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Overview of Labbie Cube Processing

Contents

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1. Summary and Scope

This document gives a walk-through of the program Labbie, the Laboratory Data Retriever, as far as the processing of concrete test cubes is concerned. Invoicing and other features are dealt with briefly. (Soil tests have been added and are undergoing testing as at May-June 2009.)

2. Introduction

Civil Engineering Materials Laboratories strength-test endless batches of concrete cubes for quality control purposes. In the past, Labs often lacked a coherent system to capture the data and report the results to clients, then bill them timeously for the number of tests done. Our solution is the program Labbie, first released in May 2007.

Labbie has been running successfully at two major Gauteng laboratories, Roadlab (since May 2007) and Civilab (since early 2008).

Once Labbie is set up with company data and price lists, you can start entering cube data.

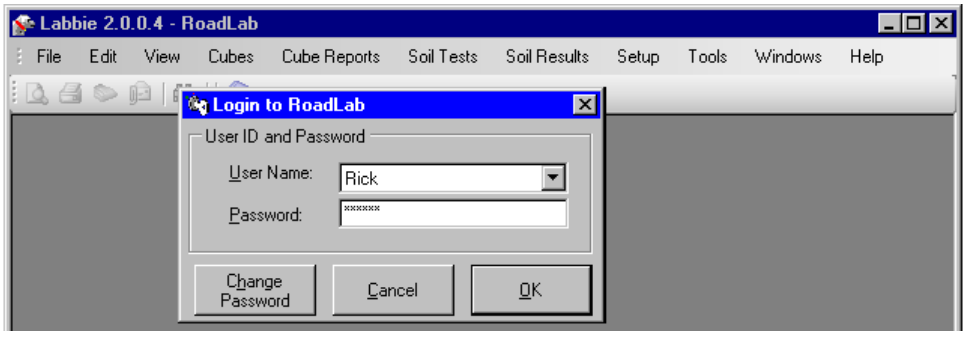
Using the Cubes Menu, Labbie will walk you through the sequence of testing cubes (more details below):

- Receiving the cubes (entering new clients and projects as needed),
- Listing the cubes to be crushed each day,
- Entering the results of crushed cubes,
- Approving the results (by a senior technician or other authorised person), or
- Rejecting dubious results, then
- Correcting dubious results (or marking them as unfixable), and
- Finally, producing the results for the client by e-mail and/or fax and/or printing for posting and/or collection, plus printing a copy for file.
- Monthly, or when desired, the program can do pro-forma invoicing, which can be exported to Pastel Accounting and, with some alterations, to other accounting programs.
- There are numerous reports and charts that allow you to look at results globally or individually.
- For quality control purposes, Labbie also allows you to monitor and report on curing bath temperature, curing chamber humidity, and verification of scales and presses.

3. Starting Labbie

The Labbie Splash Screen appears as you start the application. It provides program details including the version number and date, and copyright information.

The Login form appears and you are prompted to log in:



The previous User Name logged in will be displayed in the top combo box. If your User Name is not displayed, click the down arrow to open the drop-down list to select it from the list. If your name does not appear in the list, your Administrator should add you as a user.

4. Setting Up the Program

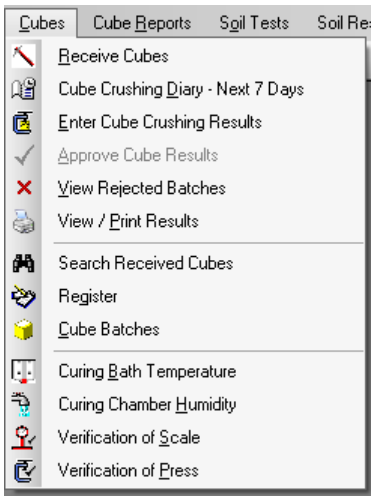
A blank database is supplied with the installation. Using the Setup Menu, you need to enter into it the data relevant to your company:

- **Company Data**: Address, Header and Footer Logo (if you want them on reports), Connections (to send e-mail and fax-to-e-mail).
- **Reference Numbers:** This specifies the numbering scheme you want to use for Clients (might be equivalent to the Clients Account Code in Pastel), Projects, Cube Batches, and Cubes.
- **Users:** Login information and customised reports
- **Price List:** Your Standard codes and prices for each type of cube test, travel, standing time, etc.
- **Client** list (new Clients can be added later as required)
- **Projects** (different Jobs per Client –can also be added later as required)

Once the basic data are in, you are ready to start testing cubes.

5. Cube Testing Sequence

The sequence is shown explicitly on the Cubes Menu:



The upper section (above the first horizontal line) represents the testing sequence. The individual items are explained in detail below.

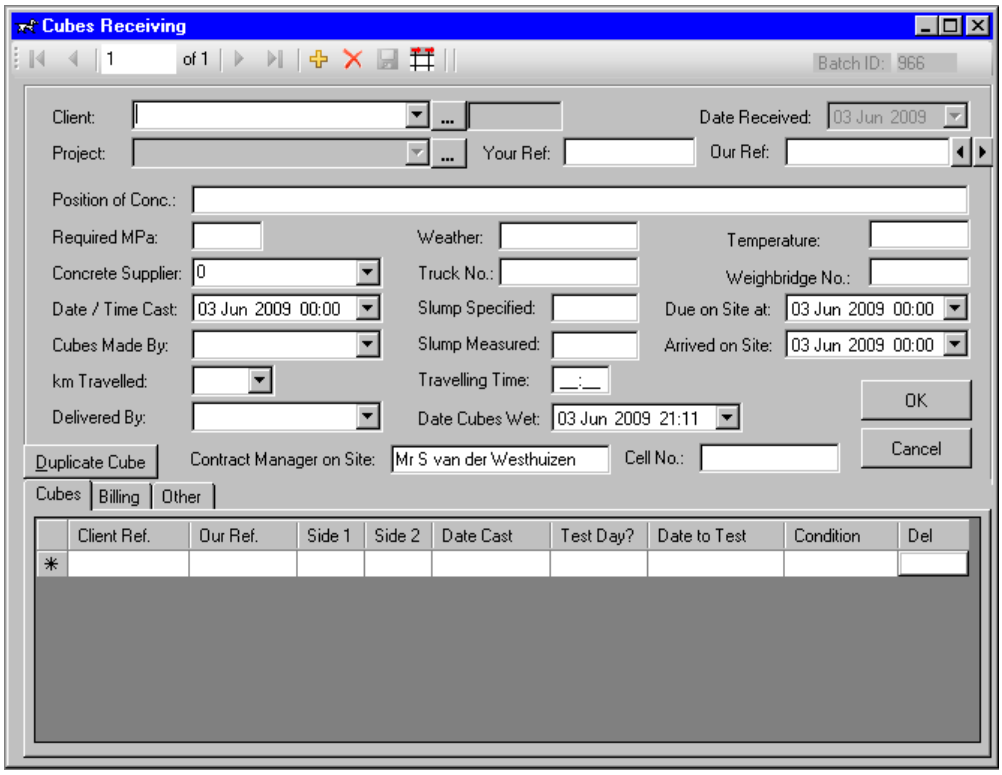
The middle section (between the horizontal lines) allows you to find and view batches and cubes in various ways.

The lower section (below the second horizontal line) covers verification of the test equipment, useful for SANAS certification purposes.

5.1 Receiving Cubes

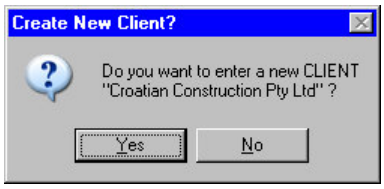
It is suggested that data for each batch of cubes be filled in, as the batch is received, on a paper Cubes Receiving form. This is taken back to the office (if cubes were collected on site), and the data entered into Labbie:

This is done through the top menu item: Cubes > Receive Cubes:

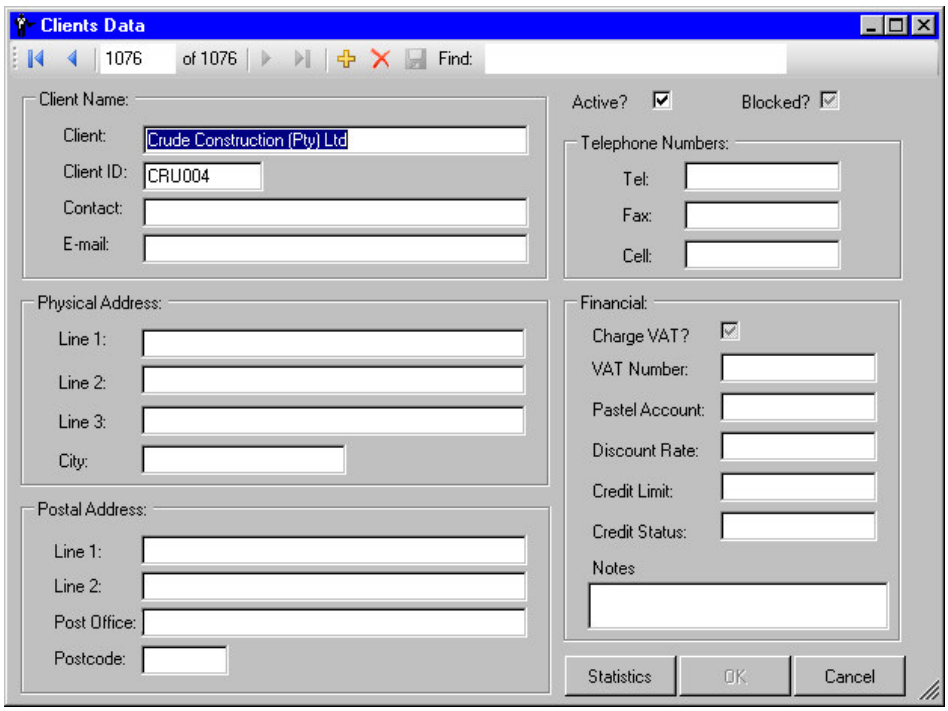


5.1.1 Entering new Clients and Projects as needed

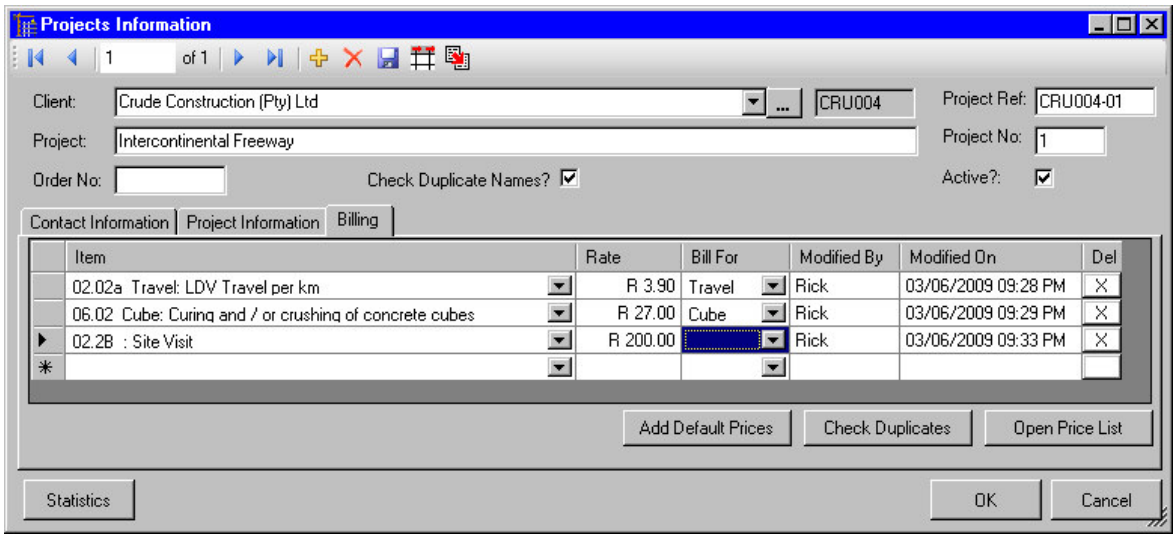
Select a Client from the first combo box (drop-down list). If the client does not exist, type the name of the new client and pres tab, and Labbie will offer to create it:



If you choose Yes, the program will open the Clients form with the new client name already filled in:



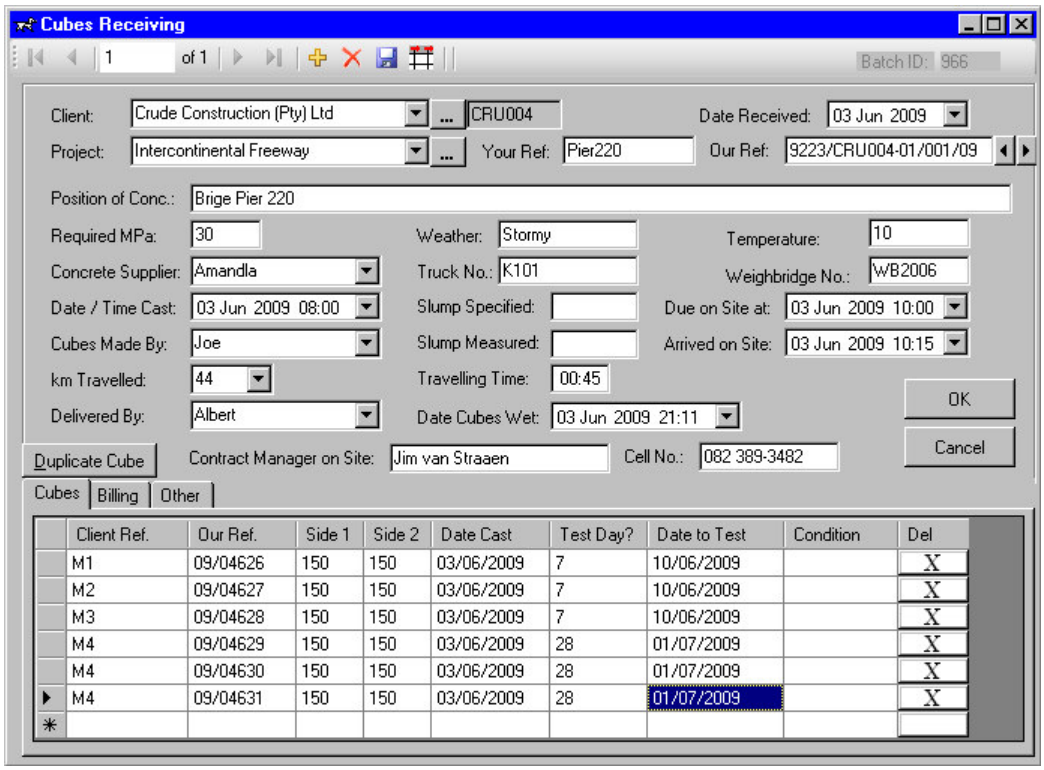
Complete the rest of the data and click OK. You are then returned to Cubes Receiving, where you can, if necessary, create a new Project in a similar way:



Note that each project must be given its own subset of the Price List, as shown on the Billing tab above. Prices can differ from the main Price List. The “Bill For” column is important: If it is filled in, the associated item becomes the default. Thus km will automatically be charged at the “Travel” rate, and Cubes at the “Cubes” rate per cube. Other alternatives are “Visit” and “Set” (batch of cubes).

5.1.2 Cubes Receiving data

Returning to the Cubes Receiving form, complete the data for example as follows:

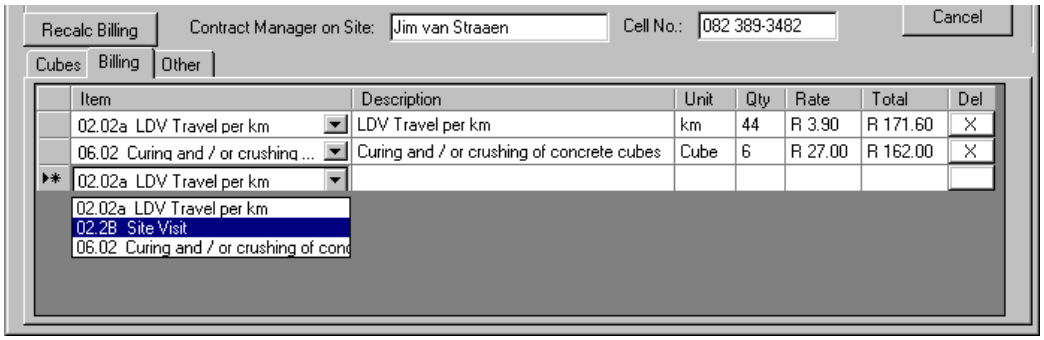


Note the combo boxes (drop-down lists) for Concrete Supplier, Cubes made by, km, etc.: These speed up input by drawing their results from previous entries and, in the case of km, from a default value for the Project. The “Duplicate Cube” button is a quick way to repeat the data of the line above: Only differences need to be entered.

The part of the cube number (“Our Ref”) after the year, can be recorded on the cubes using crayon, or you can work via the maker’s mark (“Client Ref”) in which case it is useful to mark the cubes with the test date.

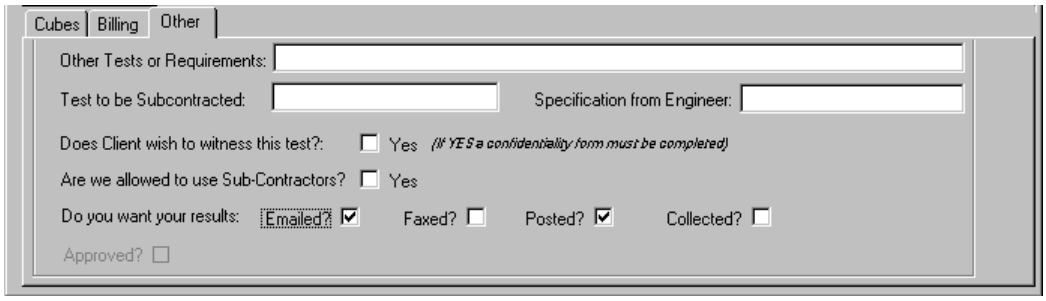
5.1.3 Cube Billing data

On the Billing tab, the “Recalc Billing” button will fill in all the default items for us based on the number of cubes and km, etc. We can also add items that are just applicable to this batch, by using the combo box on the left.



5.1.4 Other Cube data

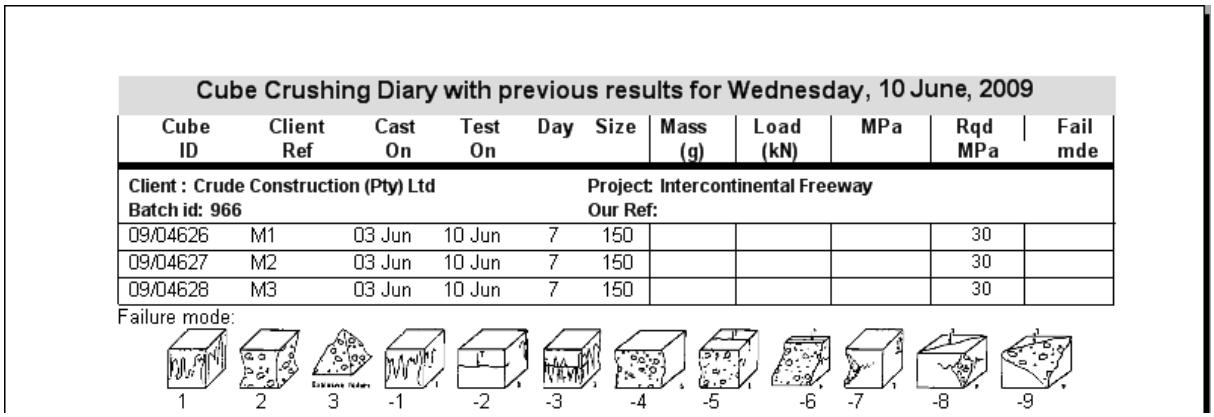
The final tab ("Other") allows us, inter alia, to specify how the results for this project should be transmitted to the Client (e-mail, fax, post, and/or collect). Defaults are picked up from the Project form.



We can click the "Diskette" button to save the batch, then the "+" button to add a new batch, and add the new batch as outlined above, or just click OK to save and exit the form.

5.2 Listing the Cubes to be Crushed

Each day, or in advance for several days, we print the Cube Crushing Diary:



Cube Crushing Diary with previous results for Wednesday, 10 June, 2009

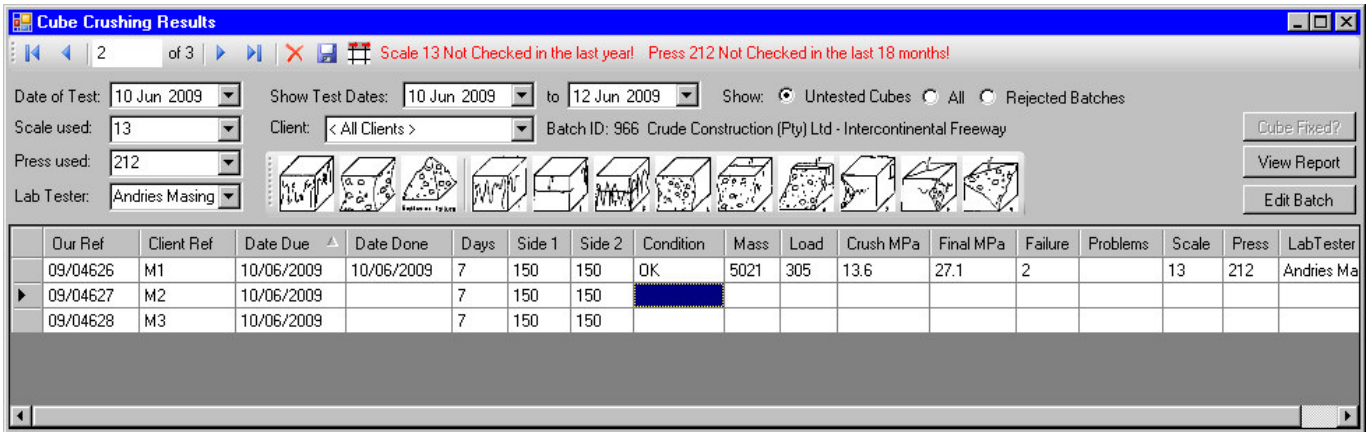
Cube ID	Client Ref	Cast On	Test On	Day	Size	Mass (g)	Load (kN)	MPa	Rqd MPa	Fail mde
Client : Crude Construction (Pty) Ltd Batch id: 966								Project: Intercontinental Freeway Our Ref:		
09/04626	M1	03 Jun	10 Jun	7	150				30	
09/04627	M2	03 Jun	10 Jun	7	150				30	
09/04628	M3	03 Jun	10 Jun	7	150				30	

Failure mode:

This has space for the results to be filled in. If there are previous results for the same batch, the averages are shown.

5.3 Entering the Results of Crushing

By default, Labbie displays all cubes not crushed, that were due to be crushed in the three months up to today. The test date automatically defaults to today. Fill in (or select from the lists of previous entries) the Scale number, Press number, and Lab Tester. Then type in the results from the completed Crushing Diary sheet shown above.



Labbie automatically fills in the Scale number, Press number, and Lab Tester from the entries at the top of the screen, as you type in the test results. It also warns you if the Scale or Press was not checked recently –note the red tell-tale at the top of the form.

Labbie will warn you if the mass of the cube does not match the cube dimensions.

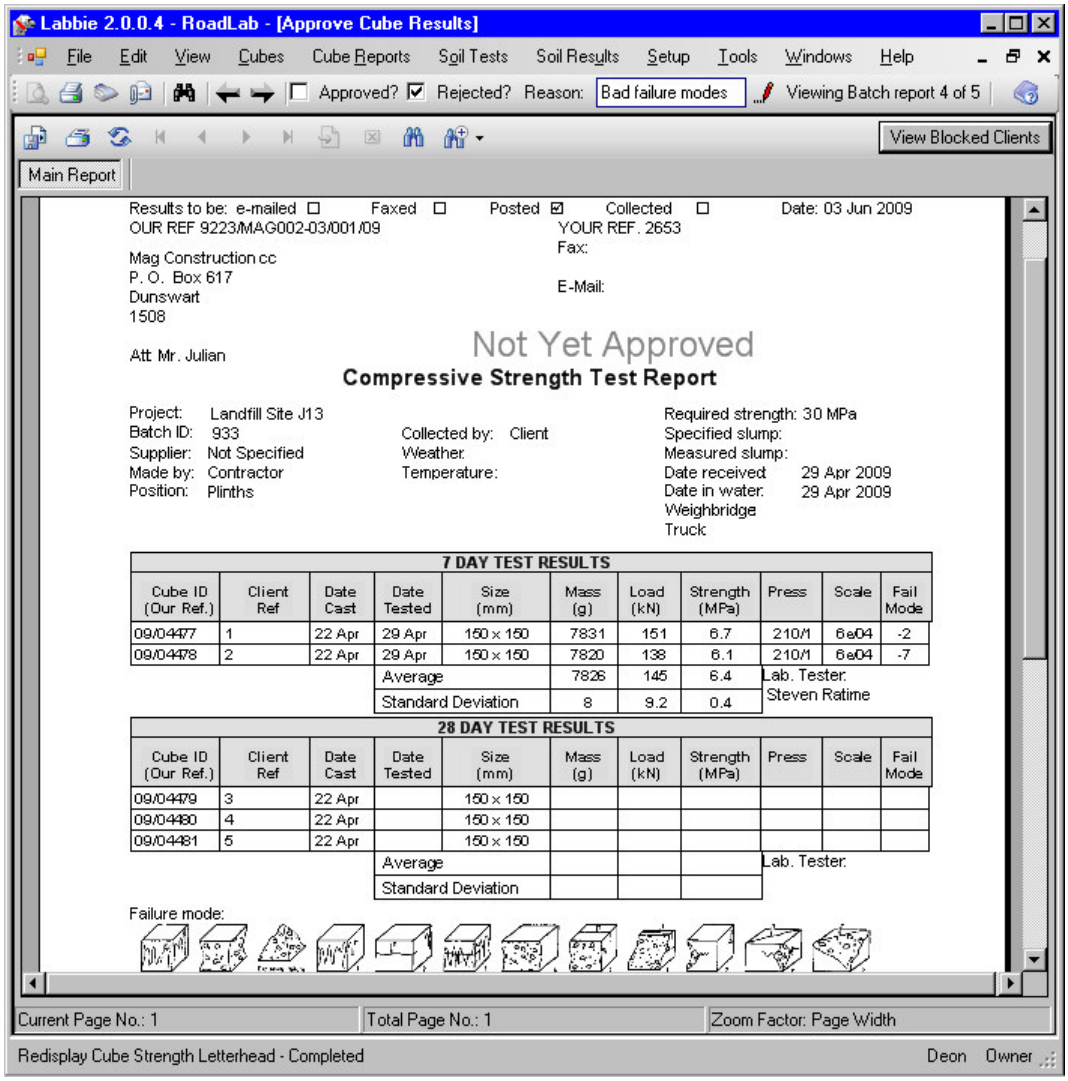
An estimated "Final MPa" is calculated for the 28-day strength. Since hardening curves vary greatly, this is only a guideline.

The user also chooses the Failure Pattern as per SABS, either by typing in the number, or by clicking on the pattern concerned.

5.4 Approving the Results

This must be done by a senior technician or other authorised person with the correct rights in Labbie: For unauthorised staff, the menu item is greyed out (unavailable).

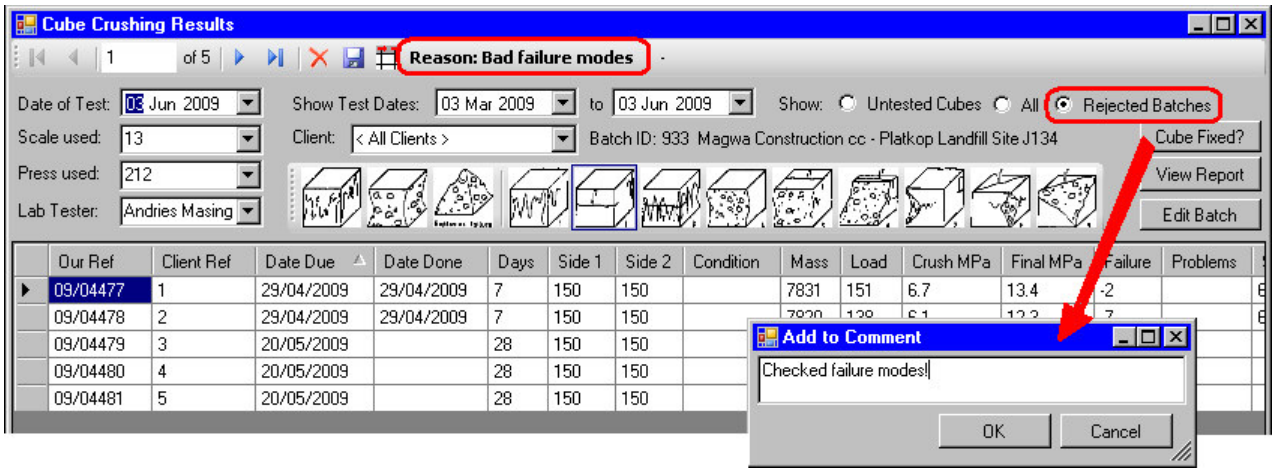
The authorised user views the results of each batch on screen and either approves it, or rejects dubious results with reasons (or marks them as unfixable by ticking both "Rejected" and "Approved").



Note the toolbar at the top of the screen just under the menus, which allows the user to print (or, indeed, fax or e-mail) the report. The arrow buttons are used to navigate from batch to batch (when you approve, it automatically displays the next). The checkboxes to approve or reject can be seen, and the box for the rejection reason.

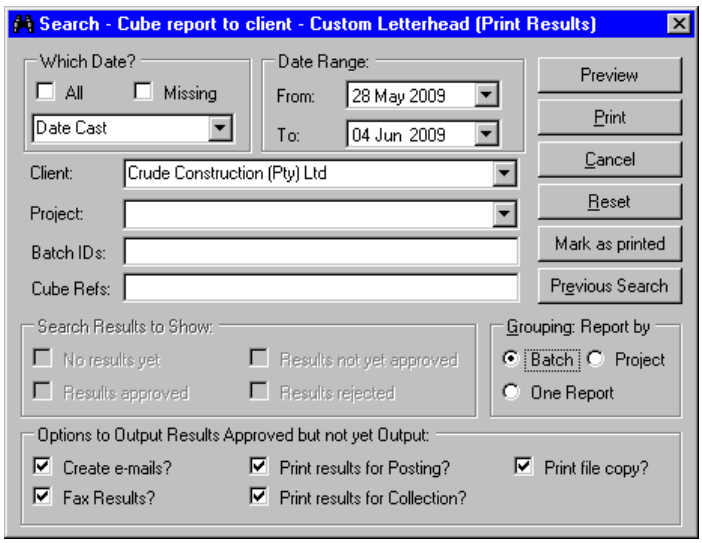
5.5 Correcting Dubious Results

Through the Cubes menu item “View Rejected Batches”, the data capturer views the batches on the same form used to enter the results of crushing, and makes the necessary corrections.



5.6 Producing Results for the Client

Finally, we produce the results for the client by e-mail and/or fax and/or printing for posting and/or collection, plus print a copy for file. The Cubes > **View/Print Results** menu item is used for this. It starts with a search:



While it not necessary to set any criteria, it is also possible to search by a variety of dates, Client and/or Project, or even down to the level of individual batch or cube numbers.

The report can either be previewed, or printed according to the output method requested by the client and set at the bottom of the search form. Labbie can use e-mail (attached PDF file), fax (direct via modem, or fax-to-email), and/or printing for posting or collection. From the Preview it is also possible to print to a PDF file without additional software. A PDF file can contain either a single batch per file, or all selected batches for a project.

The printout looks as shown below. The header and footer are customisable for the company (or can be omitted). The signature and the text that appears under it, are as recorded in Labbie for the signatory that approved the cubes. Remarks are also customisable.

Civil Engineering Materials Laboratory

ROADLAB

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42 YEARS. Est. 1965

Results to be: e-mailed ☐ Faxed ☐ Posted ☑ Collected ☐ Date: 04 Jun 2009

OUR REF 9223/GO1001-06/001/09 YOUR REF. N228/27468

Goic Construction
P O Box 8
NORTHRIDING
2162

Fax:

E-Mail:

Att: Mr.Pierre Marais

Compressive Strength Test Report

Project: The Office Park
Batch ID: 1651
Supplier: Lafarge
Made by: Contractor
Position: C15 cols 1 st floor Block B no's 642, 643, 644, 645, 648, 649, 650, 651

Collected By: Contractor
Weather:
Temperature:

Required Strength: 30 MPa
Specified slump:
Measured slump:
Date Received: 07 Jan 2009
Date In Water: 07 Jan 2009
Weighbridge:
Truck: L12

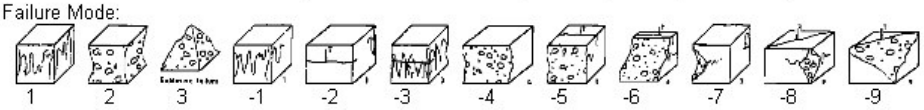
7 DAY TEST RESULTS

Cube ID (Our Ref.)	Client Ref	Date Cast	Date Tested	Size (mm)	Mass (g)	Load (kN)	Strength (MPa)	Press	Scale	Fail Mode
09/00001	01	06 Jan	20 Jan	150 x 150	8704	563	25.0	210/1	6e/04	-1
09/00002	02	06 Jan	20 Jan	150 x 150	8728	509	22.6	210/1	6e/04	1
09/00003	03	06 Jan	20 Jan	150 x 150	8782	551	24.5	210/1	6e/04	2
			Average		**8738**	**541**	**24.0**	Lab. tester:		
			Standard Deviation		**40**	**28.4**	**1.3**	Andries Masinga		

28 DAY TEST RESULTS

Cube ID (Our Ref.)	Client Ref	Date Cast	Date Tested	Size (mm)	Mass (g)	Load (kN)	Strength (MPa)	Press	Scale	Fail Mode
09/00004	04	06 Jan	03 Feb	150 x 150	8829	849	37.7	210/1	6e/04	-7
09/00005	05	06 Jan	03 Feb	150 x 150	8819	784	34.8	210/1	6e/04	-3
09/00006	06	06 Jan	03 Feb	150 x 150	8910	819	36.4	210/1	6e/04	1
			Average		**8853**	**817**	**36.3**	Lab. tester:		
			Standard Deviation		**50**	**32.5**	**1.5**	Steven Ratime		

Failure Mode:



REMARKS: 1. The cube samples were tested in accordance with SABS test method 863.
2. In the event of any errors made in the execution or reporting of tests or any conclusions drawn thereof RoadLab (Pty) Ltd will not be held responsible as every care has been taken to ensure the correctness of all tests and reports.
3. The results reported relate only to the samples tested.
4. SANAS Accredited Laboratory - T0296. Opinions and Interpretations are not included in our schedule of accreditation.

Deon Beekhuizen, Managing Director,
Roadlab (Pty) Ltd.

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6. Other Features

6.1 Invoicing into your Accounting Package

Monthly or when desired, the program can do Pro-forma Invoicing, which can be exported in a CSV file that can be imported into Pastel Accounting. Formats can probably be added for any Accounting program that can import text files. Alternatively, totals can be typed into the accounting package from the Pro-forma Invoice.

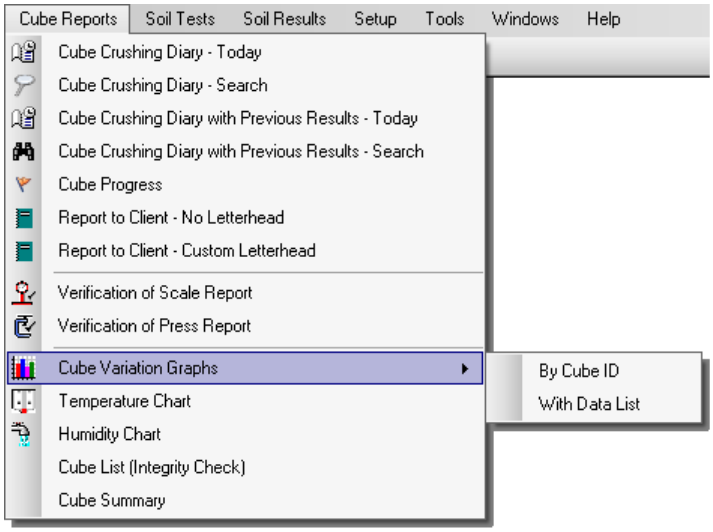
Invoicing is done from the Tools menu. All unbilled invoices are shown with dates and amounts, and the authorised user can choose which ones to bill, view details, or see the original Cubes receiving form. Invoices can be split so that older items can be billed and newer ones carried forward, if required.

You will have noticed that the invoice items for a batch are set up as the batch is received. This means that the invoice is ready to go to the client directly after the batch is received and **even before the first cube has been crushed**. This can markedly **improve your company's cash flow**, compared with a situation where billing is done after some (or all!) cubes have been crushed, and details then have to be collected from paper forms up to a month old. There is also a much smaller chance that cubes will not be billed at all.

Of course, the system does still rely on human input: If the data capturer fails to input the fact that your staff travelled to site to collect the cubes, or enters the km incorrectly, or forgets to put in standing time, under-billing can still happen.

6.2 Reports and Charts

There are numerous reports and charts that allow you to look at results globally or individually. Most of these have the ability to search by relevant data.



6.3 Quality Control

Labbie allows you to monitor and report (via graphs) on curing bath temperature, curing chamber humidity, and verification of scales and presses.

6.4 Importing data

Data can be imported from CSV (comma-delimited) text files for:

- Clients (for example, the list exported from your accounting package) and the
- Price List (for example, saved as CSV from Excel).
- For Soil tests: Mould and Tin (drying container) data.

6.5 Soil and other Tests

Labbie Version 1 as described handles concrete test cubes (of any size). With Version 2, we have added many other Civil Engineering materials tests. They are not covered in this document. See the Labbie web page for more details.