Rubicon Newsletter

March 2008

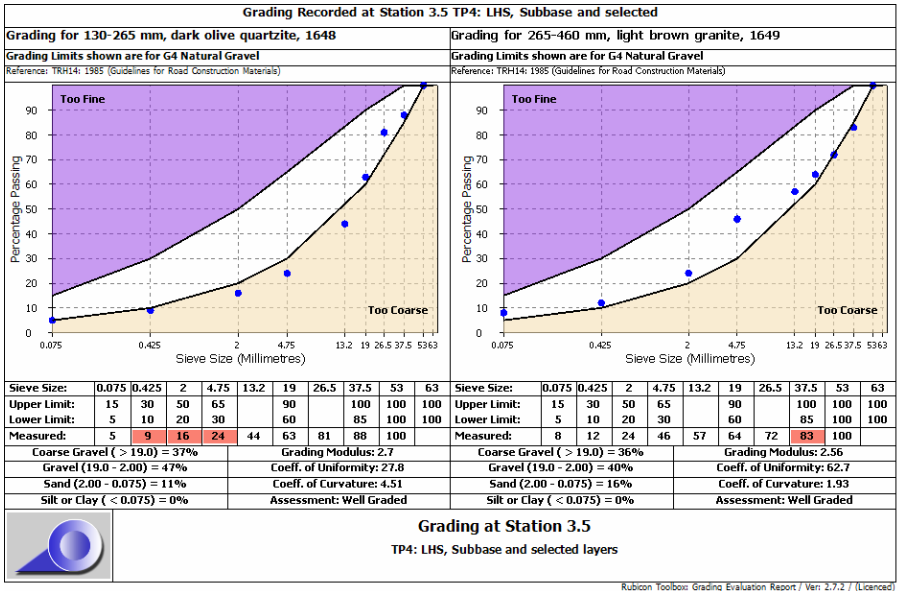
Rubicon Toolbox: New Release, Version 2.7.3

The latest version of Rubicon Toolbox has been released. This version, 2.7.3, contains some new features and some modifications. Major enhancements were made to the Grading Evaluation Reporting Tool, discussed in the article below. Improvements have also been made to the following Tools: Data Viewer, Multiple Stripmap Reporter and the Stress and Strain Calculator Tool. Modifications were made to the formatting of the Rubicon Toolbox Main Window list boxes and the Customizing Tool. The modifications and improvements are briefly discussed overleaf. More details can be found on our website under the "What's New" tab.

Rubicon Toolbox Feature: Grading Evaluation Reporting Tool

The Grading Evaluation Reporting Tool, also known as the Grading Analysis Tool, is part of the extensive Rubicon Toolbox series of Reporting Tools. The Tool was first introduced in Version 2.4.2 of Rubicon Toolbox. Several improvements have been made to the tool in the latest release. The main features are:

- The grading data are entered into a Microsoft Excel template and imported into Rubicon Toolbox. The template "Gradation Comparer Template1.xls" can be downloaded from our website.
- The gradings are shown both graphically and in a table, as shown in the adjacent report.
- You can select which grading envelope to use for each grading. The grading envelopes are entered into the template so you can define your own grading specification. Some envelopes currently used in South Africa are already included in the template.
- In the table, the sieve sizes for which the grading does not comply with the selected envelope are automatically highlighted.
- On the graph, you can choose whether to show the grading envelope and the "too coarse" and "too fine" areas (as demonstrated in the above report), just the grading envelope, or just the actual grading.
- The Grading Parameters shown in the table of data gives the Coarse Gravel, Gravel, Sand and Silt or Clay fractions, the Grading Modulus, Coefficients of Uniformity and Curvature, and an Assessment of how well the grading fits the envelope.
- A tabular summary of the gradings can be exported to Excel. The summary shows, for each grading: an assessment of whether it fits the selected envelope, the Grading Modulus and the other grading parameters. The exported summary is very useful when you need to quickly extract the essence from a large number of material gradings.
- The new Analyze option in the Tool allows you to summarize many gradings on one plot (as shown in the adjacent figure) and also plots the data on a triangle that shows the skeleton type of the gradings. These skeleton types represent different types of aggregate interlock, such as Stone-to-Stone contact (i.e. Coarse Aggregate Skeleton), Sand Skeleton or Filler Skeleton. This type of analysis is particularly useful where treatment of the material by means of cement, bitumen or foamed bitumen is planned. An additional feature is the ability to plot three areas indicating the suitability of the grading to foam bitumen treatment.

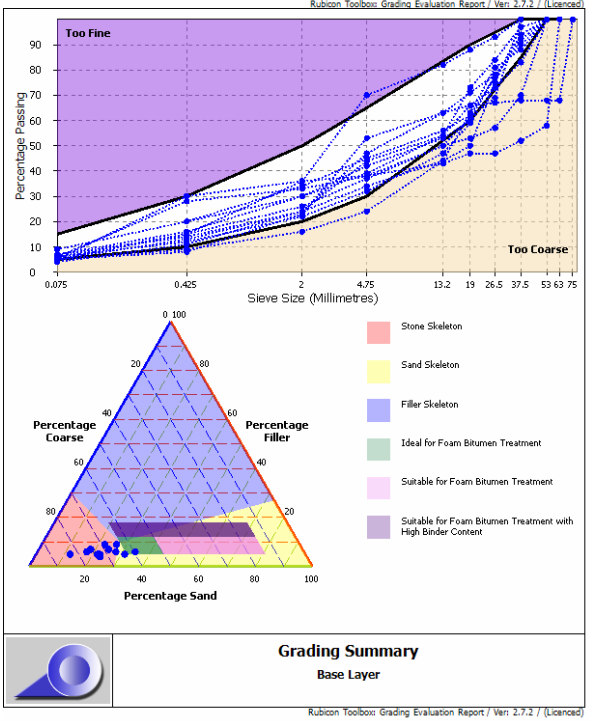


Sieve Size:	0.075	0.425	2	4.75	13.2	19	26.5	37.5	53	63
Upper Limit:	15	30	50	65		90		100	100	100
Lower Limit:	5	10	20	30		60		85	100	100
Measured:	5	9	16	24	44	63	81	88	100	

Coarse Gravel (> 19.0) = 37% | Grading Modulus: 2.7
Gravel (19.0 - 2.00) = 47% | Coeff. of Uniformity: 27.8
Sand (2.00 - 0.075) = 11% | Coeff. of Curvature: 4.51
Silt or Clay (< 0.075) = 0% | Assessment: Well Graded

Sieve Size:	0.075	0.425	2	4.75	13.2	19	26.5	37.5	53	63
Upper Limit:	15	30	50	65		90		100	100	100
Lower Limit:	5	10	20	30		60		85	100	100
Measured:	8	12	24	46	57	64	72	83	100	

Coarse Gravel (> 19.0) = 36% | Grading Modulus: 2.56
Gravel (19.0 - 2.00) = 40% | Coeff. of Uniformity: 62.7
Sand (2.00 - 0.075) = 16% | Coeff. of Curvature: 1.93
Silt or Clay (< 0.075) = 0% | Assessment: Well Graded



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Brief Summary of Modifications

Main Rubicon Toolbox Window, Actions Menu: Because we have so many Tools making up Rubicon Toolbox and it can be cumbersome and possibly confusing, it is now possible to select which Tools you would like to display under the Action Menu.

Main Rubicon Toolbox Window, Analysis Window: The format of the Analysis listbox has been changed so the full name of an analysis will be shown.

Customize Options: The listboxes that show the stored Criteria, Category Sets, Materials and Load Setups have been widened to allow more of the name to show.

Customizing Category Sets: The colours and names of all Category Sets can now be changed in one operation.

Multiple Stripmap Reporter: This tool can now also handle High-Low Comparer plots.

Stress-Strain Calculator Tool: This tool has been improved so that all the calculated stresses, strains and deflections are exported to Excel.

Data Viewer Tool: The uniform section component of the Data Viewer Tool was modified so that the statistics generated for the user-defined subsections can now be exported to Excel as well as printed as a report.

MAS News

- Fritz and Sanet Jooste are settled in Hamilton, New Zealand. Fritz is still actively working on Rubicon Toolbox, as evident by the enhancements to the Grading Analysis Tool featured in this newsletter. Fritz is also working on Guidelines for the Network Measurement of Skid Resistance for the Road Materials Committee of COTO, amongst other projects in New Zealand.
- The SABITA and Gautrans project to update the foamed bitumen and emulsion guideline documents is reaching its final stages. A new, Pavement Number (PN) based design method and a method for classifying pavement materials consistently from routine pavement test data has been developed. These methods are currently being validated before inclusion in the final guideline document. To find out more about the methods, and to actually do a pavement design or classify materials, go to www.bitstab.roadrehab.com.
- We have also just completed a project for SANRAL titled "Development of a Pavement Performance Information System". This project involved the collation of long term pavement performance data from 46 in service pavements and HVS test sections in southern Africa. The data are a valuable source for validation of the planned revision of the South African Mechanistic-Empirical Design Method. The data will also be used to further calibrate the Pavement Number design method.
- Both Arno Hefer and Marlou Bredenkamp had their second sons in August and December last year. Congratulations!
- We have had major problems with our Telkom lines and so are now automatically transferring calls to our landline to Marlou's mobile. If you struggle to reach us via the landline number, please try her mobile number directly, 082 331 9479.

Training: *Dates and New Course*

Pavement Design and Analysis Course: We are continuing to offer this two-day course, which deals with fundamental pavement data analysis and pavement design, by means of lectures and worked assignments. Key elements of the course include:

- Overview of the mechanistic design and analysis method.
- Evaluation of pavement structural capacity.
- Analysis of FWD data, including Backcalculation.
- Basic analysis and documentation of DCP data.
- Holistic pavement design; deriving and documenting design assumptions.
- Pavement condition summary using the Data Viewer Tool.

Rubicon Toolbox is used for the assignments, thereby providing an environment for learning how to use the program. It is not necessary to have purchased the package to attend the course nor is it necessary to have experience in using the package. The course is best suited to practitioners with some experience in pavement design and analysis. 2008 Dates for this course are:

- 3 & 4 April in Bloemfontein
- 5 & 6 June in Durban/Pietermaritzburg
- 14 & 15 August in Pretoria
- 23 & 24 October in Cape Town

Data Viewer Course: We will also be holding a new, one-day course on the Data Viewer in Pretoria on 12 June. This course is a hands-on workshop highlighting the extensive capabilities of the Data Viewer. Key elements of the course include:

- Preparation of data in a Microsoft Access Database.
- Construction of strip maps including data strips, statistic strips, tool link strips and text strips.
- Using the Data Viewer in feedback mode to obtain relevant statistics.
- Analysis of Uniform Sections and preparing the Uniform Section Summary Report.

This course is suitable for any one already using, or interested in using, the Data Viewer. Depending on the demand for the course, we will hold it in other major cities later in the year.

Customized Workshops: Remember too that we are available to hold in-house customized workshops at your offices.

CPD Accreditation: All our courses are accredited for SAICE Continued Professional Development (CPD) points. Two points are available for the two-day course and one point for the one-day course.

Course Costs: The two-day Pavement Design and Analysis course costs R 3750 to attend. The one-day Data Viewer course costs R 2 000 to attend. If your maintenance is up to date, you will receive a 15% discount on the course attendance fee.

Registration: To register for any of the courses or to request a course at an alternate location, contact MAS.

Comments and Suggestions

One of our primary aims with Rubicon Toolbox is to keep enhancing and improving the software to better meet your needs. To do this, we need you to share your ideas and suggestions—and, of course, bugs—with us!

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