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Earth Works and Harvesting Quantities with InRoads V8*i:*

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Sustaining Infrastructure

Topics

- Generating quantities in Design & Computation Manager (D&C Manager)

- Exporting quantities to Quantity Manager

- Setting project preferences in Quantity Manager

- Importing pay items and funding from AASHTO Trns*port into Quantity Manager

- Adding manual quantities

- Creating reports of quantities

- Exporting quantities to AASHTO Trns*port

Workflow Philosophy

- Design project using elements displayed Pay Item configured in Style Manager.

- Tag those MicroStation elements that are to be quantified with an adhoc attribute defining the chain.

- Check quantities as the project progresses to ensure accuracy.

- Create shapes for odd area quantities.

- Export CAD quantities to Quantity Manager and add manual quantities.

- Generate reports in Quantity Manager and export quantities to Trns*port.

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Quantity Manager Workflow

- Quantities from design files
  - Create
  - Update
  - Delete
- Non-graphic quantities (manually calculated)
  - Add adhocs
- Create reports
- Export to Trns*port
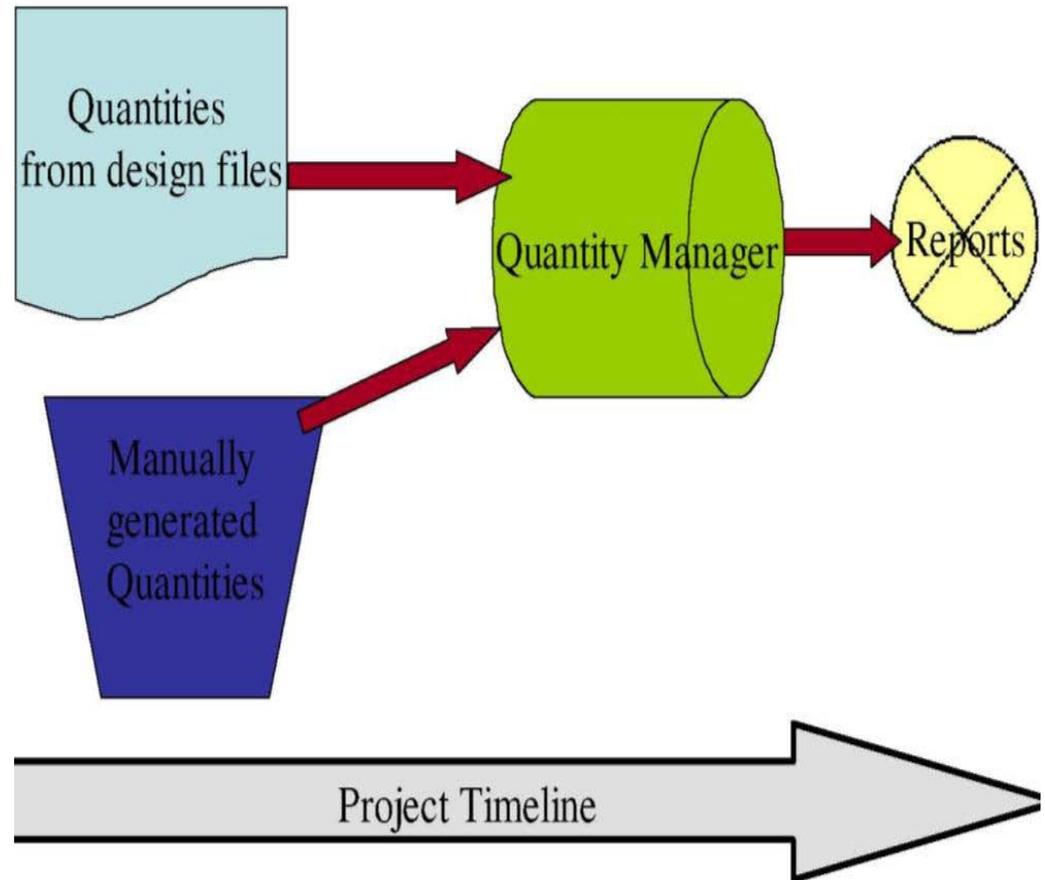
Computing Quantities in QM

- Quantities from:
  - Alignment
  - Graphical Element
  - Pay Item
  - Feature
  - Sheet
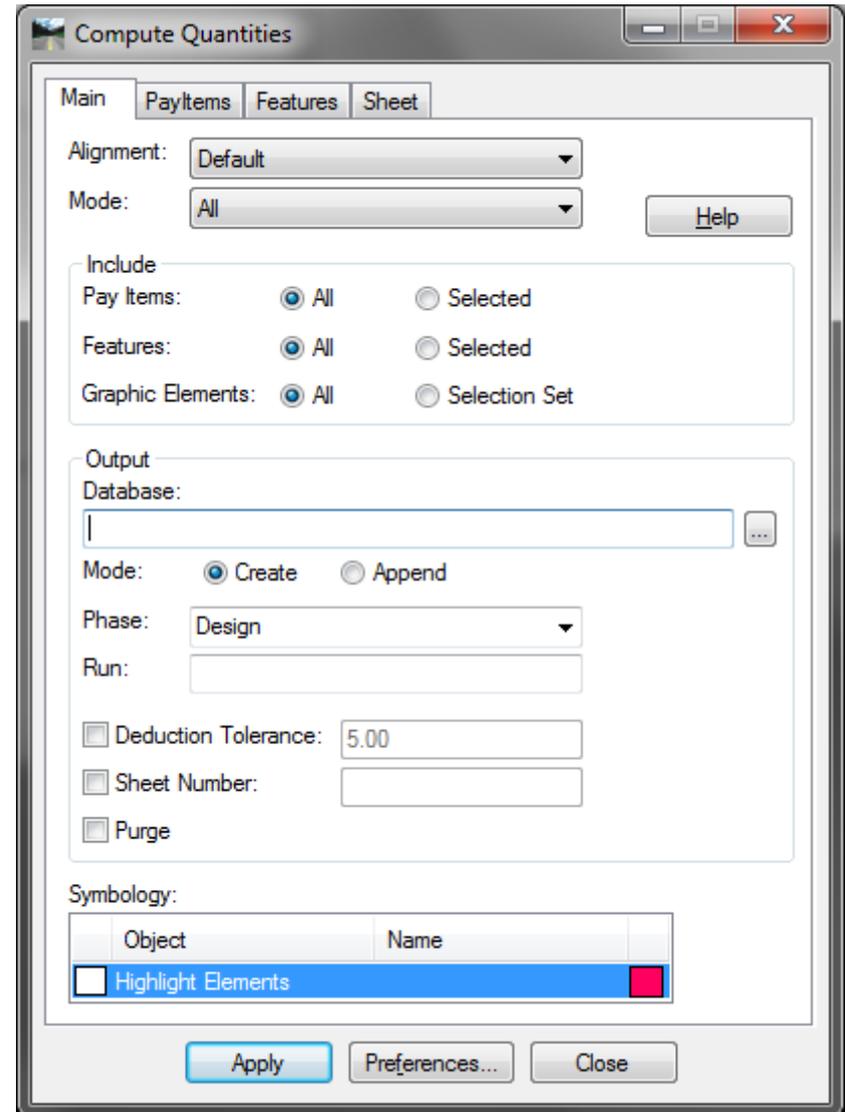
Overview of Quantity Manager

- Direct interface.

- Application for managing all quantities.

- Organizes quantities by pay items, stations, units of measure, etc.

- Provides for special rounding and lump sum items.

- Supports CAD quantities as well as non-graphic quantities.

- Interfaces with Trns*port.

- Custom report capabilities in PDF, HTML and CSV formats.

- Cost estimates & cost comparisons.

Accessing Quantity Manager

Start InRoads or if in MicroStation select Applications > InRoads Group.

Select Quantity manager from the InRoads Group Menu

If the database was created in Quantity Manager select *Open and choose the previously created database. If not select New, to create a new database.*

Note: The project specific pay items database can be added to the project defaults.

Also QM interfaces with SQL Server and Oracle too!

Quantity Manager Interface

Customizing the User Interface

The Quantity Manager interface can be customized to show specific quantity information in various display formats. This allows the user to easily review and sort their quantities.

View formats:

- Tree view
- Table view
- Horizontally tiled panes
- Adjustable windows and sashes
- Show/Hide/Adjust/Move columns
- Sort-able columns
- View quantities by phase

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Customizing the User Interface

Primary Functions of Quantity Manager

- Develop Cost estimates and cost comparisons
    - Support CAD and non-graphic quantities.
    - Organize quantities by pay item, station, and/or element information.
    - Assign Funding/Payer Parameters
    - Round quantities and designate lump sum items.
    - Allow manual entry of quantities and modifications to quantities.

- Import Trns*port pay items & funding sources.

- Export quantities to Trns*port.

- Create quantity reports

Funding

- Funding is defined by payers (the funding source) and the funding rule (the list of payers and their corresponding participating percentages).

- The Funding dialogs are accessed from *Funding > Payer* and *Funding > Rule.*
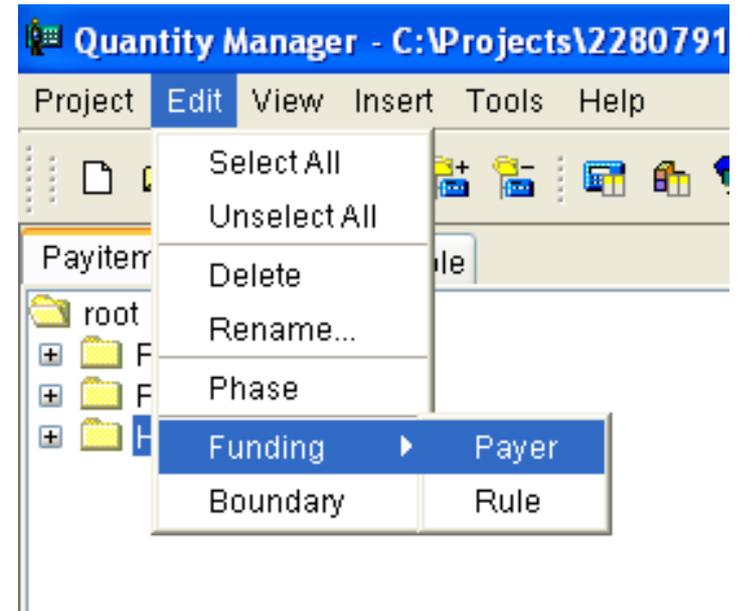
Creating Payers
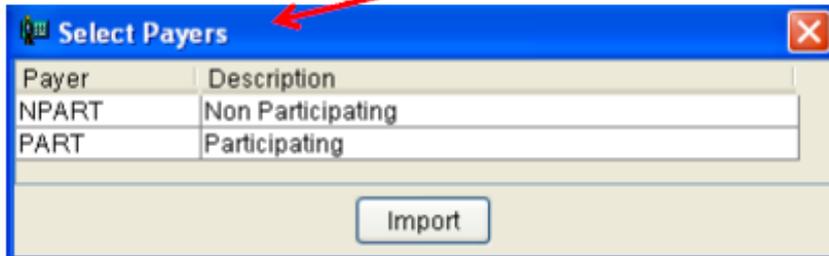
- Funding is defined by payers (the funding source) and the funding rule (the list of payers and their corresponding participating percentages).

- The Funding dialogs are accessed from *Funding > Payer* and *Funding > Rule.*

Creating a Funding Rule

- Assign percent of participation to existing payers. Note: The total participation for a rule should add up to 100%. If the total participation doesn't add up to 100% it will warn, but allow the definition of the rule.

- Assign station range of influence if applicable, per payer.

- A default funding rule can be applied to each phase.

Creating a Funding Rule

- Click on the new icon and define the name of the rule, then assign the payer participation and any station restrictions.

Note: If the same payer participation is needed outside the station range, an additional funding rule must be created.
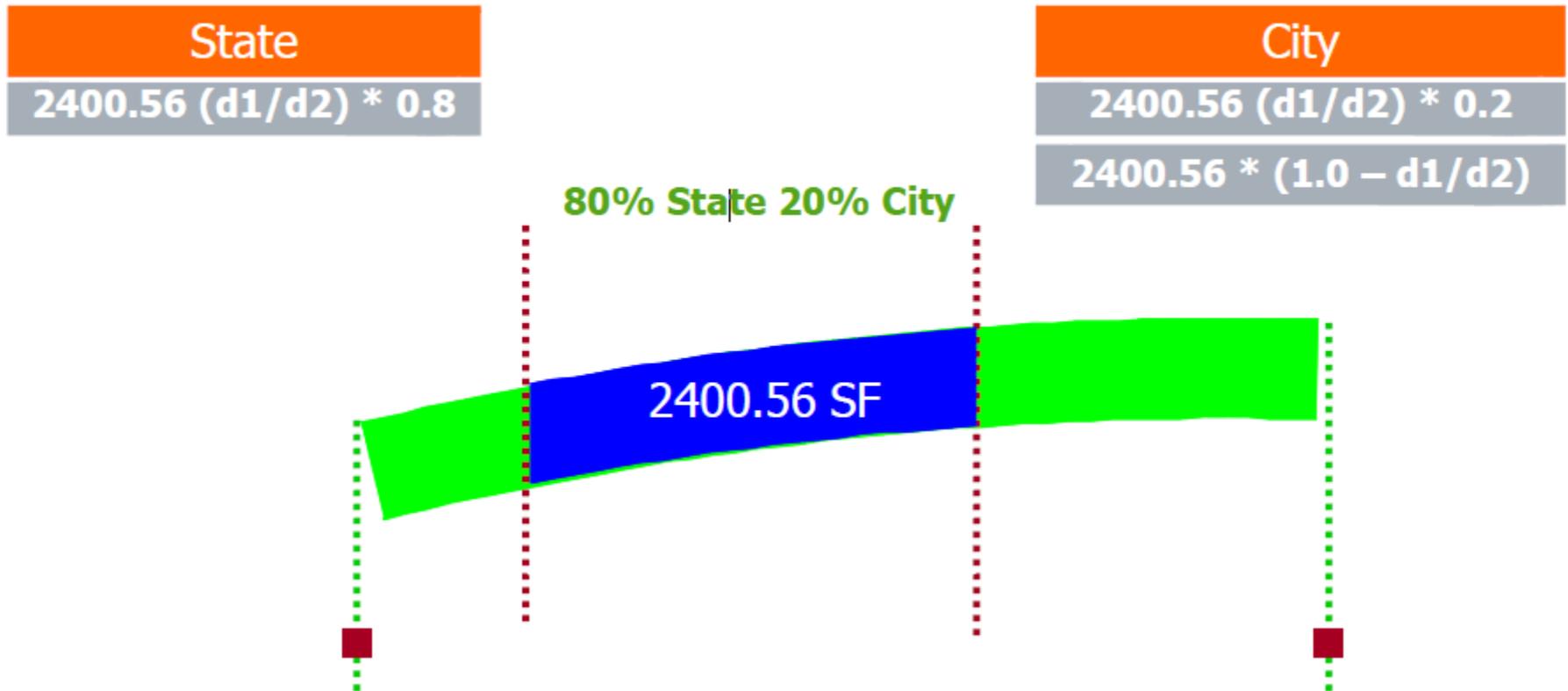
Funding Computation by Payer

State

2400.56 * 0.8 =
1920.448 SF

80% State

20% City

City

2400.56 * 0.2 =
480.112 SF

2400.56 SF

Funding Computation by Payer Based on a Station Range

State

2400.56 (d1/d2) * 0.8

City

2400.56 (d1/d2) * 0.2

2400.56 * (1.0 − d1/d2)

80% State 20% City

2400.56 SF

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Phases

Phase is a way to group quantities. A phase has a default funding rule applied.

- Example phases:
  - DesignEstimate

- When the quantities are imported into Trns*port they must be assigned the phase name DesignEstimate.
  - Preliminary
  - Construction Final
  - Bid Estimate…

- Total quantities of different phases may be compared.

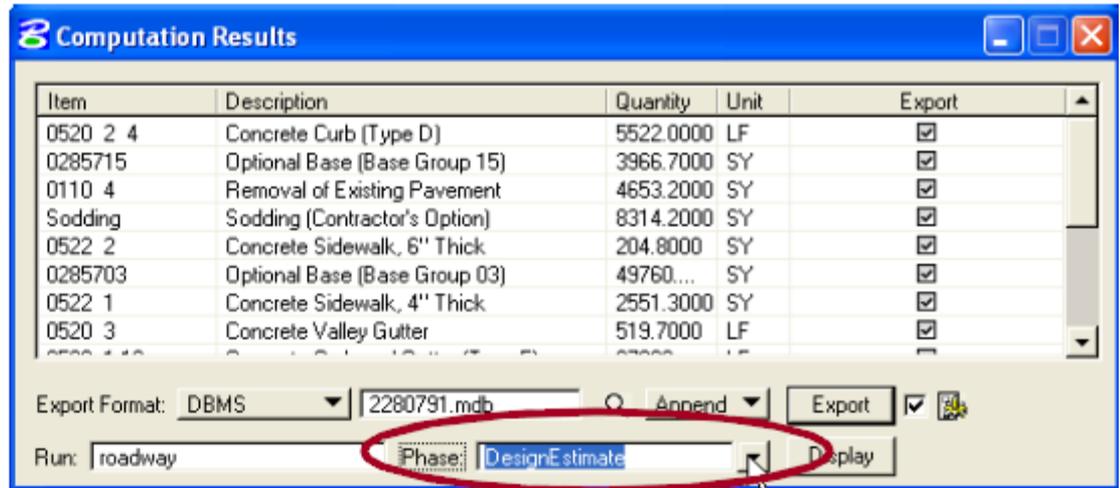- Reports are generated based on phases.
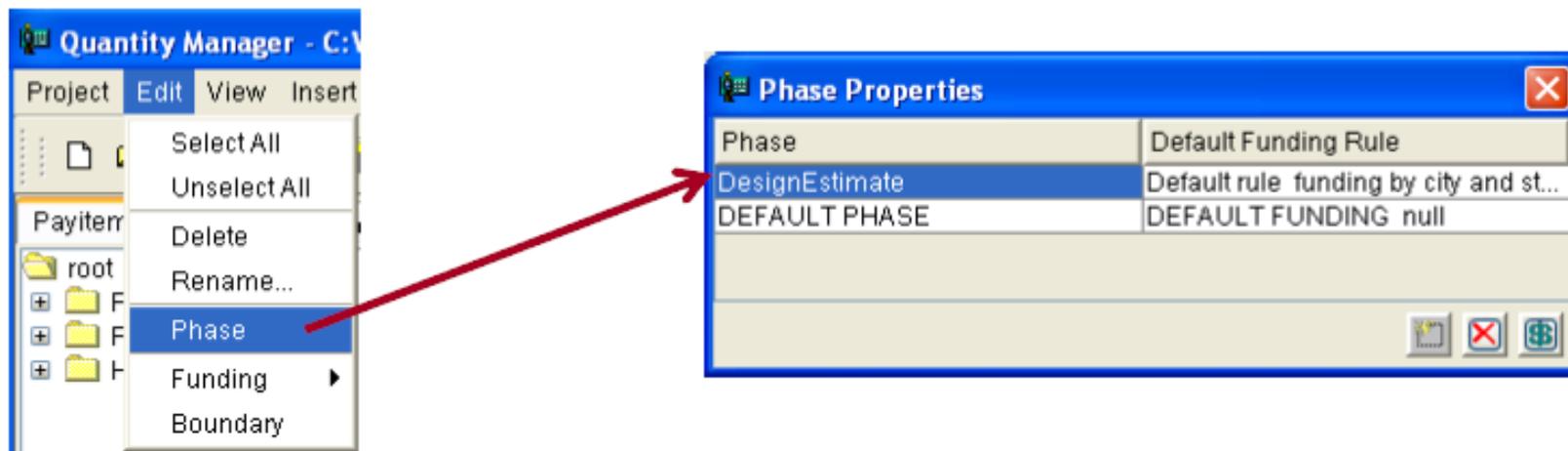
Phases
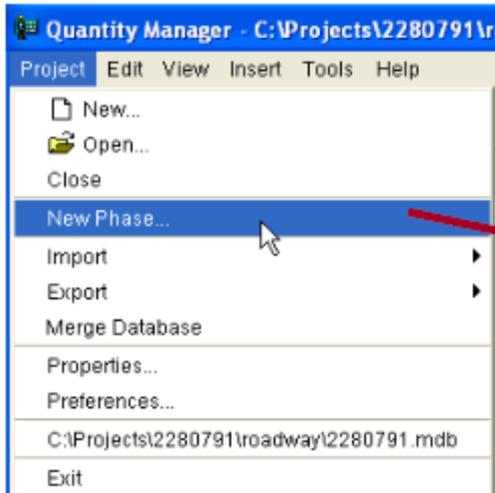
Phases can be defined in QM by selecting *Project > New Phase* or...
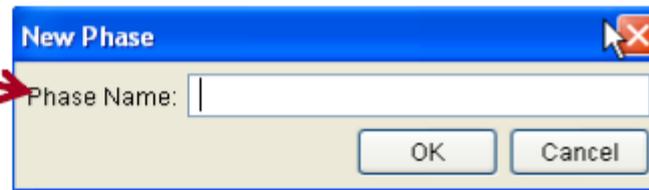
The phase used is automatically defined in Quantity Manager.
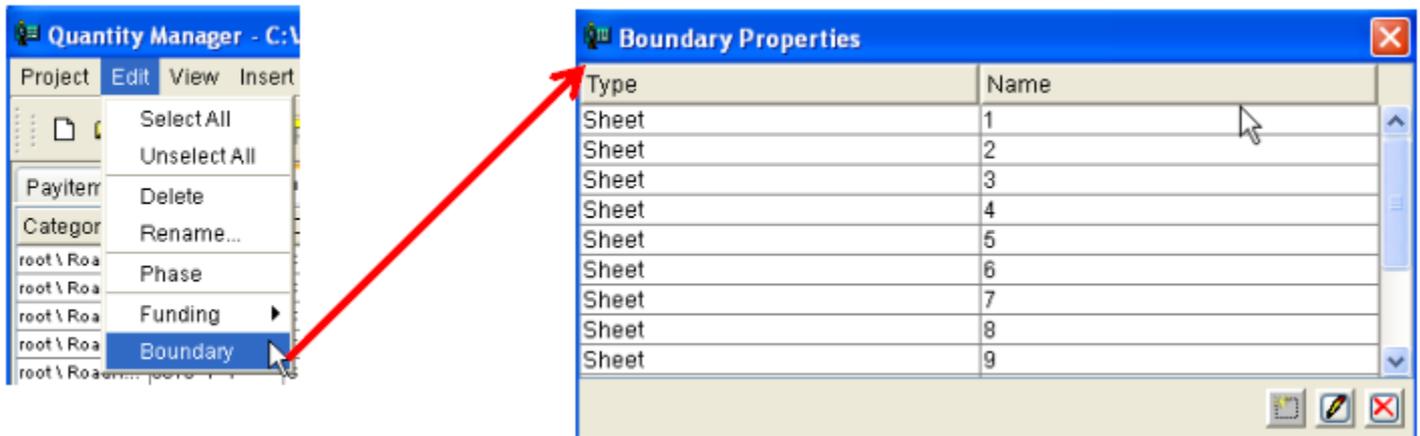
Phases Properties

The phase properties defines the funding rule that is automatically applied to the quantities grouped in that particular phase.

Note: The phase assigned to a quantity can be changed later if necessary.

Boundary

- In addition to grouping quantities by phases, quantities can be grouped by a boundary.
- This is normally defined when computing quantities. Whenever sheet, by fence, by station range, by view, or by boundary element is used as the "extents" this boundary information is passed to Quantity Manager.

Boundary

The user can review quantities graphically by activating the Graphic viewer from the tools menu.

Steps to Manually Enter Quantities

1. Create a category (if needed).

2. Create the pay item (this should be selected from the pay items imported from Trns*port.

3. Add the quantities to the pay item.
   1. Define the general properties.
   2. Define the location properties.
   3. Add adhocs if needed.

Categories Entered Manually

All Pay Items reside under a Category. The user can create a new category by right clicking on a folder in the pay item view or by selecting Category from the Insert menu.
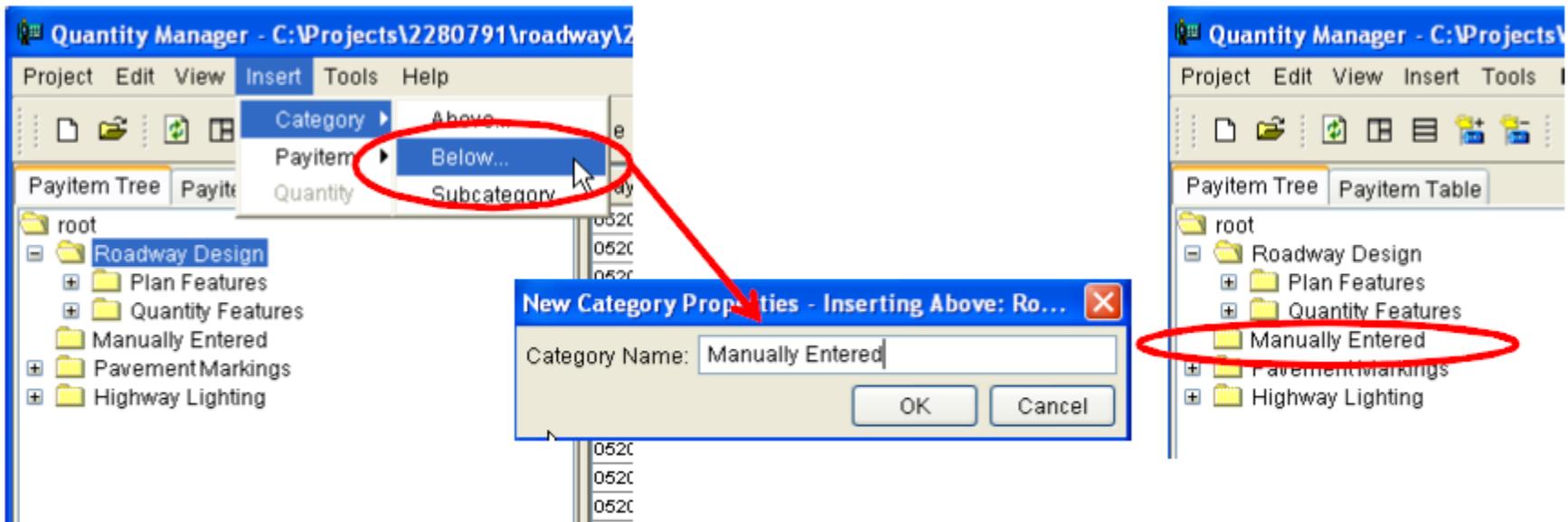
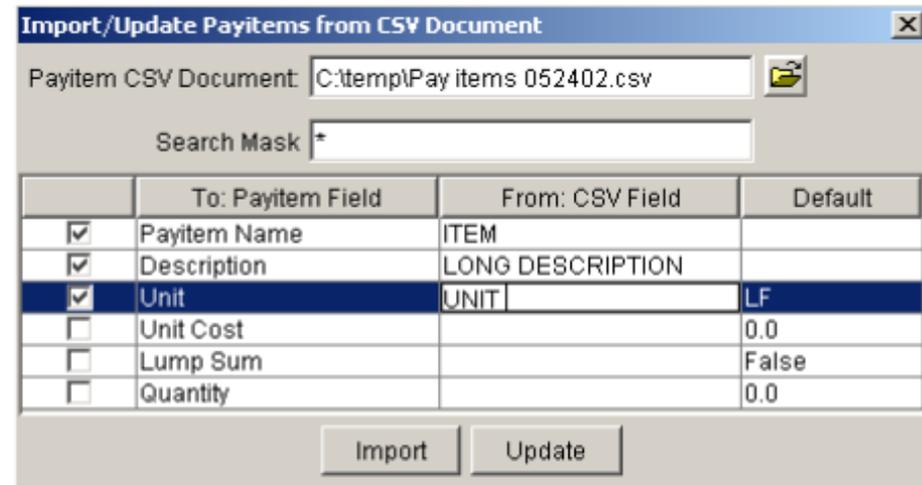# Importing Pay Items from a CSV File
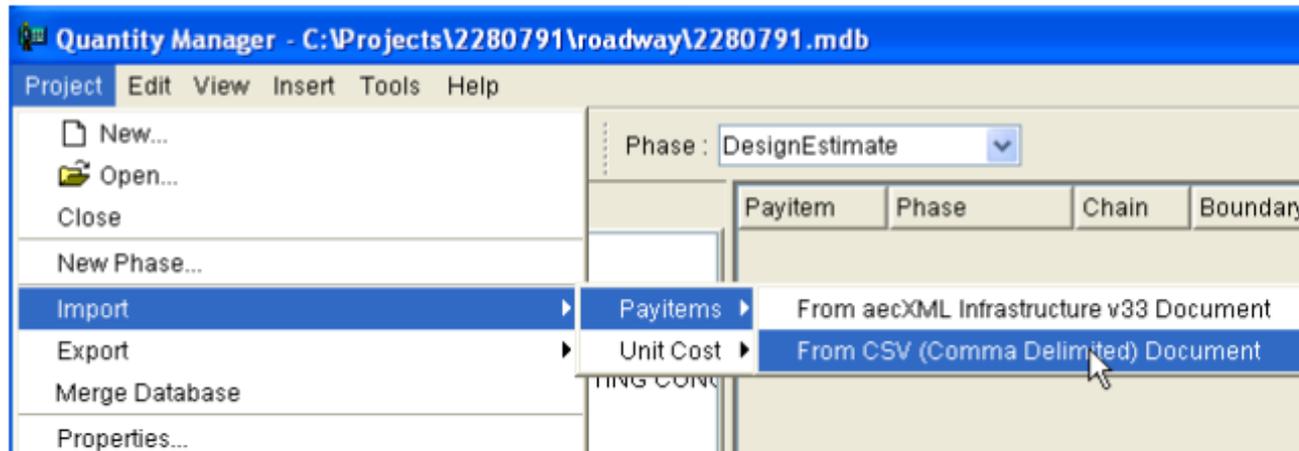
• Select
File > Import >Pay Items >From CSV

Adding Quantities to a Pay Item

1. Select Quantities > Pay Item Manager
2. Double click on the Pay Item you want to edit

Quantity General Properties

The required information to tell Quantity Manager what type of quantity it is and how it is to be reported must be entered.

Measurement basis	Each/Linear/Area (Linear)
Measurement value	Count/Length/Area (L=23.5)
Computed quantity	Q = L*w/9 = 10.44 SY
Rounded quantity	Q = 11 SY (if rounding = 1)
Deduction quantity	
Net quantity	net Q = rounded Q – deduction Q

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Quantity Properties

- Select the elements to be quantified

- Select the output database

Quantity Manager – Summary Overview

Bentley Civil Applications

Computed **INSIDE** Design Application

Compute Quantities

Pay Items + Design Data

InRoads Quantities

Quantities Database (MDB)

- Quantity Manager is a standalone application
- Quantity calculation methods are dependent on design application
- Quantity Manager runs **INDEPENDENT** of design applications

Quantity Manager
Review Quantities
Generate Quantity Reports
Export to Trns*port

Runs **OUTSIDE** of Design Application

Demo

- Lets peek under the hood of quantity manager!