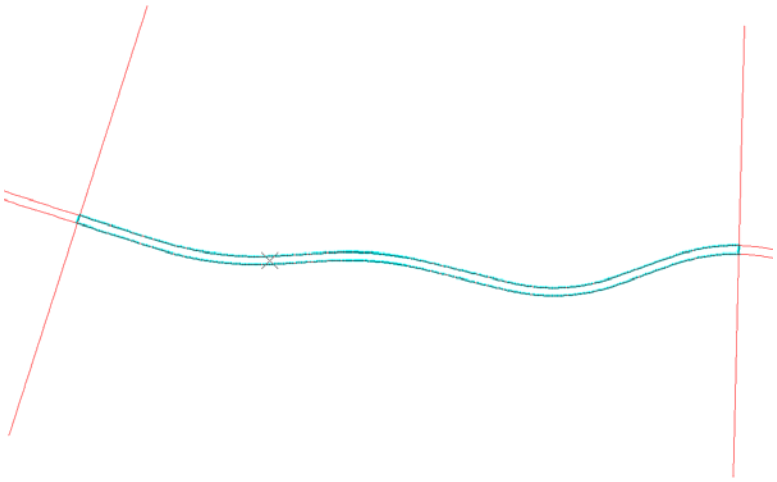
21. Using the **Feature Style** pull down menu, select the desired feature style.

22. Select **Rename** for the **Duplicate Names** setting.

23. Toggle on **Use Dynamics** and **Exclude From Triangulation**.



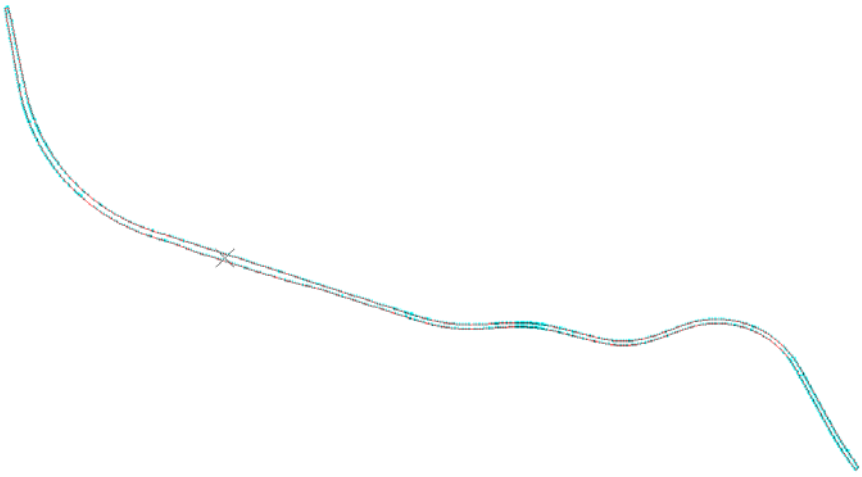
24. In the Limits area, toggle **Station** on if desired. If used, *key in* the **Start** and **Stop** stations in their respective fields. **Note:** If station limits are used, temporary lines extending perpendicular to the active alignment 1,000 feet in either direction will be placed at the Start and Stop stations. These will be used to define areas both inside and outside the station limits.



25. Select the **Apply** button.

26. Move the cursor inside the desired area. Closed areas will highlight as the cursor is moved through them.

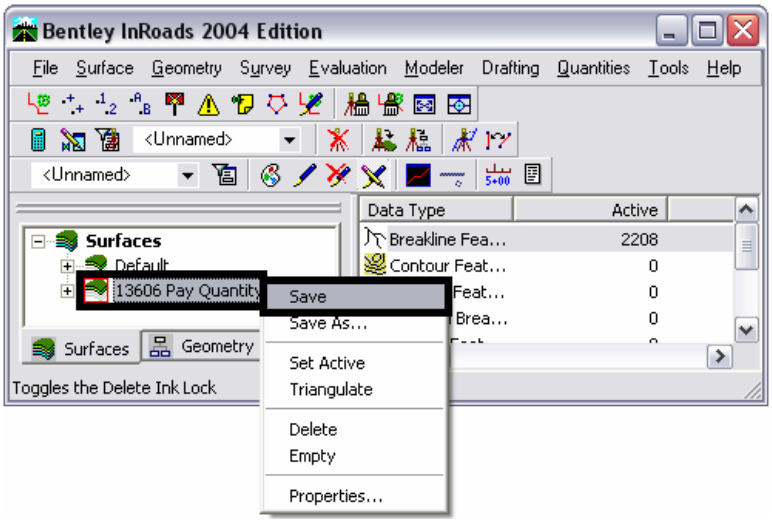
27. **<D>** inside the area to create the feature. **<D>** a second time to accept. If additional features are to be created using the same settings, these can be selected at this time. The first additional feature will have a '1' appended to its name. This will be incremented by 1 for each additional feature thereafter.



28. After the desired areas have been selected, **<R>** to redisplay the Shapes Tool dialog box and then select **Close**.

Saving The Surface

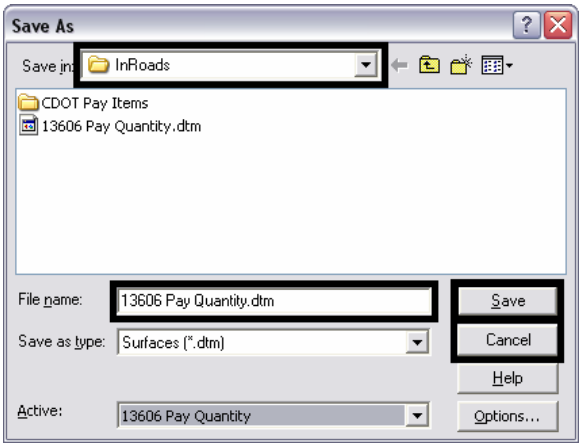
29. In the InRoads menu, **<R>** on the surface name in the left pane then select **Save** from the menu. If the file existed prior to importing data then the data is saved to that file and no further action is required.



30. If the file was new then the **Save As** dialog box will appear. Select the directory path using the **Save In** pull down menu.

31. In the **File Name** field, *key in* the desired name.

32. **<D>** on the **Save** button, then **<D>** on the **Close** button.

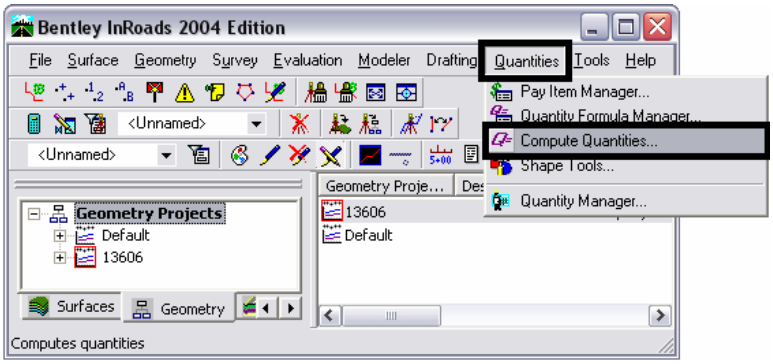


InRoads Compute Quantities

This document guides you through the use of the InRoads Compute Quantities command. This command collects pay quantity data from a DTM and stores it in a database to be used with Pay Quantity Manager. This command requires a surface with pay items assigned to the features and a geometry project with a horizontal alignment.

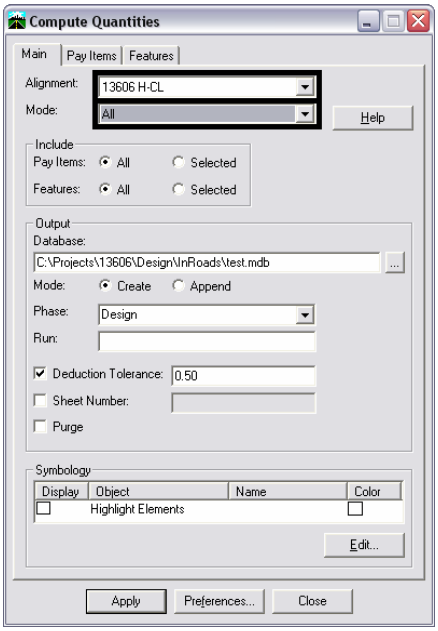
The Compute Quantities Command

7. From the InRoads menu, select **Quantities > Compute Quantities**. This will display the Compute Quantities dialog box.



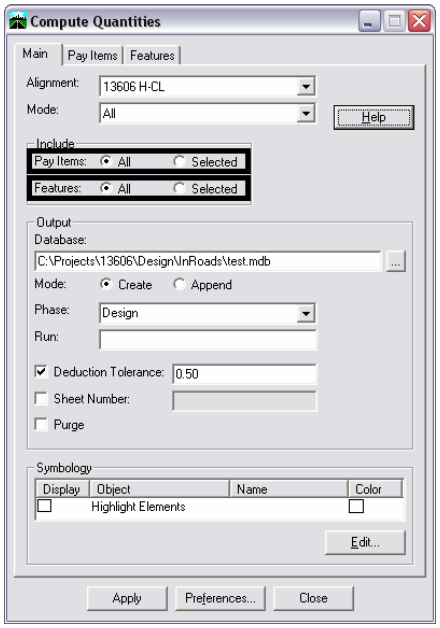
2. Select the desired alignment using the **Alignment** pull down menu. Quantities will only be calculated for features within the station range of the specified alignment.

3. Using the **Mode** pull down menu, select either **All** or **Fence**. The **All** mode uses all features within the alignment, the **Fence** mode uses only those features that are within a defined fence.



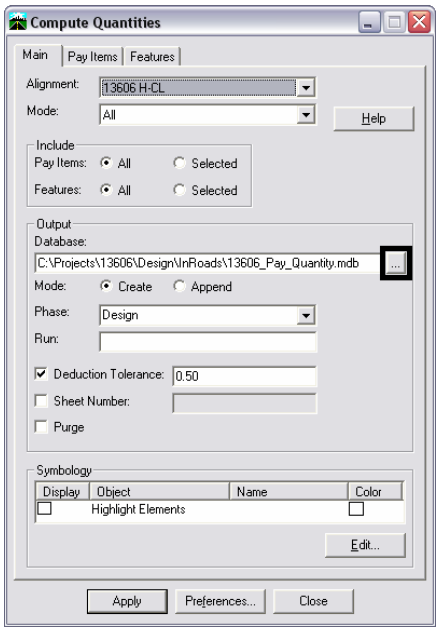
4. In the **Include** area, **<D>** either the **All** or **Selected** radio button for **Pay Items**.

5. **<D>** either the **All** or **Selected** radio button for **Features**.



Note: If the **Selected** radio button is chosen, then the items to be processed must be identified on their respective tab. If the **All** radio button is selected all data of that type is processed and its tab is not used.

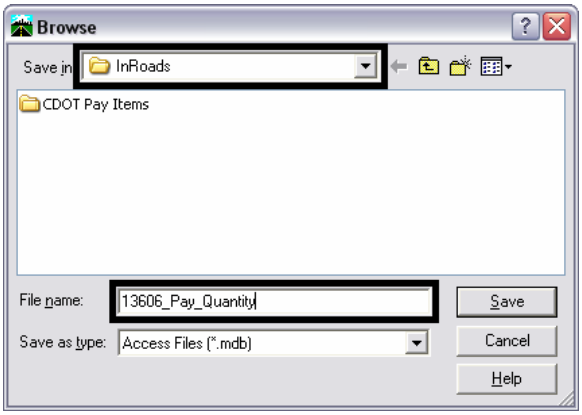
6. In the **Output** area, **<D>** on the browser button next to the **Database** field. This will display the Browse window.



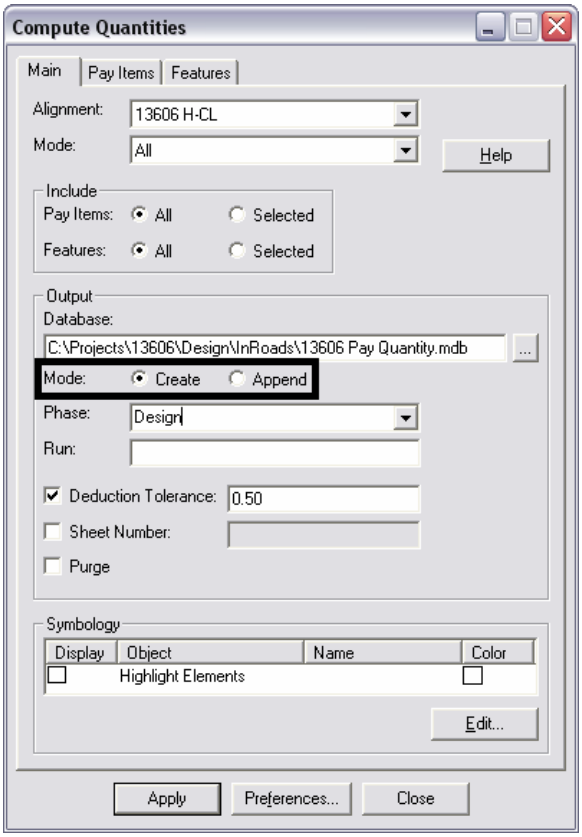
7. Select the desired directory path from the **Save In** pull down menu.

8. In the **File Name** field, *key in* the desired filename or select an available one from those listed.

9. **<D>** on the **Save** button. This will dismiss the Browse window and fill in the Database field.



10. Select a **Mode**. Choose **Create** to make new file or to overwrite an existing file. Choose **Append** if adding additional data to an existing file.



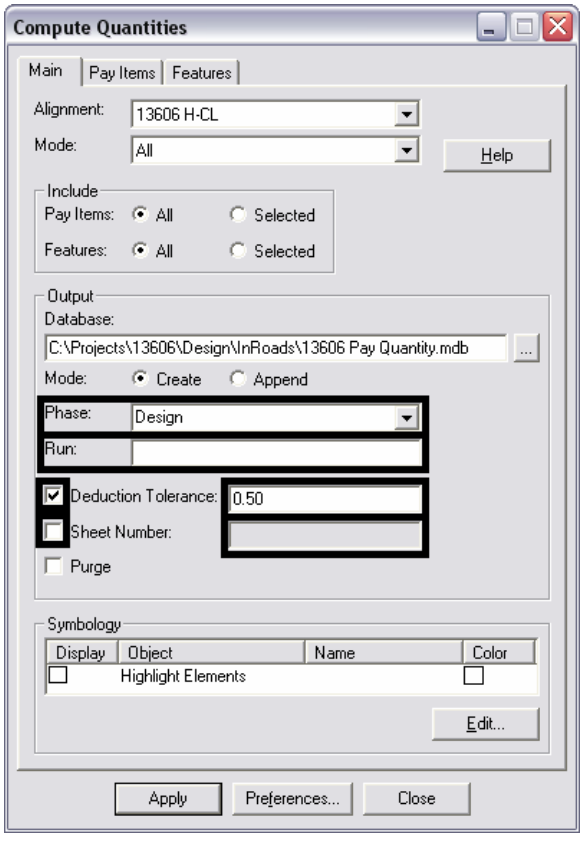
11. Select a **Phase** from the combo box to the right. A new **Phase** can be created by *keying in* a name in the combo box. Phases are used to group quantities.

12. The **Run** field is another method of grouping quantities. If desired, *key in* a **Run** name in the field to the right.

13. **<D>** in the **Deduction Tolerance** check box to turn it on or off. The field to the right is used to define the distance at which features are considered coincident. *Key in* the desired value. For more information on pay item deductions see the "Customizing The Pay Items Database" workflow.

14. **<D>** in the **Sheet Number** check box to turn it on or off . When on, the field to the right is made active and a **Sheet Number** can be *keyed in*. This field is for informational purposes when quantities are tabulated on a per sheet basis.

15. **<D>** in the **Purge** check box to turn it on or off . When on, this option deletes pay quantities from the database if the feature used to calculate the quantity has been deleted from the DTM.



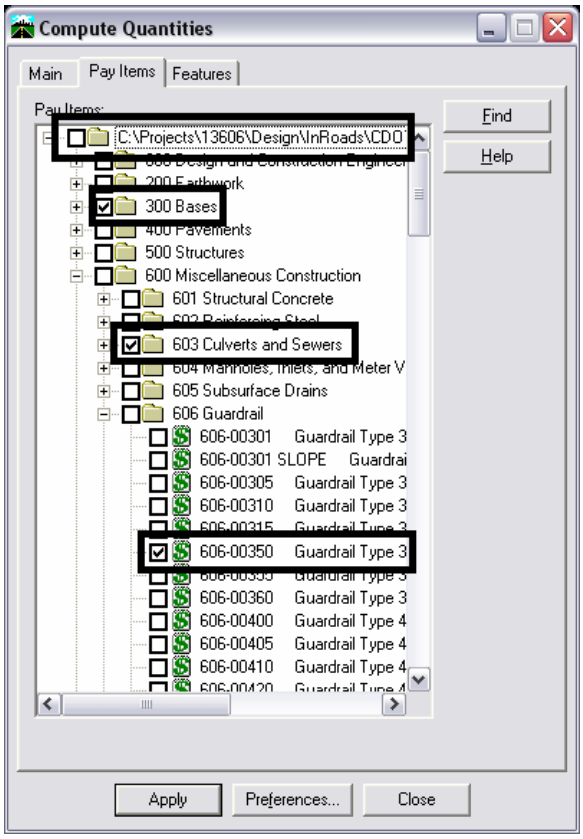
16. The **Symbology** area is used to set the parameters for highlighting elements that quantities were computed for. **<D>** on the check box in the Display column to turn the highlight on or off.

The Pay Items Tab

This tab is used if **Pay Items** in the **Include** area is set to **Selected**.

17. **<D>** on the **Pay Items** tab to bring it to the front.

18. Select the Pay Items to be computed by clicking in the check box to its left.



Note: All of the pay items in the list can be selected by selecting the 'Root' directory at the top of the list. If a Category is selected ('300 Bases' in the example above) then all of the items in that category and its sub-categories are selected. If a Sub-Category is selected ('603 Culverts and Sewers ' above) then all of the items in that sub-category are selected. Finally, individual pay items can be selected ('606-00350 Guardrail Type 3 above).

The Features Tab

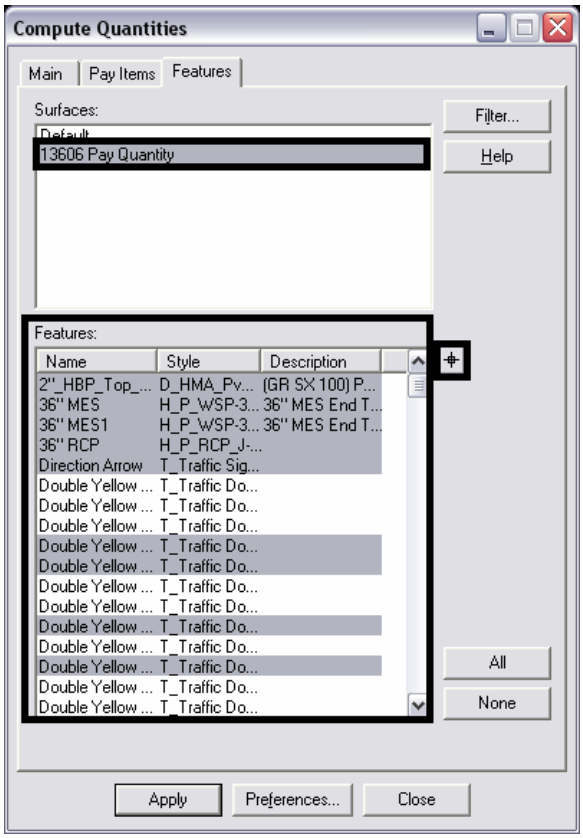
This tab is used if **Features** in the **Include** area is set to **Selected**.

19. **<D>** on the **Features** tab to bring it to the front.

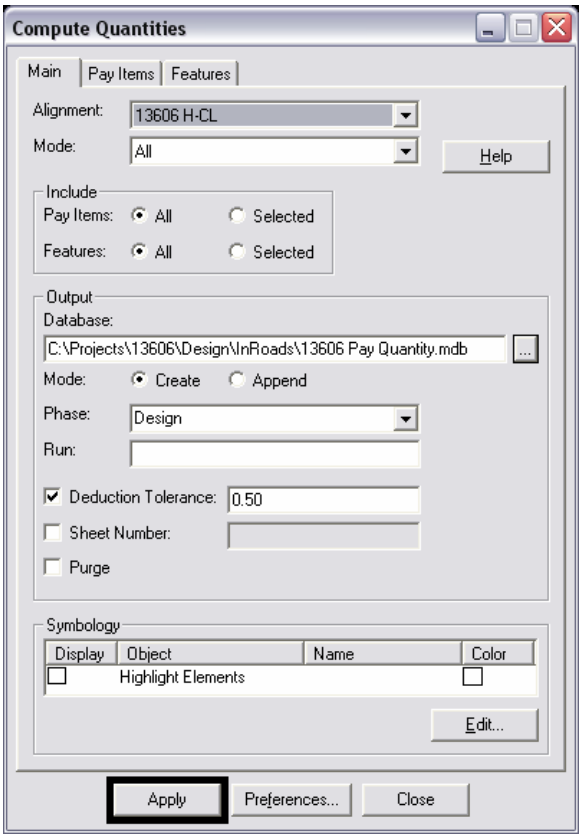
20. In The **Surface** area, **<D>** on the desired surface. Multiple surfaces can be selected by holding the **Shift** or **Ctrl** key and then clicking on the desired surfaces.

21. In the **Features** area, **<D>** on the desired Feature. A consecutive range of features can be selected by holding the Shift key then clicking on the first and last feature in the range. A number of individual features can be selected by holding the Ctrl key then clicking on the desired features.

    The **Locator** button can be used to identify features from the graphic elements displayed. The **Ctrl** key can be used with this option, however, the **Shift** key can not. To use it, **<D>** on the **Locator** button then **<D>** on the desired graphic element.

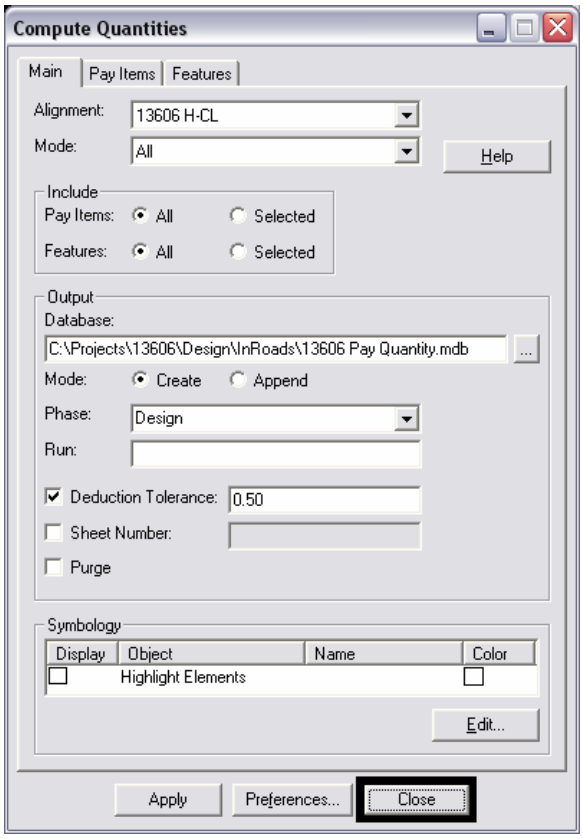


22. **<D>** the **Apply** button to calculate the quantities.



23. When processing is completed, a message stating that the *.mdb file has been created will appear in the lower left corner of the InRoads interface.

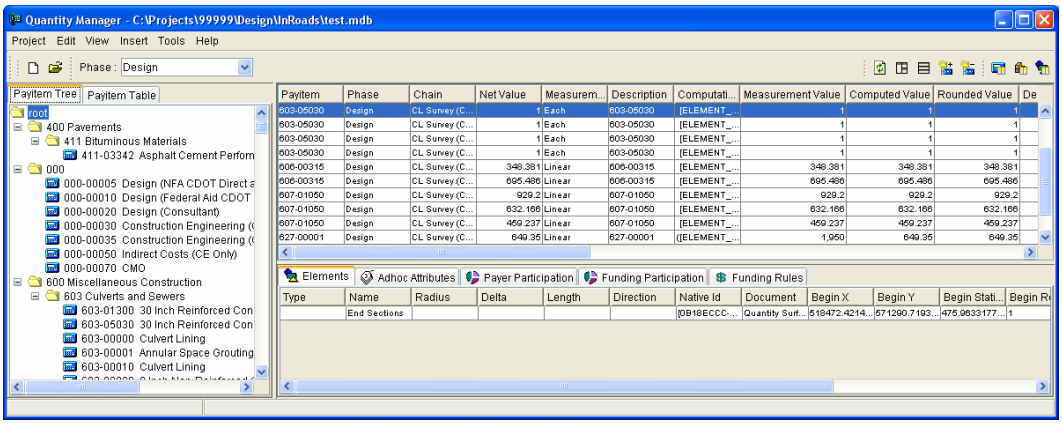
4. **<D>** the **Close** button to dismiss the **Compute Quantities** dialog box..



Working With A Quantity Manager Project

Opening Quantity Manager

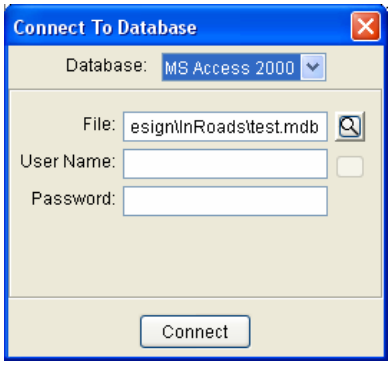
1. Quantity Manager can be started from the InRoads menu by selecting Quantities > Quantity Manager. It can also be started from the Start menu by selecting Start > All Programs > Bentley Civil Engineering > Quantity Manager. MicroStation and InRoads do not have to be running for Quantity Manager to work.



2. Select **Project > Open**. This option is used to load the database created by the InRoads Compute Quantities command (see CDOT Compute Quantities.pdf for more information). The 'Connect to Database' window will appear.

3. Set the **Database** pull down to: **MS Access 2000**. This is the format used by the Compute Quantities command (SQL Server 2000 and Oracle formats can also be used by Quantity Manager)

4. In the 'File' box, type in the directory path and file name of the desired file. The 'search' button to the right of the field can be used to locate and select the desired file.



5. Click the **Connect** button. (unless otherwise noted, the 'User Name' and 'Password' fields are left blank.) The database is now loaded into Quantity Manager and editing can begin.

Edit- The six menu items here work with the Payitem Tree view (in the left pane of Qunatity Manager). They are: Select All, Unselect All, Delete, Rename, Phase, and Funding.

Select All- This is used to select all of the payitems in a specified category or sub-category. Highlight the desired category or sub-category then select Edit > Select All.

Unselect All- Choose this option to unhighlight all of the payitems currently highlighted.

Delete- This option is used to remove data. If a single payitem is selected then only that item will be deleted. However if a category or sub-category is selected, then all data within that category or sub-category is deleted also. To use this command, highlight the desired data and select Edit > Delete. A warning message will be displayed reading," Are you sure you want to delete…". Click 'Yes' to delete the selected item(s).

Rename- This option is used to change the name of a Caregory, Sub-Category, or Payitem. Highlight the object to be changed then select Edit > Rename. This will display the 'Rename' window. Key in the desired name in the field and click 'OK'.

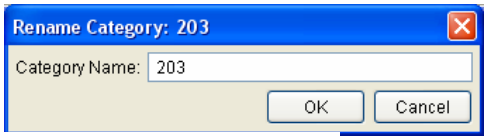


Figure 26. The Rename window.

Phase- Choosing this option displays the 'Phase Properties' window. From here Phases can be added, deleted, or edited. To add a new phase, click the 'New' button (left button in the lower right corner). A new row is added to the list containing "New Phase 1" in the first column.

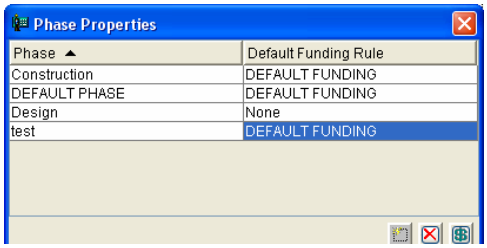


Figure 27. The Phase Propertieswindow.

To Edit a phase name, double click on the name to be changed and type in the new name. To change the funding rule of a phase, click on the default funding rule for the desired item and use the pull down menu to select another rule.

To delete a phase, highlight the phase and click the 'delete' button (middle button in the lower right corner). Note: if the pase has payitems stored in it, then the phase can not be deleted.

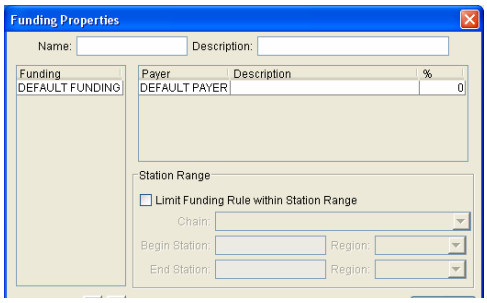


Figure 28. The Funding Properties window.

The last button is used to create/edit the funding rules. To create a funding property click the 'New' button (left button on the lower left side of the window). Type in the name and description for the new property in the respective fields at the top of the screen. To delete a funding rule highlight the name in the Funding column and click the 'Delete' button (right button on the lower left side of the window). A warning message appears reading, "Are you sure you want to delete the funding rule …?". Click yes to delete the rule.

Funding- There are two options for funding; Payer and Rule. Rule opens the Funding Properties window as described above. The Payer button displays the Payers window. Form here data can be added, imported from an aecXML file, edited, or deleted.

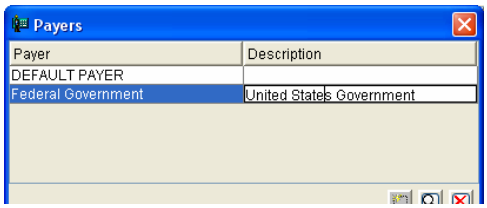


Figure 29. The Payers window.

To add anew Payer, click the 'New' button (the left button in the lower right corner, see figure 29). A new row is added to the data above. This can be edited by double clicking in the field, deleting the old data, and typing in the new data.

To import data from an aecXML file, click the 'search' button (the middle button in the lower right corner, see figure 29). Select the desired payers from the list and click Import.

View- The commands under this menu item are used to change what is seen in the Quantity Manager window.

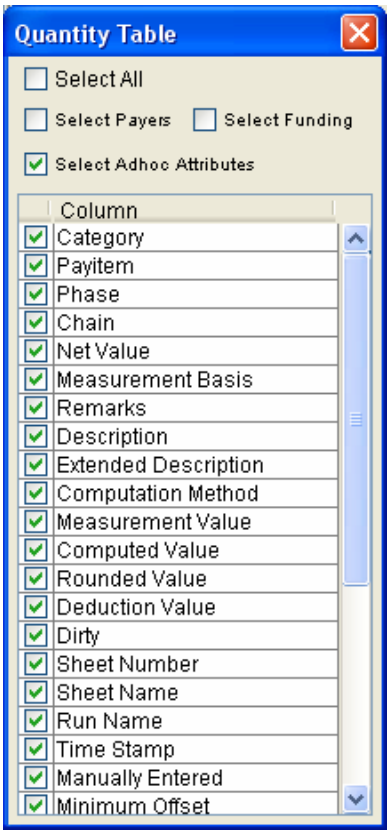


Figure 29. The View Columns window.

Refresh- This command updates all displayed fields from the database.

Columns- There are three options for this command, one for each pane (Payitem, Quantity, or Element) of the Quantity Manager window. Columns can be turned on or off by clicking the check box next to the desired column.

Expand Category Quantities- When on, quantities within the highlighted category are displayed in the Quantity pane even when the tree view is collapsed. When off, the sub-category folder must be highlighted in order to view its quantities.

Expand Tree- When chosen, all categories, sub-categories, and pay items are expanded in the Payitem Tree (not the Payitem Table).

Collapse Tree- When chosen, all categories, sub-categories, and pay items are collapsed in the Payitem Tree (not the Payitem Table).

Normal and Tile Horizontally- these two option determine the location of the panes withih Quantity Manager. Click on the desired option.

Insert- These commands are used to add data to the database. The choices are Category, Payitem, and Quantity.

Category- There are three options for creating a new Category; Above, Below, or Sub-Category. If 'Above' is selected, the new category will be placed directly over the highlighted category in the payitem tree.

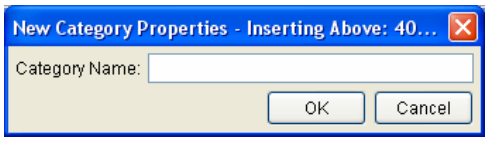


Figure 30. The New Categories Properties window.

If 'Below' is selected, the new category will be placed directly under the highlighted category in the payitem tree.

When Sub-Category is selected the new category is placed inside the highlighted category.

Note: A new category can not be placed above or below the Root category they must be placed as sub-categories.

After the desired option has been selected, the 'New Categories Properties' window appears. Type in the desired name for the category and click 'OK'.

Payitem- Three options are available for the location of the new payitem; Above, Below, or In Category. Above and Below are available only when a payitem is highlighted in the payitem tree. In Category is available only when a Category or Sub-Category is highlighted in the payitem tree.

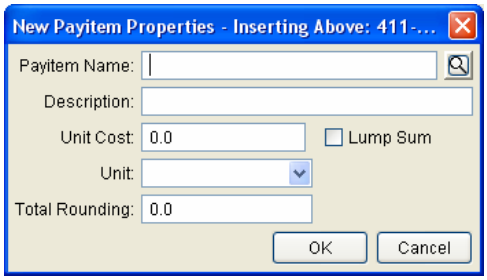


Figure 31. The New Payitem Properties window.

Click on the desired option to display the 'New Payitem Properties' window.

Payitem Name- Key in the desired name. The 'search' button can be used to import a payitem from the aecXML infrastructure v33 file if one is loaded.

Description- Key in the desired description here.

Unit Cost- Key in the desired unit cost.

Lump Sum- If the unit cost is a lump sum total, click on this check box.

Unit- This is the unit type shown in reports, it is not used for any calculations. Key in the desired unit.

Total Rounding- This number is for informational purposes. It does not affect quantity data entered. Key in the desired number.

When all of the desired entries have been made click the 'OK' button to create the payitem.

Quantity- This option is used to add an amount to a payitem. This option is active only when a single payitem record is highlighted. To add a quantity, highlight the desired payitem and select Insert > Quantity. This will display the 'New Quantity Properties' window. It should be noted that the only calculation performed is to subtract the Deduction Quantity from the Rounded Quantity to produce the Net Quantity.

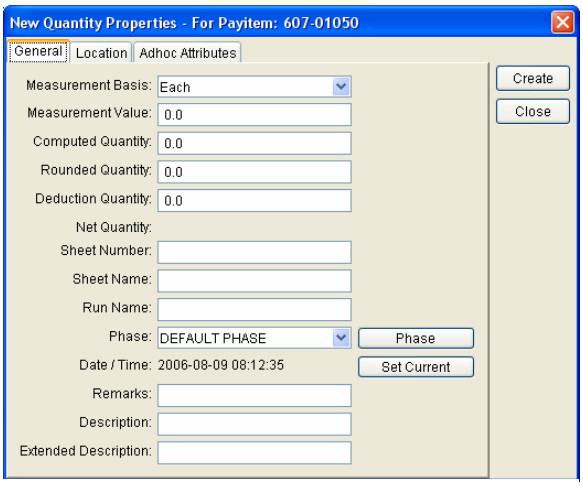


Figure 32. The New Quantity Properties window.

General Tab- This is where the actual amount is stored.

Measurement Basis- This is how the feature would have been measured if there was one. There are three options; Area, Linear, and Each. Items measured by volume (Tons, Gallons, Cubic Yards, etc.) or area (Square Feet or Square Yards) should be set to 'Area'. Those measured in Linear Feet or Linear Yards should be set to 'Linear'. Items listed as Each or Lump Sum should use 'Each'. Use the pull down menu to select the desired entry.

Measurement Value- This equates to the area of a shape feature, the length of a line feature, and the number of points in a random feature. For a Lump Sum payitem this should be 1. This number is not used for any calculation. It is here to make this payitem record consistent with those imported from the DTM. Key in the desired value.

Computed Quantity- If a formula was utilized, this field is the result of the computation. Using a pavement quantity example, a formula computing tons from square feet could be utilized. In this case, the tonnage is the Computed Quantity. Entering data into this field auto-fill the Rounded Quantity with the same value. Key in the desired value.

Rounded Quantity- Some payitems use a Rounding Factor which is applied to the Computed Quantity. If the quantity being entered uses a rounding factor, change the number in this field to the rounded computed quantity. For example, concrete pipe is rounded to 2 foot increments. An 83 foot long pipe would be rounded to 84 feet. Key in the desired value.

Deduction Quantity- The quantity of some payitems may be reduced by the presence of another payitem. While the payitem causing the reduction is not listed here, the amount of the reduction is. Key in the desired value.

Net Quantity- Subtracting the Deduction Quantity from the Rounded Quantity yields the Net Quantity. This is the only calculation performed by this command.

Sheet Number- This is the name of the sheet upon which the quantities are located. This can be useful when computations are tabulated for individual sheets.

Run Name- This is a user-defined name. The run name is a grouping mechanism to permit segregation of quantities under the same payitem. It could be used to represent quantities of different stages or different alternatives.

Phase- To assign the quantity to a particular phase or change the phase, Simply select the desired phase from the pull down menu.

Phase Button- This is used to display the Phase Properties window. The use of this window is described above.

Date / Time- This is the date and time that the record was created.

Set Current Button- If a record is being edited, the Date/Time can be reset to the current date and time by clicking this button.

Remarks- Key-in field for remarks. Limited to 256 characters.

Description- Key-in field for the Description. Limited to 256 characters.

Extended Description- Key-in field for the Extended Description. Limited to 256 characters.

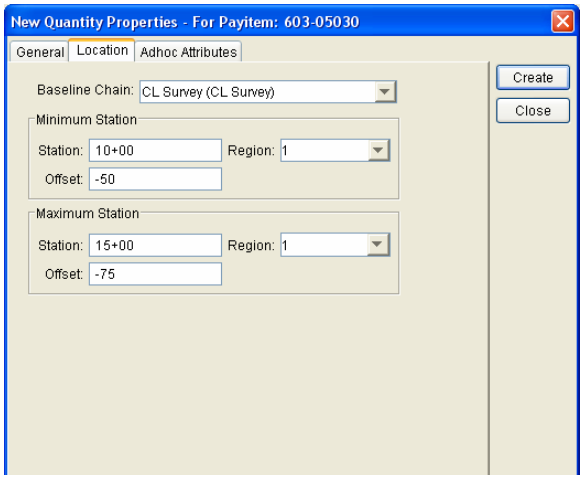


Figure 33. The New Quantity Properties window, Location tab.

Location Tab- This tais used to identify the location of the quantity in relation to an alignment.

Baseline Chain- The is the alignment to be measured from. Use the pull down menu to select the desired alignment.

Minimum and Maximum Station- These are used to set a boundary around the quantity. The station numbers do not represent the beginning or end of a feature, but the lowest and highest station at which the quantity would occur. The same can be said about the offsets. They do not represent the locations of the beginning and end of a feature, but denote the furthest distance to the left and right of the alignment that the quantity occurs. There are three fields for both the minimum and maximum station; Station, Offset, and Region.

Station- key in the desired station number. Note: station numbers should be computed as if there is no station equation.

Offset- Key in the desired distance. Left of the alignment is negative, right of the alignment is positive.

Region- This is used if the alignment has a station equation. This option is usually selected automatically when the station number is entered.

Adhoc Attributes Tab- There is no information on the use of this tab.

Tools- Reporting tools are located in this menu item. Under Tools > Reports there are two options; Create and Define Styles. As Defining Styles (other than the samples provided) requires knowledge of XML programming, this option will not be discussed here.

Creating A Report- Select Tools > Reports > Create to open the 'Create Report' window.

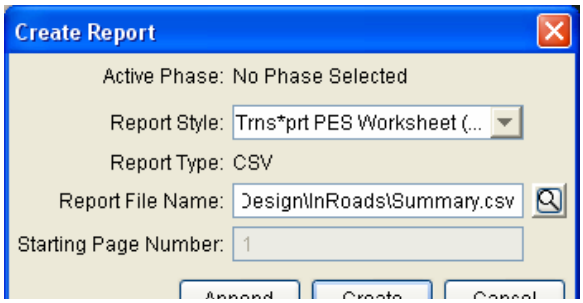


Figure 35. The Create Report window.

Active Phase- This is determined by the Phase selected in Quantity Manager.

Report Style- Select the desired style from the pull down menu. The Style name describes the type of information to be contained in the report.

Report Type- This is determined from the Report Style chosen.

Report File Name- Key in the directory path and filename for the output file. The 'search' button can be used to select the directory path and filename if desired.

Starting Page Number- Some report styles use this information to automatically number the pages of the report. If this field is active, the desired page number can be keyed in.

The three buttons at the bottom of the window determine how the information will be stored.

Append- Choose this button if this data is to be added to an existing file. Note: this button is not available if the report type is PDF.

Create- This option creates a new file or overwrites an existing file.

Cancel- This option closes the Create Report window without processing any data. No report is created.

The commands for data entry or modification are available through 'Right Click' menus. Categories, Payitems, and Quantities each have their own Right Click menu. To activate a Right Click menu, place the cursor over the desired object and click the right mouse button. Below are examples of the three Right Click menus.

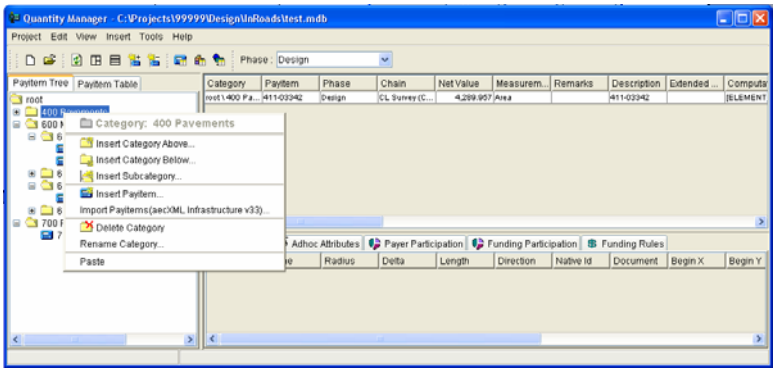


Figure 35. The Category Right Click menu.

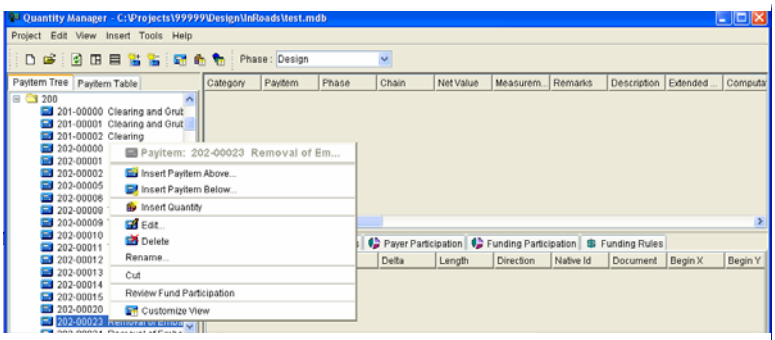


Figure 36. The Payitem Right Click menu.

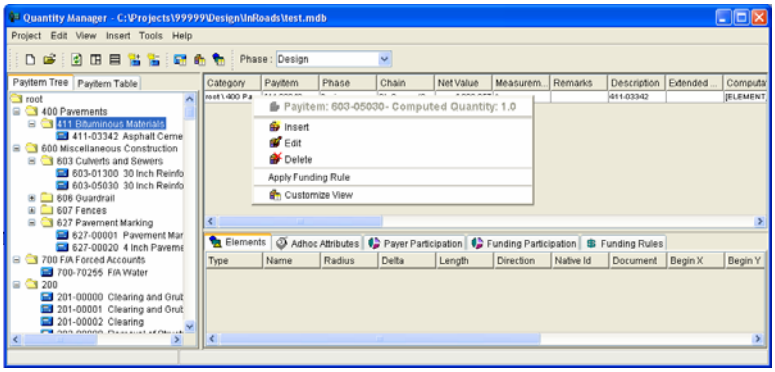


Figure 37. The Quantity Right Click menu.