

# **Concrete03**

## **User's Guide**

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## Concrete03

Concrete03 is the new program used for calculation Incentive/Disincentive Payments on CDOT's Portland Cement Concrete Pavements. The calculations follow CP 71 and the Standard Special Provisions, Revisions to Sections 105, 106, & 412. Don Flynt, a former tester in R4, has agreed to work with the Pavement Management Unit to create new, easier to use, and better working software.

### OVERVIEW

These instructions are intended to be a guide to all areas of the program. They will walk the user through inputting a new project, new mix design, and adding test data into the program. Additional information about the program is also provided.

### SPECIFICATIONS

This program is based on the Standard Special Provisions, Revisions of Sections 105, 106, & 412 Quality of Portland Cement Concrete Pavement (Compressive Strength Criteria) and Revisions of Sections 105, 106, & 412 Quality of Portland Cement Concrete Pavement (Alternative Strength Criteria). Please review the specifications for details on the setup of this program.

### User's Guide Updates

Future revisions to this guide will be maintained on CDOT's web site. Concrete03 contains a link to the website. To get to the link, go to "User's Guide" under "Help" on the menu bar for the program. The User's Guide is also available from CDOT's External web site at the following address: [www.dot.state.co.us/ECSU/Documents.asp](http://www.dot.state.co.us/ECSU/Documents.asp) Check the User's Guide from time to time for any updates.

## **BEFOR YOU BEGIN!!!**

### **SYSTEM REQUIREMENTS**

Please make sure your computer meets these minimum hardware/software requirements prior to installing Concrete03.

|                  |   |
|------------------|---|
| Processor        | Pentium                                     |
| Operating System | Windows 95, Windows NT 4.0, or Windows 2000 |
| Hard Drive *     | 15 MB (25 MB required for installation)     |
| RAM              | 64 MB                                       |

\* Reduce hard drive requirements by 10 MB if either Concrete03 or Asphalt 98 are currently installed on your computer.

The following chart indicates what Screen Resolution/Font Size combinations can be used for Concrete03...

| Resolution  | Font Size |       |
|-------------|-----------|-------|
|             | Small     | Large |
| 640 x 480   | No        | No    |
| 800 x 600   | Yes       | No    |
| 1024 x 768  | Yes       | Yes   |
| 1152 x 864  | Yes       | Yes   |
| 1280 x 1024 | Yes       | Yes   |
| 1600 x 1200 | Yes       | Yes   |

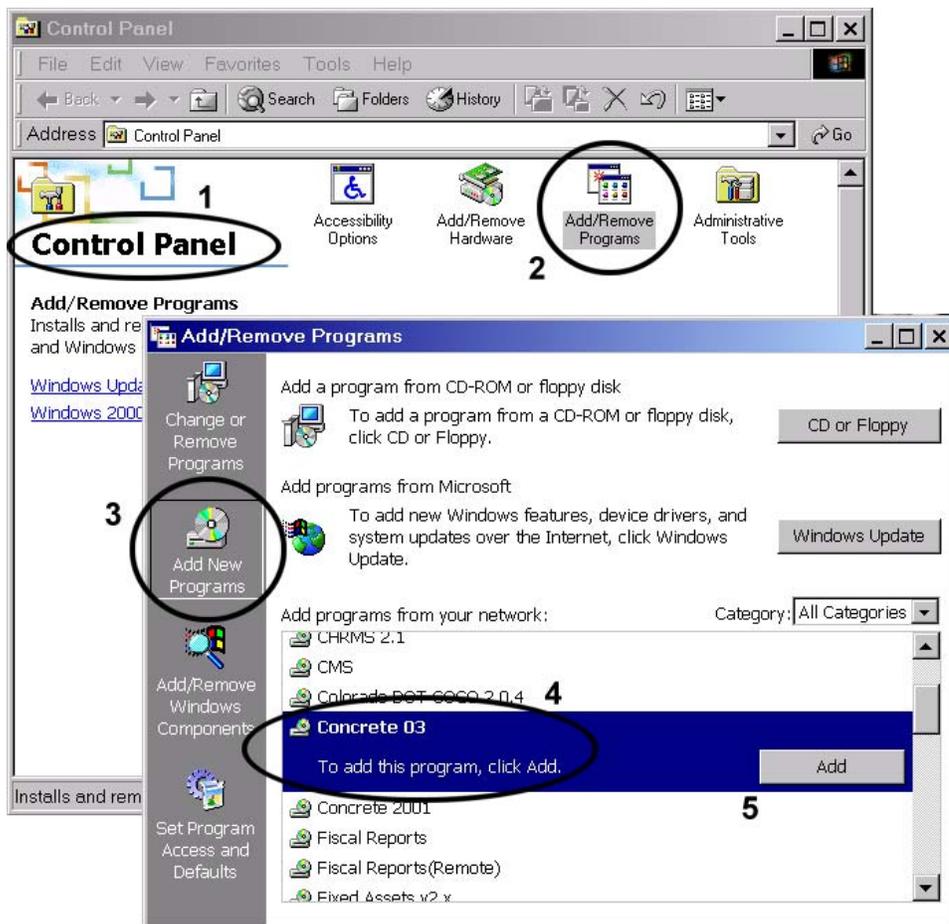
To check or change these settings, right click the Windows desktop, click *Properties*, and select the *Settings* tab.

## DOWNLOADING AND INSTALLING THE PROGRAM

### CDOT Computer:

Click on **Start --> Settings --> Control Panels --> Add/Remove Programs**.

Click on **Add New Programs** in the gray bar on the left (the default is *Change or Remove Programs*).



### Steps Required to Download the Program

In a relatively short time, all programs ready for installation are displayed.

Select Concrete03 from the listing and click on the **Add** button. If the button displays the word *Install* rather than *Add*, you have previously installed the program.

If you have problems with the install contact the Help Desk at 303 757-9317.

## **Non CDOT Computer:**

Asphalt03 can be downloaded at the following web site: [Http://www.dot.state.co.us/ECSU/Download.asp](http://www.dot.state.co.us/ECSU/Download.asp)

To get there from CDOT's home page, <http://www.dot.state.co.us/>, do the following steps, Go to: Planning & Construction → Planning & Construction Main → Design & Construction Project Support, • Software → Software, • Engineering Customer Support Unit (ECSU) → Download Area.

Follow the instructions on the download page to complete the installation.

If you have problems with the install contact the Help Desk at 303 757-9317.

**Note:** Windows 95, 98, and ME users. Microsoft Installer 1.1 or better MUST be installed prior to installation of Asphalt03. CDOT's program download site listed above contains a link to Microsoft Installer. Microsoft Installer for Windows 95, 98, and ME can also be downloaded by clicking on the following <http://www.microsoft.com/downloads/release.asp?releaseid=32831>

## **GENERAL INFORMATION - COMPUTER**

*Blocking or Highlighting* – Selecting text, numbers, or the entire contents of a box by clicking and dragging the cursor over the desired selection. Useful in Asphalt03 for replacing the entire contents of a box without having to use the delete or backspace keys. Highlight the entire contents of the box then replace it by typing the new data.

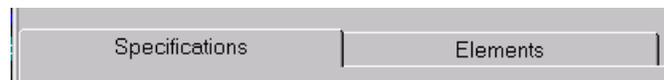
*Button* – A little clickable box on the computer screen that is a shortcut for a command. Clicking on the Buttons in Asphalt03 brings up the various entry screens.

*Click* (pressing the left button on the mouse) – Clicking is used to place the cursor, select an object on the screen, or a menu option. Use the mouse to move around within the program. Clicking places the cursor at a desired location on the screen, runs macros associated with a button, or is used to select an object from a list.

*Close Button* – The button in the upper right of each windows screen which looks like a square with an "X" in it, (☒). Clicking on the close button exits the program, sub program, or screen that is running.

*Drop Down Arrow* – The solid black triangle at the end of an entry box which points down, (▼). Clicking on a drop down arrow displays the selection list for that item. Select an object from the list by clicking on it.

*Tab (pressing the tab key)* – Pressing the tab key moves the cursor to the next entry box. Use the tab key after entering information to move to the next entry box. Pressing the tab key cycles through the entry boxes. Useful for entering information in Asphalt03.



### **Folder Tab**

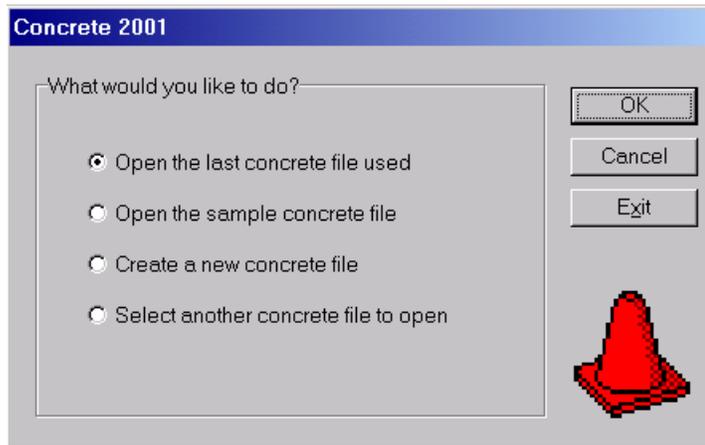
*(those depicted like a file folder tabs on the screen)*

Works like a button. Used as an easy way of switching between screens in the program.

## STARTING THE PROGRAM

### Using the Menus

Click on the Windows *Start* button  
Highlight *Programs*  
Highlight *CDOT Applications*  
Click on the file *Concrete03*.



You will usually want to “Open the last concrete file used”.

**Note:** Please review the two sections that follow: “Organization of Data Within the Program” and “Creating New Concrete Files” for more details on the use of Concrete Files in the program.

### Creating a Shortcut to the Program

Click on → Start → Programs → CDOT Applications → Right Click on Concrete 03  
Click on → Send To → Desktop (Create Shortcut)



**Program Shortcut.**

## ORGANIZATION OF THE DATA WITHIN THE PROGRAM

The following is a quick overview of how the program organizes the information and the hierarchy used.

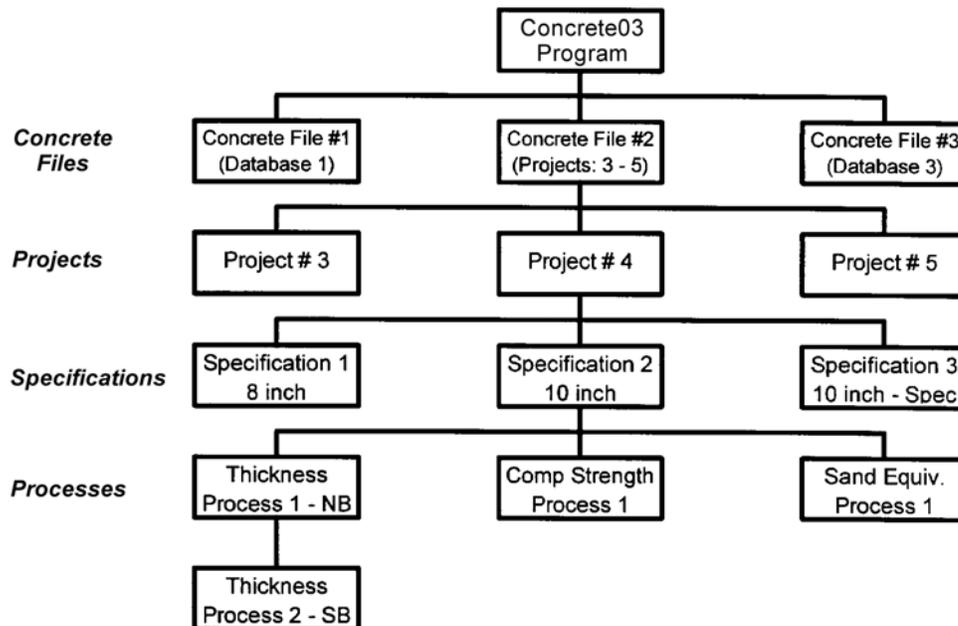
**Concrete Files:** Concrete03 maintains the project information in databases called Concrete Files. The program can contain multiple Concrete Files. Create and use as many Concrete Files as you need to organize your data.

**Note:** The nomenclature Concrete File is used in this program as the name for databases associated with this program. In some cases the term database still appears in the program and this guide. Until all references have been corrected the two terms can be used interchangeably.

**Project:** All information specific to one project is maintained in a Project File.

**Specification:** Concrete03 uses Specifications to track different paving Items and mix designs used in a project. Different paving Items have price differences. By separating the test results by Specification, therefore the Item, the test results can be grouped correctly. Additionally, a project can contain more than one mix design. Grouping the test results by Specification allows the tests to be associated with the correct mix design when more than one mix design is used in a single Item.

**Process:** All tests will be assigned to a process. Processes are a way of grouping like tests together. Each element will have at least one process defined for it. Specifications may have more than one Process assigned to it depending on the nature of the work. Refer to the Standard Special Provision for the project, section 105.03 (a) for more information on processes.



Organization of data within Concrete03

## CREATING A NEW CONCRETE FILE

**Important:** The “Sample” Concrete File, database, that comes with the program is read only. A new project **Can Not** be added to the Sample Concrete File. You Must add at least one new Concrete File to the program in order to add new project information.

### Adding a New Concrete File to the Program

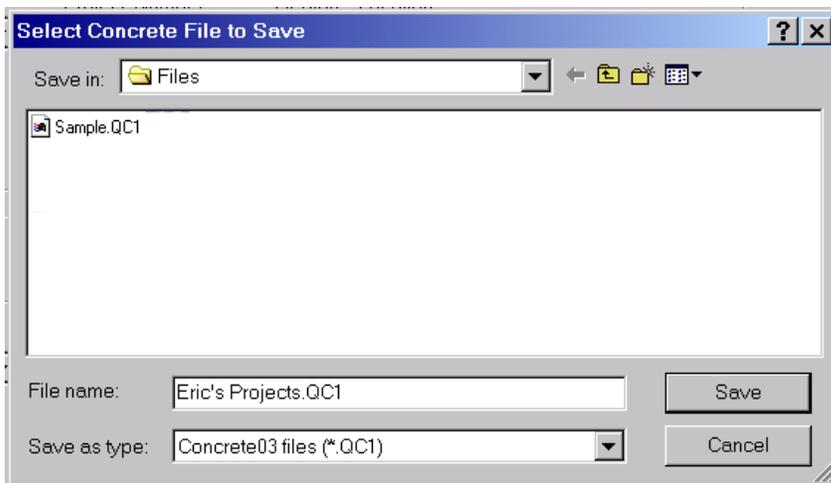
Close the currently opened Concrete File.  
Click on the Close icon in the toolbar.



Open a new blank Concrete File.  
Click on the Create a New Concrete File icon in the toolbar.



A New Blank Concrete File will be created.  
“Save” the New Concrete File with a new personalized name.  
Click on “File” in the menu bar.  
Click on “Save As”.  
Enter a name for the new Concrete File.  
Click on the “Save” button.



**Saving a New Concrete File with a Personalized Name**

## CONCRETE03 MENU BAR



The following describes each of the options associated with the menu bar.

|                      |                                      |   |  |
|----------------------|--------------------------------------|---|--|
| <b>File</b>          | <i>New</i>                           | Creates a new empty Concrete File.  |  |
|                      | <i>Open</i>                          | Opens a saved Concrete File.  |  |
|                      | <i>Close</i>                         | Closes the currently opened Concrete File.  |  |
|                      | <i>Save</i>                          | Saves changes made since the last save or undo. Creates an auto backup file of the open Concrete File.  |  |
|                      | <i>Save As</i>                       | Saves the open Concrete File with a new name.   |  |
|                      | <i>Exit</i>                          | Exits the program.  |  |
| <b>Edit</b>          | <i>Undo</i>                          | Undoes changes made since the last Save or Undo.  |  |
| <b>Project</b>       | <i>Add</i>                           | Adds a new project to the current Concrete File.  |  |
|                      | <i>Edit</i>                          | Edits the information in the current project.   |  |
|                      | <i>Delete</i>                        | Deletes the current project and all of the testing information.   |  |
|                      | <i>Reports</i>                       | Brings up the Reports Screen.   |  |
|                      | <i>Export/Import</i>                 | Exports a project from a Concrete File and creates a new Concrete File that contains the project. Imports a project into an existing Concrete File. |  |
| <b>Specification</b> | <i>Add</i>                           | Adds a new Specification to the project.  |  |
|                      | <i>Edit</i>                          | Edits the current Specification information.  |  |
|                      | <i>Delete</i>                        | Deletes the current Specification.  |  |
| <b>Element</b>       | <i>Process</i>                       | Add   | Adds a new Process to the current Element.                             |
|                      |                                      | Edit  | Edits the current Process information.                                 |
|                      |                                      | Delete  | Deletes the current Process  |
|                      |                                      | Recalculate MQL   | Recalculates the MQL after changes have been made to the testing data. |
|                      | <i>Test</i>                          | Add   | Adds a new Test.   |
|                      |                                      | Edit  | Edits the current Test's information.                                  |
|                      |                                      | Delete  | Deletes the current Test.  |
|                      |                                      |   |  |
| <b>Tools</b>         | <i>Quality Level</i>                 | Starts a subprogram that will calculate a Quality Level based on input information.   |  |
|                      | <i>Random Schedule</i>               | Starts a generic random number generating program used for generating random number schedules.  |  |
|                      | <i>F &amp; t Test</i>                | Starts an Excel program that does the F & t Test calculations.  |  |
|                      | <i>Extract/Archive Data Files</i>    | Currently not operational.  |  |
|                      | <i>Restore/Backup Concrete Files</i> | Allows the user to restore and backup Concrete Files.   |  |
|                      | <i>Options</i>                       | Column Widths   |  |
| <b>Help</b>          | <i>User's Guide</i>                  | Contains a link to the program's User's Guide.  |  |
|                      | <i>About</i>                         | Displays the program information.   |  |

## Toolbar Icons



**Create New Concrete File** – Adds a New Blank Concrete File, database, into the program.

**Open a Concrete File** – Opens a previously created Concrete File.

**Close the Concrete File** – Closes the currently opened Concrete File.

**Save Changes** – Saves all changes made since the last Save was made.

**Undo Changes** – Will undo all changes back to the last time you Saved information.

**Reports** – Opens the “Reports Options” screen.

**Exit** – Stops the program from running.

## CONCRETE03 MAIN SCREEN

The screenshot shows the Concrete03 software interface. The title bar reads "Concrete03 - C:\A\QCQA Backup Data\C2K Data Backup\Erics.c08". The menu bar includes File, Edit, Project, Specification, Element, Tools, and Help. The interface is divided into several sections:

- Project Information:** Located at the top left, it contains fields for Project Code (55001), Project Number (NH 0761-003), Region (4), and Location (I-76 East). It also includes fields for Supplier (Real Concrete), Comment (Mainline Paving), and Special Provision (2000-11-30, Quality of PCCP (Compressive Strength)). Buttons for Add, Edit, and Delete are present.
- Process Information:** Located on the left side, it features a Process # dropdown (1), a Comment field, and buttons for Add, Edit, and Delete. Below this is a Specification # field (501-10) and an Item desc. field (PCCP 10 inch). A Spec. comment field contains "10 inch Mix 1".
- Testing Information:** Located on the right side, it displays a table of tests. The table has columns for Process, Test #, Date Placed, Date Tested, Quantity (sq yd), and Thickness (in). Below the table are fields for Test #, Date Tested, Thickness (in), Location, and Samp. by. At the bottom, there are summary statistics: Total Tests (4), MQL Tests (4), Mean (10.200), and MQL (100.00). Buttons for Add, Edit, and Delete are also present.
- Folder Tabs, Test Elements:** Located in the center, it shows a set of tabs for Specifications and Elements. The Elements tab is active, showing sub-tabs for Pavement Thickness, Compressive Strength, Flexural Strength, and Sand Equivalent.

The status bar at the bottom indicates "Database: OPEN", "Project count: 4", and "Units: USA (non-metric)".

The Main Screen is divided into four main areas. Each area has its own set of buttons that control functions related to that area.

**Project Information:** All the information related to a project is displayed at the top of the main screen. The buttons in the project area will: *Add* a new project into the database, *Edit* project information that has been previously entered, & *Delete* an entire project and all of its testing information.

**Process Information:** Information related to a process is displayed here. There are buttons for Adding, Editing, & Deleting processes. Information relating to the Specification the Process is associated with is also displayed here.

**Test Information:** Information about the tests are displayed in this area. Tests that have been entered into the database are displayed in the window at the top of this area. Use the scroll bar on the right of the list to move through the entire list. The current test's information is displayed in the lower half of this area. To display the test information for a different test select it from the list above. Scroll through the list and highlight the test you want to display the information for. The bottom part of this area shows the Moving Quality Level (MQL) information. Buttons associated with this area are Add, Edit, & Delete tests.

**Folder Tabs:** There are two folder tabs on the main screen. The folder tabs work like a button and switch between the Specifications and Elements screens.

## Specification Screen

The Main Screen with the Specifications folder tab selected.

The screenshot displays the 'Concrete03' application window. The 'Specifications' tab is selected, showing the following data:

| Specification # | Item                                  | Criteria                |
|-----------------|---------------------------------------|-------------------------|
| 501-12-M2       | 412-01200 Concrete Pavement (12 inch) | Compressive Strength    |
|                 | Class: P Pavement 4200 psi            | Comment: 12 inch, Mix 2 |

**Unit Price Section:**

| Price                    | Quantity   |
|--------------------------|--|
| Place (\$/sq yd): 61.00  | Volume (cu yd): 0                                    |
| Furnish (\$/cu yd): 0.00 | Area (sq yd): 0                                      |
| Unit (\$/sq yd): 61.00   | <input checked="" type="checkbox"/> Final quantities |

**Plan Value Section:**

| Thickness (in) | Compressive (psi) |
|----------------|-------------------|
| 12.00          | 4200              |
| Flexural (psi) | Sand Equiv. (%)   |
| 570            | 80                |

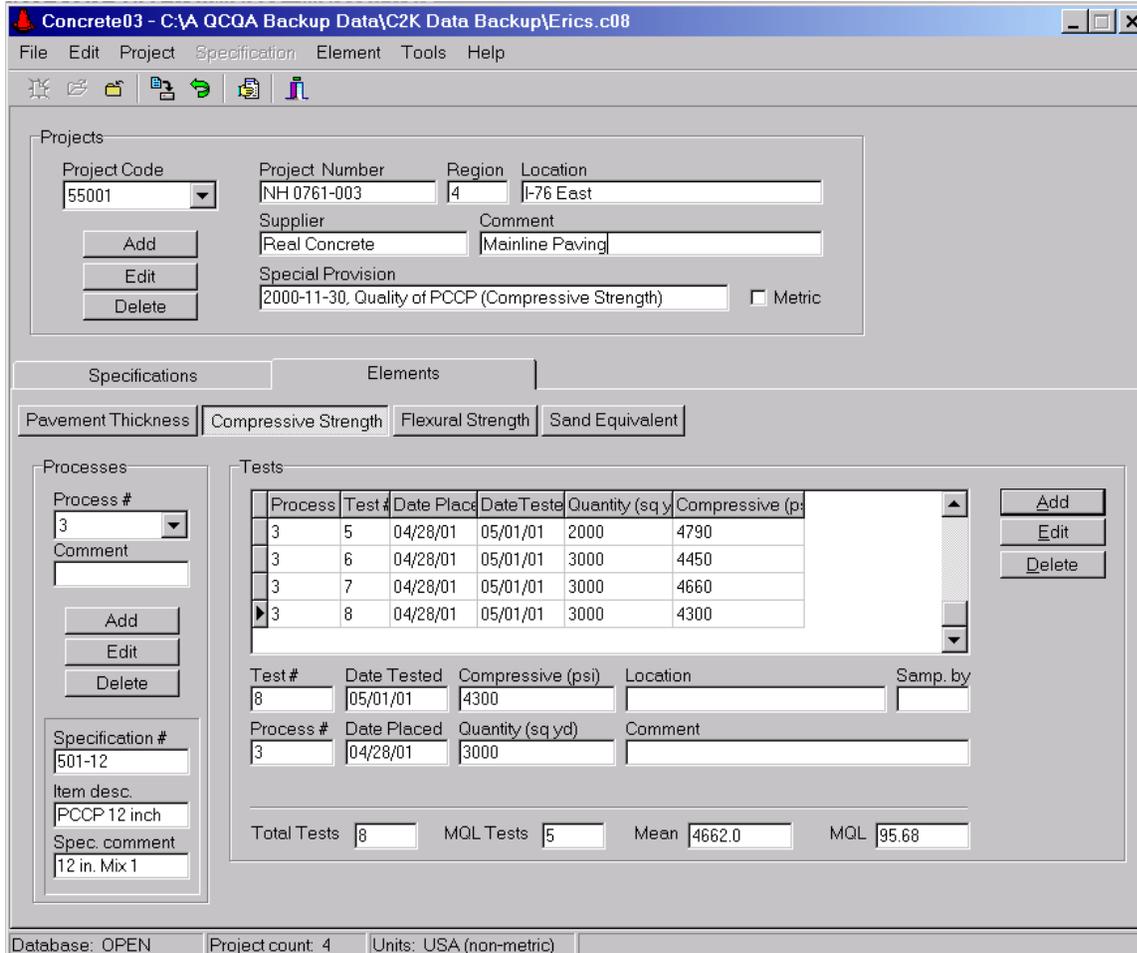
Additional options:  Include Thickness I/DP in report

Database: OPEN | Project count: 4 | Units: USA (non-metric)

**Specification Screen:** The Specification screen displays all the information associated with a Specification #. There are three buttons for Adding, Editing, & Deleting specifications. The program uses Specifications as a way of grouping Items or mix designs information together. See the section in this guide "Organization of the Data Within the Program" for more details on Specifications. Also refer to the Revision to Sections 105, 106, & 412 for information on Processes.

## Elements Screen

The Main screen with the Elements folder tab selected



Concrete03 - C:\A QCQA Backup Data\C2K Data Backup\Erics.c08

File Edit Project Specification Element Tools Help

Projects

Project Code: 55001  
Project Number: NH 0761-003  
Region: 4  
Location: I-76 East  
Supplier: Real Concrete  
Comment: Mainline Paving  
Special Provision: 2000-11-30, Quality of PCCP (Compressive Strength)  Metric

Specifications Elements

Pavement Thickness Compressive Strength Flexural Strength Sand Equivalent

Processes

Process #: 3  
Comment:

Tests

| Process | Test # | Date Placed | Date Tested | Quantity (sq yd) | Compressive (psi) |
|---------|--------|-------------|-------------|------------------|-------------------|
| 3       | 5      | 04/28/01    | 05/01/01    | 2000             | 4790              |
| 3       | 6      | 04/28/01    | 05/01/01    | 3000             | 4450              |
| 3       | 7      | 04/28/01    | 05/01/01    | 3000             | 4660              |
| 3       | 8      | 04/28/01    | 05/01/01    | 3000             | 4300              |

Test # 8 Date Tested 05/01/01 Compressive (psi) 4300 Location Samp. by

Process # 3 Date Placed 04/28/01 Quantity (sq yd) 3000 Comment

Total Tests: 8 MQL Tests: 5 Mean: 4662.0 MQL: 95.68

Database: OPEN Project count: 4 Units: USA (non-metric)

Each of the testing Elements is accessed through the Elements screen. In the Elements screen you can Add, Edit, & Delete testing information. The Elements screen is also where you Add, Edit, & Delete Process information. Click on the folder tab for Elements to display this screen.

**Element Buttons:** There are four buttons for selecting each of the testing elements. Clicking on one of these buttons displays the testing information for that element. Elements not related to a testing specification will be locked out.

**Processes:** Each Element used must contain at least one Process. A Process must be defined before testing information can be added into the program. Add Processes by first moving to the Element you want and then clicking the Add button in the Processes area of the screen. Additional Process information is displayed on the lower left of this screen. Refer to the Standard Special Provision for the project, section 105.03 (a) for more information on processes.

**Tests:** Testing information is added using the Elements Screen. There are three buttons in the Tests area used for Adding, Editing, and Deleting testing information. Tests that have been added to the program are displayed in the upper half of the Tests area. The current test's information will be displayed in the lower half of the screen.

## ENTERING PROJECT INFORMATION

*Program Warning Messages* - The first time you add information into the program you will see warning messages displayed. This includes the first time you add Projects, Specifications, Processes, and Tests. This is valuable information that you should read and understand before proceeding. It not only describes the way the program will handle the imputed information but also details various specification requirements. Refer to the Revision to Sections 105, 106, & 412 for the project for more information.

### **Adding A New Project**

Click on the "Add" button in the "Projects Area" of the Main Screen.  
Enter the "Project Code" for the project, Tab.  
Enter the "Project Number", Tab.  
Continue entering the project's information, use the Tab key to cycle through the input boxes.  
Select the QC/QA Special Provision for the project using the drop down list.  
Select Metric Units if applicable.  
Click the "OK" button when everything is correct.

**Add Project**

Project Code  
13783

Project Number    Region    Location  
NH 0761-003    4    I-76 East

Supplier    Comment  
Real Concrete    Mainline Paving

QC/QA Special Provision \*  
2003-03-06, Quality of PCCP (Compressive Strength)     Metric \*

\* Cannot be changed if there is at least one specification included in this project

OK  
Cancel

### **Adding a New Project**

## Adding a Specification:

Concrete03 uses Specifications to track different paving Items and mix designs used in a project. Refer to the section "Organization Of The Data Within The Program" of this guide and the Revision to Sections 105, 106, & 412 for additional details.

### How To:

Click on the "Specification" folder tab to move to the Specification Screen.  
Click on the "Add" button to add a new specification.  
Click on "OK" after reading the warning message.  
Enter a "Specification #". Any unique number/description can be used.

Specification #  
501-10

Item \*  
click arrow to select an item ->

Criteria \*  
Compressive Strength

Class \*  
P Pavement 4200 psi

Comment

OK  
Cancel

Select the correct paving "Item" using the dropdown list.  
Select the testing "Criteria" if applicable, Alternate Strength specification only.  
Add a "Comment" for the specification.

**Note:** Comments add valuable information to help track Items and mix designs. Use this box to help track the Specifications defined for the project.

Enter the "Unit Price" for the Item.

The default Plan Values should always be correct. You should not have to change these.  
Click "OK" when all the cells are correct.

Specification #  
501-10

Item \*  
412-01000 Concrete Pavement (10 inch)

Criteria \*  
Compressive Strength

Class \*  
P Pavement 4200 psi

Comment  
10 inch Mix 501

Unit Price

|                            |  |
|----------------------------|--|
| Price                      | Quantity   |
| Place (\$/sq yd)<br>23.22  | Volume (cu yd)<br>0                                  |
| Furnish (\$/cu yd)<br>0.00 | Area (sq yd)<br>0                                    |
| Unit (\$/sq yd)<br>23.22   | <input checked="" type="checkbox"/> Final quantities |

Plan Value

|                  |                     |
|------------------|---------------------|
| Thickness (in) * | Compressive (psi) * |
| 10.00            | 4200                |
| Flexural (psi)   | Sand Equiv. (%)     |
| 570              | 80                  |

Reset to default

Include Thickness /DP in report

\* Cannot be changed if there is at least one process using this specification

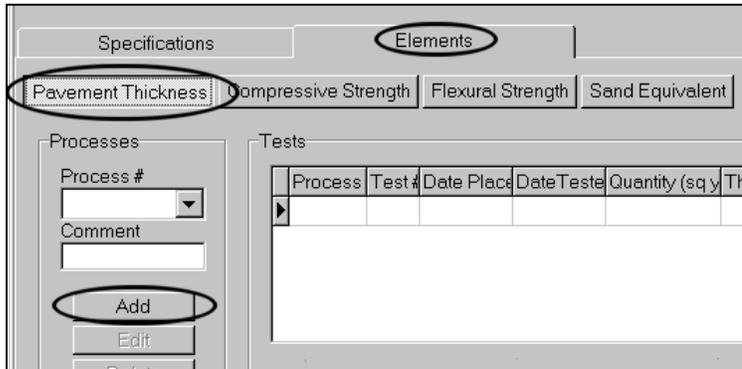
OK  
Cancel

## Adding a Process

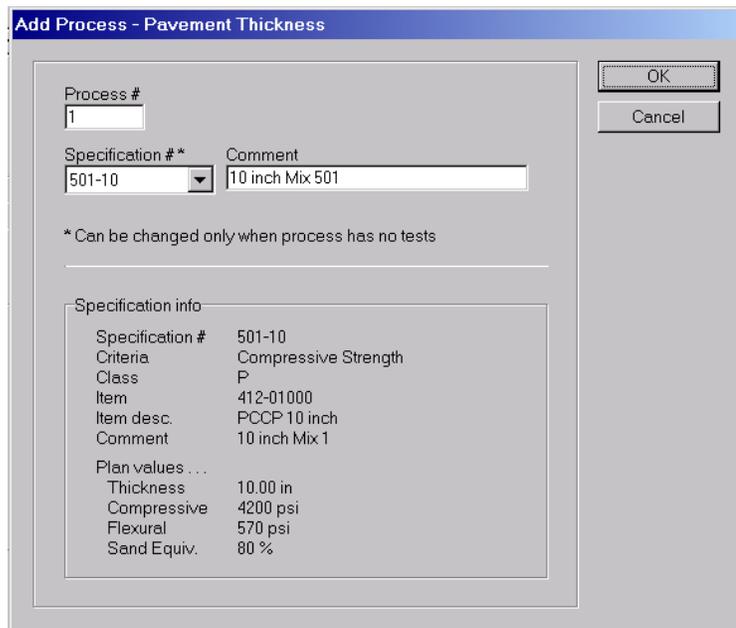
All test results will be assigned to a Process. Each element will have at least one process defined for it. Refer to the Standard Special for the project, section 105.03 (a) for information on processes.

### How To:

- Click on the Elements folder tab.
- Select the element by clicking on its button.
- Click on the Add button in the Processes area.



- Click on "OK" after reading the warning message, if displayed.
- The program will automatically displays the next available process number.
- Select a Specification using the drop down list.
- The information for the Specification will be displayed below once it is selected.
- Add a Comment to the Process. Comments help track the various processes in the project.
- Click on the "OK" button when done.



### Adding a Process

**Note:** New Processes can also be added while in the Add Test screen.

## Adding Test Results

Before adding a test result you must have added the Project, Specification, and a Process for the element into the program.

**Note:** Adding a test result is essentially the same in all of the testing elements. The following instructions can be used for any of the test elements.

Click on the Elements folder tab.

Select the element you want to add a test to by clicking on its button.

Select the Process to add the test to using the drop down list for Process #.

At least one process must be defined for each element, see earlier.

Click on the Add button on the right of the Tests Area.

Click "OK" after reading the warning messages, if displayed.

Enter the Date Tested. Tab.

Enter the test result. Tab

Enter additional information for the test into the remaining boxes as needed.

**Note:** Make sure that the minimum sampling frequency is being followed. Adjust the quantities as necessary. Refer to the project's Standard Special for details.

Click the "OK" button when finished.

To add additional tests repeat the above procedure.

Examples of the Thickness & Compressive Strength Add Test Windows:

| Test #    | Date Tested | Thickness (in)   | Location   | Samp. by |
|-----------|-------------|------------------|------------|----------|
| 1         | 5/5/03      | 10.10            | Lane no. 1 | TFC      |
| Process # | Date Placed | Quantity (sq yd) | Comment    |          |
| 1         | 5/1/03      | 5000             | Day one    |          |

**Thickness**

| Test #    | Date Tested | Compressive (psi) | Location       | Samp. by |
|-----------|-------------|-------------------|----------------|----------|
| 1         | 5/28/03     | 4310              | Day one        | TFC      |
| Process # | Date Placed | Quantity (sq yd)  | Comment        |          |
| 1         | 5/1/03      | 5000              | Mix Design 501 |          |

**Compressive Strength**

## EDITING

### Editing A Test Result

**Note:** Editing of test results is essentially the same in all of the testing elements.

Click on the Elements folder tab.

Click on the button for the desired Element.

Select the Process that contains the test result using the drop down list.

Scroll through the list of tests using the slide bar if necessary.

Highlight the test to be edited.

The screenshot shows a software window with two tabs: 'Specifications' and 'Elements'. The 'Elements' tab is active, and within it, the 'Compressive Strength' sub-tab is selected. On the left, there are sections for 'Processes' and 'Specification #'. The 'Processes' section has a dropdown menu with '3' selected. Below it are 'Add', 'Edit', and 'Delete' buttons. The 'Specification #' section has a text box with '501-12' and a 'Comment' box with '12 in. Mix 1'. The main area is a 'Tests' table with columns: Process, Test #, Date Placed, Date Tested, Quantity (sq yd), and Compressive (psi). The table contains four rows of data, with the third row (Process 3, Test # 5) highlighted in blue. To the right of the table are 'Add', 'Edit', and 'Delete' buttons. Below the table are two summary tables. The first has columns: Test #, Date Tested, Compressive (psi), Location, and Samp. by. The second has columns: Process #, Date Placed, Quantity (sq yd), and Comment. At the bottom, there are summary statistics: Total Tests: 8, MQL Tests: 5, Mean: 4672.0, and MQL: 95.15.

| Process | Test # | Date Placed | Date Tested | Quantity (sq yd) | Compressive (psi) |
|---------|--------|-------------|-------------|------------------|-------------------|
| 3       | 3      | 04/28/01    | 05/01/01    | 5000             | 4460              |
| 3       | 4      | 04/28/01    | 05/01/01    | 5000             | 5110              |
| 3       | 5      | 04/28/01    | 05/01/01    | 2000             | 4790              |
| 3       | 6      | 04/28/01    | 05/01/01    | 3000             | 4450              |

| Test # | Date Tested | Compressive (psi) | Location | Samp. by |
|--------|-------------|-------------------|----------|----------|
| 5      | 05/01/01    | 4790              |          |          |

| Process # | Date Placed | Quantity (sq yd) | Comment |
|-----------|-------------|------------------|---------|
| 3         | 04/28/01    | 2000             |         |

Total Tests: 8    MQL Tests: 5    Mean: 4672.0    MQL: 95.15

**Select the Test to Edit**

Click on the "Edit" button, OR Double Click on the test to edit.

The test information will be displayed in the "Edit Test" window.

Edit the information as needed in the boxes.

Click on the "OK" button to accept the changes.

The screenshot shows a window titled 'Edit Test - Compressive Strength'. It contains two tables of input fields. The first table has columns: Test #, Date Tested, Compressive (psi), Location, and Samp. by. The second table has columns: Process #, Date Placed, Quantity (sq yd), and Comment. To the right of the tables are 'OK' and 'Cancel' buttons.

| Test # | Date Tested | Compressive (psi) | Location | Samp. by |
|--------|-------------|-------------------|----------|----------|
| 5      | 6_/20/03    | 4760              | MP 281.3 | TFC      |

| Process # | Date Placed | Quantity (sq yd) | Comment |
|-----------|-------------|------------------|---------|
| 3         | 5_/23/03    | 2000             |         |

**Edit Test Window**

The changes will be added to the data base.

| Process | Test # | Date Place | Date Test | Quantity (sq y) | Compressive (psi) |
|---------|--------|------------|-----------|-----------------|-------------------|
| 3       | 4      | 04/28/01   | 05/01/01  | 5000            | 5110              |
| 3       | 5      | 05/23/03   | 06/20/03  | 2000            | 4760              |
| 3       | 6      | 04/28/01   | 05/01/01  | 3000            | 4450              |
| 3       | 7      | 04/28/01   | 05/01/01  | 3000            | 4660              |

Changes have been added to the data base

## Deleting A Test Result

**Note:** Deleting a test result is essentially the same in all of the elements.

- Click on the Elements folder tab.
- Click on the button for the desired Element.
- Select the Process that contains the test result using the drop down list.
- Scroll through the list of tests using the slide bar if necessary.
- Highlight the test to be Deleted.
- Click on the "Delete" button in the Tests area of the screen.
- Click on "OK" to confirm that you want to delete the test.

The test will be removed from the program.

## Editing Project Information

- Select the project to be edited using the drop down list in the Project Code box.
- Click the Edit button in the Projects area.
- The Edit Project screen will display all of the project's information.
- Edit the information as needed.
- Click the "OK" button to accept the changes.

Project Code: 55001

Project Number: NH 0761-003    Region: 4    Location: I-76 East

Supplier: Real Concrete    Comment: Mainline Paving

QC/QA Special Provision \*: 2000-11-30, Quality of PCCP (Compressive Strength)     Metric \*

\* Cannot be changed if there is at least one specification included in this project

## **Deleting A Project**

**Note:** Deleting a Project deletes all associated Specifications, Processes, and Test Results. Be sure this is what you want to do before deleting a project.

Select the project to Delete using the drop down list in the "Project Code" box.  
Click on the "Delete" button in the Projects area.  
Read the warning message.  
Click on the "OK" button to Delete the project.

## **Editing A Specification**

Click on the Specification folder tab to move to the Specification Screen.  
Select the specification to be edited by selecting it from the dropdown list.  
Click on the Edit button.  
The Edit Specification screen will display all the specification's information.  
All the information can now be edited unless the specification has been used in a process. If used in a process only parts of the specification's information can be changed.  
Click on the "OK" button to accept the changes.

## **Deleting A Specification**

**Note:** Deleting a Specification deletes the Specification and all associated Process and test information. Be sure this is what you want to do before deleting a specification.

Click on the Specification folder tab to move to the Specification Screen.  
Select the Specification to be deleted by selecting it from the dropdown list.  
Click on the Delete button.  
Click "OK" to confirm that you want to delete the specification.

## **Editing A Process**

Click on the Elements folder tab.  
Select the element by clicking on its button.  
Select the Process you want to edit by using the drop down list.  
Click on the Edit button in the Processes area.  
The Edit Process screen will display the Process information.  
Edit the information as needed.  
The Specification Number can not be changed if you have entered tests using that process.  
Click on the "OK" button to accept the changes.

## **Deleting A Process**

Click on the Elements folder tab.  
Select the Element by clicking on its button.  
Select the Process you want to delete using the drop down list.  
Click on the Delete button.  
Read the warning message when displayed.  
**Note:** Deleting a Process also deletes all associated tests.  
Click on "OK" to confirm that you want to delete the Process.

## REPORTS AND QUANTITY SUMMARIES

Concrete03 can create numerous types of reports. A report can be generated for any of the testing elements or for all elements. The amount of detail contained in the report can also be adjusted by selecting from the various check boxes. A review of the quantities associated with the Project, a Specification, and/or an Item can also be displayed through the reports screen. This is a useful tracking mechanism to ensure that the project's quantities meet the requirements of Revision to Sections 105, 106, & 412. A Final report for the project can be generated by clicking on the "Final Report" check box on the Reports screen.

### Reports - How To:



Click on the "Reports" icon.

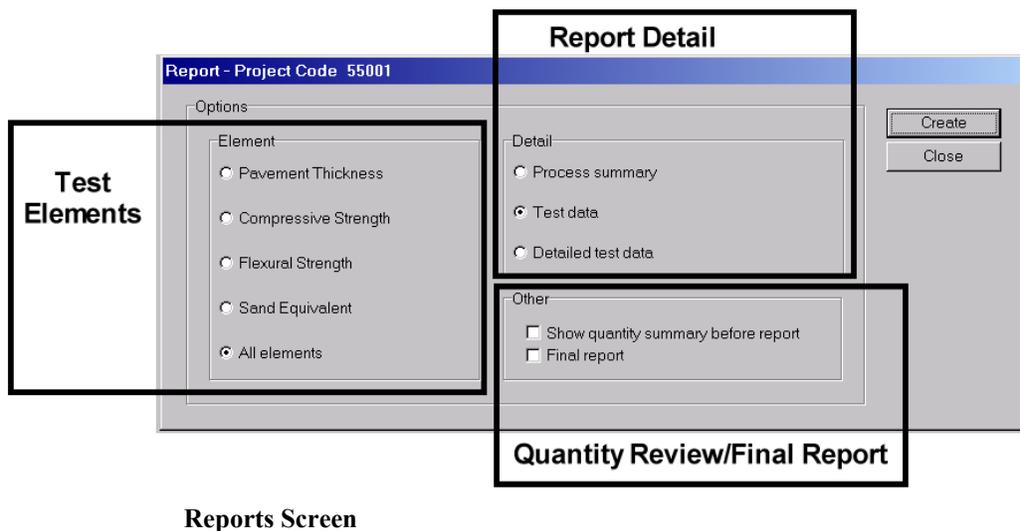
Select the test "Element" for the report.

Select the desired amount of "Detail" for the report.

Select "Show quantity summary before report", if desired.

Select "Final Report", if desired.

Click on the "Create" button to preview the report or go to the Quantity Review screens.



## **Checking Item Quantities for Compliance with the Standard Special Provision**

All test results will be assigned to a Process. Each element will have at least one process defined for it. Refer to the Standard Special Provision for the project, section 105.03 (a) for more information on processes.

The sum of the each of the element quantities for a single Item must be equal in order to calculate the Final I/DP for that Item. For example, if the sum of the quantities for the Compressive Strength element is 46,000 square yards for an Item then the sum of the element quantities in both the Sand Equivalent and Thickness elements must also equal 46,000 square yards, compressive strength criteria.

The following example demonstrates how the sum of the Process and Specification quantities must be equal for the elements within a single Item before the Final I/DP can be calculated.

### **EXAMPLE**

ITEM: 412-01200 (PCCP 12 inch)

| ELEMENT         | Thickness         | Strength       | Sand Equivalent |
|-----------------|-------------------|----------------|-----------------|
| Process 1       | 37,000 (mainline) |                |                 |
| Process 2       | 9,000 (ramps)     |                |                 |
| Specification 1 |                   | 31,000 (mix 1) | 31,000 (mix 1)  |
| Specification 2 |                   | 15,000 (mix 2) | 15,000 (mix 2)  |
| Totals          | 46,000            | 46,000         | 46,000          |

The Thickness element is separated into two processes. One for Mainline paving and another for paving of Ramps. Two different mix designs were used in the paving of the 12 inch pavement. A change in the mix design requires the processes for the Strength and Sand Equivalent elements to be changed. The change in process for these two elements is handled by changing the reference to the mix design used, the Specification. The change in mix design does not necessitate a change in the Thickness element.

Please see the Revision to Sections 105, 106, & 412 for the project for details on the creation of processes on the project.

Concrete03 checks to ensure that the sum of the element quantities are equal before allowing the calculation of the Final I/DP. Warning messages will be displayed whenever the quantities are not equal. The Quantity Summary screens are useful for tracking the project's quantities.

## Quantity Summary Screens

Concrete03 contains three Quantity Summary screens; Project, Specifications, & Items. These screens are accessed through the “Reports” screen by checking the box for “Show element quantity summary before QC/QA report” and then clicking the “Create” button. A warning message will also be displayed when trying to generate a report for the project whenever the quantity checks Do Not pass. It will ask you if you “Would you like to go to the Element Quantity Summary screen”. The summary screens show the project’s quantities in the various data groupings. The various screens can be displayed by clicking on the folder tabs for that grouping. Warning messages will be displayed whenever the sum of the quantities for the elements Do Not meet the requirements of the Standard Special Provision.

### Project

Concrete03 - Element Quantity Summary for Project Code 55001

Project | Specifications | Items

55001

| Pavement Thickness |          | Compressive Strength |          | Flexural Strength |          | Sand Equivalent |          |
|--------------------|----------|----------------------|----------|-------------------|----------|-----------------|----------|
| Process            | Quantity | Process              | Quantity | Process           | Quantity | Process         | Quantity |
| 1                  | 20,000   | 1                    | 20,000   |                   |          | 1               | 20,000   |
| 2                  | 12,000   | 2                    | 12,000   |                   |          | 2               | 12,000   |
| 3                  | 37,000   | 3                    | 31,000   |                   |          | 3               | 31,000   |
| 4                  | 9,000    | 4                    | 15,000   |                   |          | 4               | 15,000   |
| Totals:            |          | 78,000               |          | 78,000            |          | n/a             |          |

Totals: 78,000 78,000 n/a 78,000

Status  
 OK

Continue  
 Cancel

Element = All elements | Total number of warnings = 0

The “Project” screen sums all of the element quantities that have been entered into the project. This includes the quantities associated with each Item, Specification, and Process. In the above example the total quantities are equal for each of the elements and no warning messages are generated.



## Items Screen

Concrete03 - Element Quantity Summary for Project Code 55001

Project Specifications Items

412-00800 412-01000 412-01200

| Pavement Thickness |          | Compressive Strength |          | Flexural Strength |          | Sand Equivalent |          |
|--------------------|----------|----------------------|----------|-------------------|----------|-----------------|----------|
| Process            | Quantity | Process              | Quantity | Process           | Quantity | Process         | Quantity |
| 3                  | 37,000   | 3                    | 31,000   |                   |          | 3               | 31,000   |
| 4                  | 9,000    | 4                    | 15,000   |                   |          | 4               | 15,000   |
| Totals:            |          | 46,000               | 46,000   | n/a               |          | 46,000          | 46,000   |

Status  
 OK

Element = All elements Total number of warnings = 0

Continue  
 Cancel

The "Items" screen displays all of the paving Items that have been defined for the project. Click on the button for any of the Items to display the quantities associated with it. The sum of the quantities for each of the elements **Must Be** equal in order to be in compliance with the Revision to Sections 105, 106 & 412 and calculate the Final Incentive/Disincentive Payment. Warning messages will be generated whenever the quantities are not equal. In the above example the sum of quantities on each of the elements are equal and no warning messages are displayed.

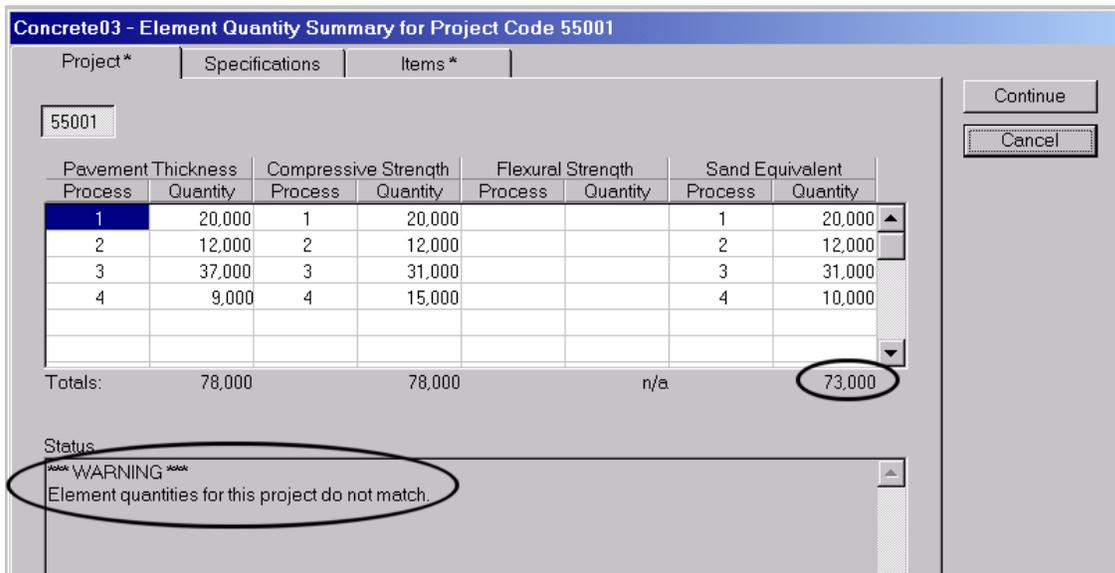
## Warning Messages – Quantity Summary Reviews

Warning Messages will be displayed whenever the program's review checks Do Not pass for the project. These are intended to help the user identify quantities that are not in compliance with the Standard Special Provision. All quantity review checks Must pass in order to generate a "Final" report for the project.

### Warning Message for a Project

At the end of a project, the sum of all process quantities in each of the testing element Must Be equal to meet the requirements of the Revision to Sections 105, 106 & 412. A warning message will be displayed whenever the sums are not equal in the testing elements.

In the following example, the total quantity in the Sand Equivalent element is less than in the other elements. A warning message is displayed to indicate that the quantity check does not pass.



Concrete03 - Element Quantity Summary for Project Code 55001

Project\* Specifications Items\*

55001

| Pavement Thickness |          | Compressive Strength |          | Flexural Strength |          | Sand Equivalent |          |
|--------------------|----------|----------------------|----------|-------------------|----------|-----------------|----------|
| Process            | Quantity | Process              | Quantity | Process           | Quantity | Process         | Quantity |
| 1                  | 20,000   | 1                    | 20,000   |                   |          | 1               | 20,000   |
| 2                  | 12,000   | 2                    | 12,000   |                   |          | 2               | 12,000   |
| 3                  | 37,000   | 3                    | 31,000   |                   |          | 3               | 31,000   |
| 4                  | 9,000    | 4                    | 15,000   |                   |          | 4               | 10,000   |
| Totals:            |          | 78,000               |          | 78,000            |          | n/a             |          |
|                    |          |                      |          |                   |          | 73,000          |          |

Status  
WARNING  
Element quantities for this project do not match.

Continue  
Cancel

## Warning Message for an Item

At the end of a project, the sum all process quantities for each element in an Item **Must Be** equal to meet the requirements of the Revision to Sections 105, 106 & 412. A warning message will be displayed whenever the sums are not equal for the Item.

In the following example, the sum of the process quantities in the Sand Equivalent element is less than in the other elements for the Item 412-01200. A warning message is displayed to indicate that the quantity check does not pass.

Concrete03 - Element Quantity Summary for Project Code 55001

Project\* Specifications Items\*

412-00800 412-01000 412-01200 \*

| Pavement Thickness |          | Compressive Strength |          | Flexural Strength |          | Sand Equivalent |          |
|--------------------|----------|----------------------|----------|-------------------|----------|-----------------|----------|
| Process            | Quantity | Process              | Quantity | Process           | Quantity | Process         | Quantity |
| 3                  | 37,000   | 3                    | 31,000   |                   |          | 3               | 31,000   |
| 4                  | 9,000    | 4                    | 15,000   |                   |          | 4               | 10,000   |
| Totals:            |          | 46,000               | 46,000   | n/a               |          | 41,000          |          |

Status  
WARNING  
Element quantities for this item do not match.

## Specification

The sum of the process quantities Do Not have to be equal to be in compliance with the Revision to Sections 105, 106 & 412 for a Specification. See the section "Organization of the Data Within the Program" for details on the way the program uses Specifications to group tests together.

Concrete03 - Element Quantity Summary for Project Code 55001

Project\* Specifications Items\*

501-10 501-12 501-12-M2 501-8

| Pavement Thickness |          | Compressive Strength |          | Flexural Strength |          | Sand Equivalent |          |
|--------------------|----------|----------------------|----------|-------------------|----------|-----------------|----------|
| Process            | Quantity | Process              | Quantity | Process           | Quantity | Process         | Quantity |
| 3                  | 37,000   | 3                    | 31,000   |                   |          | 3               | 31,000   |
| 4                  | 9,000    |                      |          |                   |          |                 |          |
| Totals:            |          | 46,000               | 31,000   | n/a               |          | 31,000          |          |

Status  
OK

## Reports

Numerous report types can be generated in Concrete03.

A report can be generated for only one of the elements or to show all elements. Click on the check box under Elements to select the element(s) to be included in the report.

The amount of detail in the report can also be selected. *Process summary* reports display the Quality Level calculation information but does not include individual test information. *Test data* reports include all of the tests results and the Quality Level calculation information. *Detailed test data* reports include sampled by, location, and test comment information along with individual test results and the Quality Level calculation information.

Click on the “Show element quantity summary before QC/QA report” check box to review the Quantities Summary screens.

Click on the “Final report” check box to generate a Final Report for a project.

Report - Project Code 55001

Options

Element

- Pavement Thickness
- Compressive Strength
- Flexural Strength
- Sand Equivalent
- All elements

Detail

- Process summary
- Test data
- Detailed test data

Other

- Show quantity summary before report
- Final report

Create

Close

**Reports Screen**

## Previewing a Report



Click on the “Reports” icon.

Select the test “Element” for the report.  
Select the desired amount of “Detail” for the report.  
Select “Show quantity summary before report”, if desired.  
Click on the “Create” button on the Reports screen.  
Or, Click on the “Continue” on the Quantity Summary review screen.  
The report will be generated.

Concrete03 - QC/QA Report for Project Code 55001

Close Print

Department of Transportation Project No: NH 0761-003  
 State of Colorado Project Code: 55001  
 May 22, 2003 Region No: 4  
 Quality of PCCP (Comp Str), 11-30-00 Location: I-76 East  
 Concrete03, v1.0.0.458 (780811432) Supplier: Real Concrete

\*\*\* INTERIM REPORT \*\*\*

Compressive Strength - Process 3

---

Spec. No: 501-12 Plan Value: 4200 psi  
 Criteria: Compressive Strength Place Price: 37.78  
 Class: P(Pavement) Furnish Price: 0.00  
 Item: 412-01200 (PCCP 12 inch) Unit Price: 37.78

Comments: 12 in. Mix 1; Mix No. 501

---

| Process No. | Test No. | Date Placed | Date Tested | Test Quantity | Total Quantity | Value | MQL |
|-------------|----------|-------------|-------------|---------------|----------------|-------|-----|
| 3           | 1        | 05/01/03    | 05/29/03    | 5000          | 5000           | 4260  |     |
| 3           | 2        | 05/02/03    | 05/30/03    | 5000          | 10000          | 4740  |     |
| 3           | 3        | 05/02/03    | 05/30/03    | 5000          | 15000          | 4460  | 100 |
| 3           | 4        | 05/03/03    | 05/31/03    | 5000          | 20000          | 5110  | 90  |
| 3           | 5        | 05/04/03    | 06/01/03    | 2000          | 22000          | 4760  | 95  |
| 3           | 6        | 05/06/03    | 06/03/03    | 3000          | 25000          | 4450  | 100 |
| 3           | 7        | 05/06/03    | 06/03/03    | 3000          | 28000          | 4660  | 100 |
| 3           | 8        | 05/07/03    | 06/04/03    | 3000          | 31000          | 4300  | 96  |

Compressive Strength - Process 3 Summary

Process 3 Mean = 4592.5 QL = 92.673 Qty = 31,000 sq yd  
 Tests 1-8 StdDev = 281.869 PF = 1.00535 I/DP = \$6,261.70

Interim All elements Test data 18 pages

### Preview of a Report

Close the Reports by clicking on the “Close” button at the top of the screen or click on the close icon in the upper right of the screen.

### Printing a Report

- Click on the Reports icon.
- Select the desired Element and report Detail.
- Click on the “Show Quantity Summary” or “Final Report” if desired.
- Click on the “Create” button to generate the report.
- Click on the “Print” button while in the Preview screen to print the report.

## Generating A Final Report

In order to generate a Final Report all of the Quantity Summary checks **Must Pass**. Please see the section *Quantity Summary Review* that appears previously in this guide and refer to the Standard Special Provision, Revision to Sections 105, 106, & 412 for additional information. Warning messages will be displayed whenever you try to generate a report and the quantity checks do not pass. A Final Report **Can Not** be generated until all the quantity checks pass.

### How To:

Click on the Reports icon.  
Select Current Project (all elements).  
Select "Final Report".

Report - Project Code 55001

Options

Element

- Pavement Thickness
- Compressive Strength
- Flexural Strength
- Sand Equivalent
- All elements

Detail

- Process summary
- Test data
- Detailed test data

Other

- Show quantity summary before report
- Final report

Create

Close

### Generating a Final Report

Click on the "Create" button to generate the report.  
If all the quantity check pass a Final Report will be generated.  
Note that the report header is titled "Final Report".

```
Department of Transportation          Project No:  NH 0761-003
State of Colorado                   Project Code: 55001
May 22, 2003                        Region No:   4
Quality of PCCP (Comp Str), 11-30-00 Location:    I-76 East
Concrete03, v1.0.0.458 (780811432)  Supplier:   Real Concrete

*** FINAL REPORT ***

Compressive Strength - Process 3
```

### Final Report Header

Click on the "Print" button while in the preview screen to print the report.

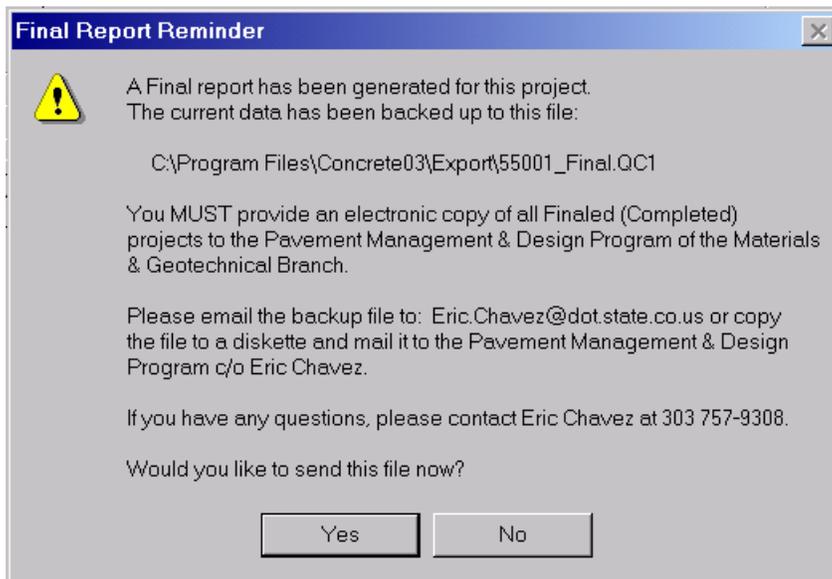
**Note:** Please see the section *Transferring Final Data to the Pavement Management & Design Program* that appears next in this guide for details on this subject.

## **Transferring Final Data to the *Pavement Management & Design Program***

The Pavement Management & Design Program (PM&DP) of the Materials & Geotechnical Branch is to receive an electronic copy of the project data for all Finaled projects. This data will be compiled into one data base and used to review the specifications only. The PM&DP will not be reviewing individual projects unless requested to.

### **How To:**

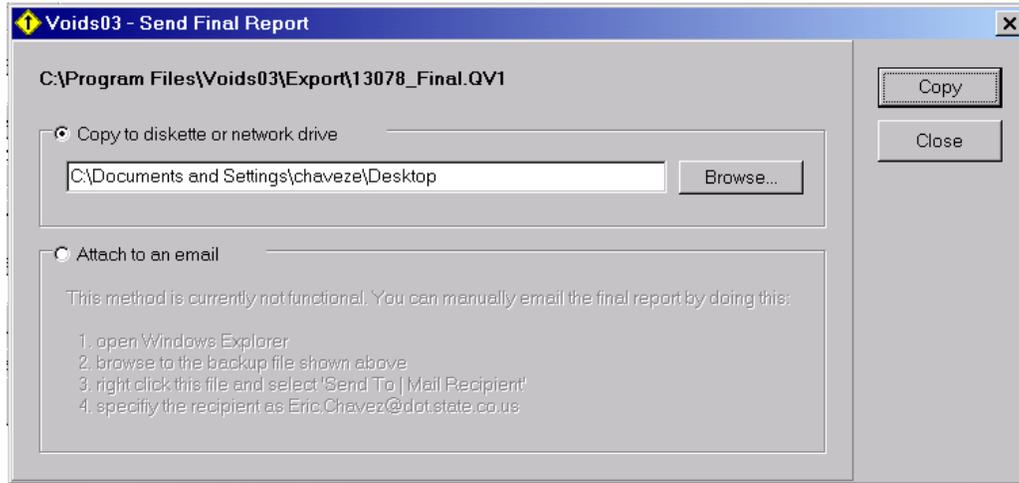
After a Final Report has been generated the following message will be displayed reminding you to transfer the project's data to the PM&DP.



### **Final Report Reminder**

Click "No" if the project has not been Finaled and to exit this screen.  
Click "Yes" if the project has completed its review and to create a data file.  
(continued...)

The following screen will then be displayed.  
Click "Browse" and select a location to save the data file to.  
Click on the "Copy" button to create the data file.  
Click "OK" after the file has been copied.  
Click "Close" to exit the "Send Final Report" screen.



**Send Final Report screen**

A data file will be created and copied to the location selected above.  
E-Mail the file to Eric Chavez at the following: [Eric.Chavez@dot.state.co.us](mailto:Eric.Chavez@dot.state.co.us)  
Or, copied the file to diskette and mailed to CDOT's PM&DP c/o Eric Chavez.

**Note:** The "Attach to an email" option on the "Send Final Report" screen is currently not operational.

## THICKNESS TESTING – Additional Program Information

The thickness testing element can become a little more complicated than the other testing elements. Thickness testing must comply with section 412.21 of the Standard Special Revision, Revision of Sections 105, 106 and 412 assigned to the project.

The following information is a recap of what is contained in the Standard Special Provision, Revision to Sections 105, 106, & 412. It restates what appears in the specification and details how the program handles this area of the specification. Information is given on what the program does automatically and what the user is required to do in these circumstances in the program.

### Specification Limits for the Thickness Element

The Lower Tolerance Limit ( $T_L$ ) for pavement thickness shall be Plan Thickness (PT) minus 10 mm (0.4 inches).  $T_L$  shall be used in the formulas for calculating Incentive/Disincentive Payments (I/DP), Quality Levels (QL), and Pay Factors (PF). Any pavement thickness test value that exceeds the PT by more than 25 mm (1.0 inch) shall be assigned a value of PT + 25 mm (1.0 inch) for the purpose of calculating the QL, PF and I/DP. **Concrete03** calculates the correct values for  $T_L$  and PT + 25 mm (1.0 inch) automatically within the program. The user **does not** need to make adjustments to these values before entering them into the program. **ENTER THE ACTUAL VALUES** for plan pavement thickness and the actual test results for thickness into the program.

### Acceptance Tests which are less than $T_L$ but greater than PT minus 25 mm (1.0 inch):

The area represented by an Acceptance Test core which is less than  $T_L$  but greater than PT minus 25 mm (1.0 inch) shall become a separate process. Four additional cores will be taken within the area and will be used to compute an I/DP, see the Standard Special Provision for details. **Concrete03 does not** separate these tests out automatically into separate processes. A warning messages will be displayed whenever a test result is entered that is less than  $T_L$  but greater than PT minus 25 mm (1.0 inch). **The user must manually** separate the test out and place it into a separate process. When the additional testing is completed, the four additional cores will be used to compute an I/DP. The quantities associated with the additional tests must be adjusted to include only the area represented by the original core.

### Process Control Tests which are less than $T_L$ but greater than PT minus 25 mm (1.0 inch):

Process Control Tests which are less than  $T_L$  but greater than PT minus 25 mm (1.0 inch) require additional testing. The area represented a by Process Control Test that is less than  $T_L$  but greater than PT minus 25 mm (1.0 inch) **may be required** to become a separate process and an I/DP calculated for the area represented, see the Standard Special Provision for details. In the program the procedure for separating out the test and calculating an I/DP would be the same as that used for acceptance tests described above.

### Any Test Result that is less than PT minus 25 mm (1.0 inch):

The area represented by any core that is less than PT minus 25 mm (1.0 inch) shall become a separate process, see the Standard Special Provision. Additional testing is required. The area that is found to be less than PT minus 25 mm (1.0 inch) shall be removed and replaced. Four additional cores shall be taken within the area represented by the original core and will be used to calculate an I/DP. **Concrete03 will automatically** separate out any test result that is less than PT minus 25 mm (1.0 inch) and place it into a separate process. **The user must** then enter the results of the four additional cores for the area into the new process. The quantities associated with the additional tests must be adjusted to include only the area represented by the original core.

## FURNISH AND PLACE CONCRETE ITEM

Some projects use a combination of two items to complete the paving, Furnish Concrete Pavement & Place Concrete Pavement. The Furnish Item is used to pay for the actual amount of concrete used. This quantity is in either cubic yards or cubic meters. The Place Item accounts for the cost involved in placement of the concrete in the roadway, in square yards or square meters. Concrete03 uses the following equation to calculate the Unit Price that will be used in the Incentive/Disincentive Payment calculations when the Furnish and Place PCCP item has been selected.

$$UP = PSP + DFS$$

where:

PSP = unit Price per square yard (meter) of placed concrete pavement.

DFS = actual dollar amount for furnishing concrete divided by the square yards (meters) of concrete pavement placed.

## Using the Furnish and Place PCCP Item

Add the Project Information into the program as usual.

### **Add a Specification for the project.**

- Select the Furnish and Place PCCP Item from the Item list.
- Enter the Bid Price for Place Concrete Pavement.
- Enter the Bid Price for Furnish Concrete Pavement.
- Enter the Estimated Quantity for the Concrete (Volume)
- Enter the Estimated Quantity for Placement (Area)
- Enter a Plan Thickness Value. Usually this will be measured at the area of minimum thickness, see the Plans and Special Provisions for the project.
- Check the box for "Include the Thickness I/DP in the report", see the Plans and Special Provisions for the project to see how the Thickness element is being handled.

**Add Specification**

Specification #  
78

Item \*  
412-00050 | Furnish and Place PCCP | Criteria \*  
Compressive Strength

Class \*  
P | Pavement | 4200 psi | Comment

Unit Price

| Price                       | Quantity                                  |
|-----------------------------|---|
| Place (\$/sq yd)<br>7.62    | Volume (cu yd)<br>121634                  |
| Furnish (\$/cu yd)<br>50.00 | Area (sq yd)<br>364902                    |
| Unit (\$/sq yd)<br>24.29    | <input type="checkbox"/> Final quantities |

Plan Value

|                           |                             |
|---------------------------|-----------------------------|
| Thickness (in) *<br>12.00 | Compressive (psi) *<br>4200 |
| Flexural (psi)<br>570     | Sand Equiv. (%)<br>80       |

Include Thickness I/DP in report

\* Cannot be changed if there is at least one process using this specification

### **Adding a Furnish & Place Specification**

Review the Unit Price calculation to ensure that it is applicable for the project.  
Click on the "OK" button to accept the Specification.

### **Enter the test results for the project into the program.**

Add all of the test results into the program for the project.

Interim calculations will be based on the estimated Unit Price and quantities for the project.

### **Finalize the Project – Enter Final Quantities for the Specification**

When the paving has been completed enter the Final quantities for the project into the program.  
The Final Incentive/Disincentive Payment can now be calculated.

Enter the Final Quantities into the Project's Specification.

- Click on the Specification folder tab
- Select the appropriate Specification number
- Click on the "Edit" button
- Enter the **Final Quantity** for the Concrete used (Volume)
- Enter the **Final Quantity** for Placement (Area)
- Click on the box to mark the quantities "Final"
- A new Unit Price will be calculated based on the Final Quantities.
- Click on the OK button to accept the changes

Review the project's reports and check for any errors

If no errors are found make the report Final by clicking on the Final Report box in the Report screen and print the report.

**Edit Specification**

Specification #  
78

Item\*  
412-00050 Furnish and Place PCCP

Criteria\*  
Compressive Strength

Class\*  
P Pavement 4200 psi

Comment

Unit Price

| Price                       | Quantity   |
|-----------------------------|--|
| Place (\$/sq yd)<br>7.62    | Volume (cu yd)<br>121932                             |
| Furnish (\$/cu yd)<br>50.00 | Area (sq yd)<br>364440                               |
| Unit (\$/sq yd)<br>24.35    | <input checked="" type="checkbox"/> Final quantities |

Plan Value

|                          |                            |
|--------------------------|----------------------------|
| Thickness (in)*<br>12.00 | Compressive (psi)*<br>4200 |
| Flexural (psi)<br>570    | Sand Equiv. (%)<br>80      |

Reset to default

Include Thickness I/DP in report

\* Cannot be changed if there is at least one process using this specification

OK  
Cancel

### **Add the Final Quantities for the Project**

## CONCRETE PAVING SYSTEM ITEM

The Concrete Paving System Item gives the contractor some flexibility in how to accomplish the paving. For this reason the thickness element is not defined in the Item itself. When using this item the user must enter the paving thickness that is defined for the project.

### Using the Concrete Paving System Item in a Project

Add the Project Information into the program as usual.

#### **Add a Specification for the project.**

Select the Concrete Pavement System Item from the Item list.

Enter the Bid Price for Place Concrete Pavement.

Enter the Thickness specification as defined for the project. See the project's Plans and Specifications

**Add Specification**

Specification #  
74

Item \*  
412-03000 Concrete Pavement System

Criteria \*  
Compressive Strength

Class \*  
P Pavement 4200 psi

Comment

Unit Price

Price

Place (\$/sq yd)  
26.22

Furnish (\$/cu yd)  
0.00

Unit (\$/sq yd)  
26.22

Quantity

Volume (cu yd)  
0

Area (sq yd)  
0

Final quantities

Plan Value

Thickness (in) \*  
10.75

Compressive (psi) \*  
4200

Flexural (psi)  
570

Sand Equiv. (%)  
80

Reset to default

Include Thickness I/DP in report

\* Cannot be changed if there is at least one process using this specification

OK  
Cancel

#### **Adding a Concrete Paving System Specification**

Enter the test results for the project into the program as usual.

Finalize the project when the paving has been completed as usual.

## FILE MAINTENANCE

### Importing/Exporting A Project

A single project's data can be Exported from a Concrete File into a separate Data File. This Data File can then be transferred to another computer and Imported. Once Imported the project's data can be reviewed or used on the second computer.

### Exporting

Have displayed the project that you want to Export.

Select it using the drop down list in "Project Code" if necessary.

Click on "Project" in the menu bar.

Click on "Import/Export".

The "Import/Export Project" screen will then be displayed.

Click on the folder tab for "Export".

Click the "Browse" button.

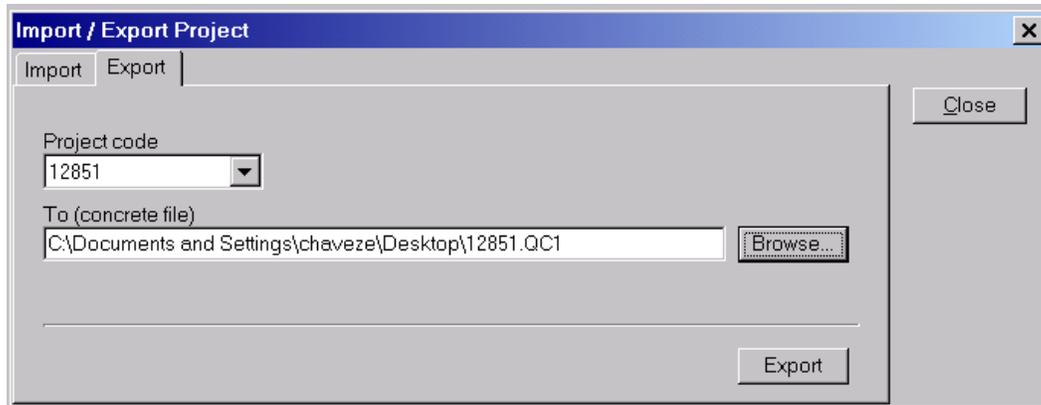
Select a directory to Export the file to.

Click on the "Export" button.

Click "OK" to confirm this is what you want to do.

Click "OK" when the project has been Exported.

Click the "Close" button to exit the "Import/Export Project" screen.

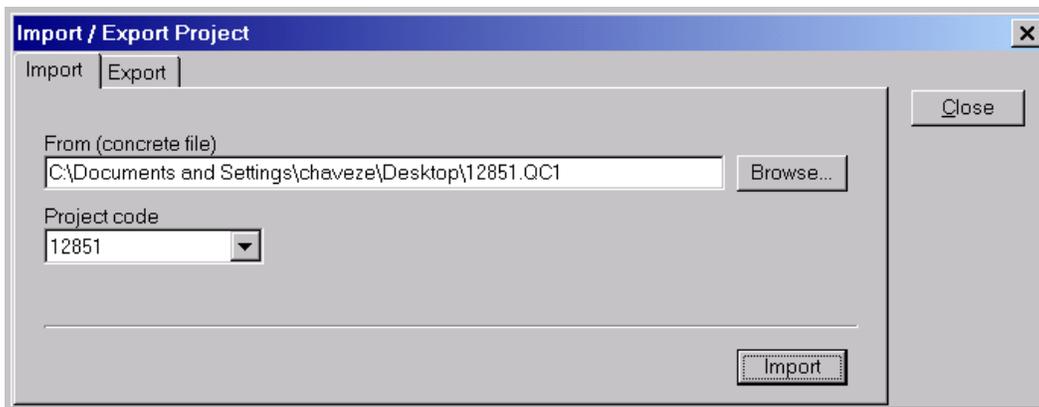


### **Exporting a Project's Data to a Data File**

The Data File will contain all of the selected project's data. The original project and all of its data will remain in the original Concrete File. Use the Project Delete button to delete the original project from the Concrete File if needed.

## **Importing A Project**

Open the Concrete File that you want to Import the project to.  
Click on “Project” in the menu bar.  
Click on “Import/Export”.  
The “Import/Export Project” screen will then be displayed.  
Click on the “Import” folder tab.  
Click on the “Browse” button.  
Navigate to and Select the Data File that you want to Import.  
Click on the “Open” button  
Click on the “Import” button on the “Import/Export” screen.  
Click “OK” to confirm that this is what you want to do.  
Click “OK” when the project has been Imported.  
Click the “Close” button to close the “Import/Export Project” screen.



### **Importing a Data File**

The imported project will be combined with the other project(s) in the Concrete File. The imported project can now be reviewed or used.

## Manual Backup Of Concrete Files

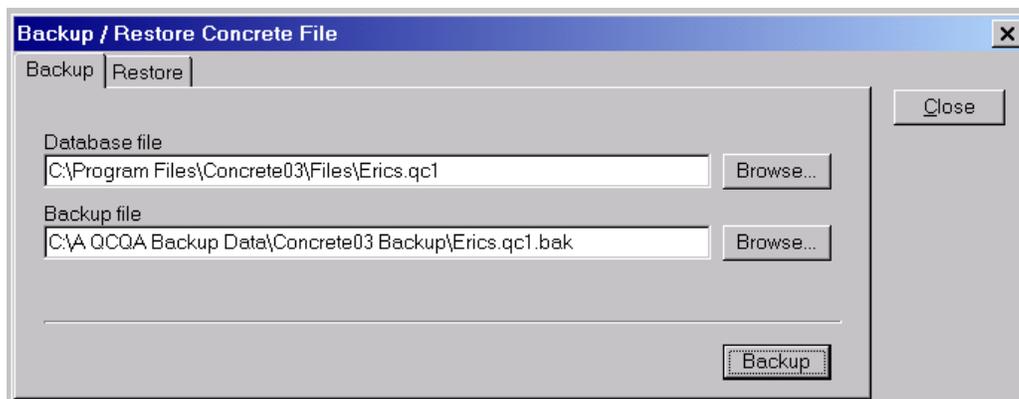
Concrete03 automatically backups the open concrete file when the file is saved. You may wish to create additional backups of the file just in case.

### How To:

Make a note of the Concrete File that you are currently using. Displayed at the top of the program screen.



- Close all open Concrete Files.
- Click on "Tools" in the menu bar.
- Click on "Backup/Restore Concrete File"
- Click on the "Backup" file tab in the "Backup/Restore Concrete File" window.
- Click the "Browse" button at the end of the "Database file" box.
- Highlight the Concrete File to backup. Navigate to it if necessary.
- Click on the "Open" button.
- Click the "Browse" button at the end of the "Backup file" box.
- Select a directory where you want to Backup the file to. Navigate to it if necessary.
- Click on "OK" when the directory is highlighted.
- Click on the "Backup" button.
- Click "OK" twice when displayed to confirm that the file has been Backedup.
- Click on the "Close" button to close the "Backup/Restore Concrete File" window and return to the main screen.



### Creating a Backup File

## **Restoring A Concrete File From The Autobackup Directory**

Concrete03 creates an autobackup file of the current Concrete File that is in use each time the user Saves in the program. If the working file for a project should become corrupted and unusable the last autobackup file can be retrieved into the program and then used. The user should only have to reenter the testing information that was entered since the program was last saved.

### **How To:**



Close the Opened Concrete Files. Click on the Close icon.

Click on “Tools” in the menu bar.

Click on “Backup/Restore Concrete File”

Click on the “Restore” file tab in the “Backup/Restore Concrete File” window.

Click the “Browse” button at the end of the “Backup file” input box.

The program will display the contents of the AutoBackup directory.

Highlight the backup file that you want to restore.

The AutoBackup files will have the same name as the original but with the .bak extension.

Click on the “Open” button.

Click the “Browse” button at the end of the “Database file” input box.

Move to the directory where you want to restore the file to.

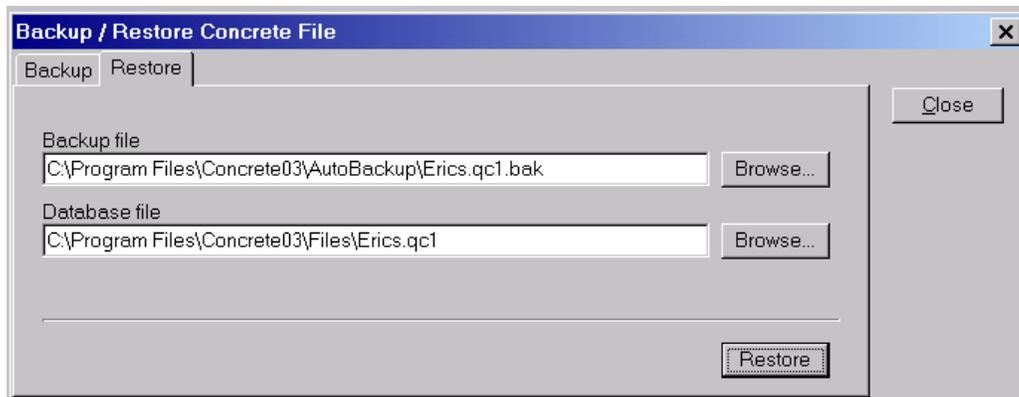
The default directory is C:\Program Files\Concrete03\Files

Click “OK”

Click on the “Restore” button to restore the autobackup file.

Click “OK” twice when displayed to confirm that the file has been restored.

Click on the “Close” button to close the Restore or Backup Concrete file window and return to the main screen.



### **Open the Restored Concrete File.**

Click on the “Open Concrete File” icon.

Select the Concrete File from the list, the one that you just Restored.

Click the Open button.

The Restored Concrete File can now be used for the project.

## CALCULATIONS

Pay Factor and Incentive/Disincentive Payments are calculated according to the Revision to Sections 105, 106, & 412 for the project.

Quality Levels are calculated according to Colorado Procedure - 71.

## NOTES ON ROUNDING

The program rounds test results according to the applicable Colorado Procedure or AASHTO procedure used. For details on rounding see the applicable test procedure. Also see the Field Materials Manual. The following table lists the rounding accuracy used in the program.

| Rounding Specification |            |      |          |      |
|------------------------|------------|------|----------|------|
| Element                | Non-metric |      | Metric   |      |
|                        | Accuracy   | Unit | Accuracy | Unit |
| Pavement Thickness     | 0.01       | in.  | 2.5      | mm   |
| Compressive Strength   | 10         | psi  | 0.01     | MPa  |
| Flexural Strength      | 5          | psi  | 0.05     | MPa  |
| Sand Equivalent        | 1          | %    | 1        | %    |

## CONTACT

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