Major new features of ROAD DOCTOR Update version 3.4.74

This is an update version of previously released Road Doctor 3.4 (November 2019). A new major release (3.5) will be published in the end of year 2020. Along with these some major new feature, the update brings many smaller enhancements and large number of bug fixes. Installation of this new version is recommended.

Table view

Road Doctor includes now a new powerful table view tool for calculating statistical values from selected columns. Earlier, statistical calculations were possible only in row direction. The new tool makes possible to calculate from selected columns average value, median value, deviation, sum of values, number of values, minimum value, minimum value location, maximum value, maximum value location, slope, goodness of fitting (R^2) and prediction of x at given y or y at given x. This operation can be used for example to estimate, when the rut depth reaches the critical limit, if there are measurements from multiple years. The slope calculation operation can also reset the slope, if for example the ruts are patched in some road sections. The user can select, which parameters are inserted into the table. If the table was taken originally from linked data base, the program can also save the changed table and replace the old table with table with new columns without relinking.

TABLE Project:4_SSDLine:00004_437Data:Rut_Increase_2015-2019

Loc	From	To	2015 RUT1	2016 RUT1	2017 RUT1	2018 RUT1	Minimum	Maximum	Average	Median	Deviation	SumOfVals	NumOfVals	Slope	Intercept	RMSE	R^2	X_y20	Y_x2030
			2015,85	2016,91	2017,6	2018,5													
5	0	10		4,036	3,991	7,6	3,991	7,6	5,209	3,991	2,071	15,627	3	2,329	-4694,229	0,432	0,804	2024,02	33,927
15	10	20		6,36	5,17	8,31	5,17	8,31	6,74	7,6	2,22	13,48	2	3,489	-7034,012	0	1	2021,851	48,432
25	20	30		6,08	7,25	10,1	6,08	10,1	7,81	7,25	2,068	23,43	3	2,56	-5157,292	0,156	0,974	2022,432	39,374
35	30	40		5,29	6,15	10,75	5,29	10,75	7,397	6,15	2,936	22,19	3	3,517	-7088,886	0,41	0,912	2021,253	50,762
45	40	50		5,69	7,54	11,88	5,69	11,88	8,37	7,54	3,177	25,11	3	3,939	-7939,479	0,227	0,977	2020,622	56,939
55	50	60	8,6	4,39	7,93	11,93	4,39	11,93	8,083	7,93	3,772	24,25	3	4,727	-9530,224	0,073	0,998	2020,191	66,372
65	60	70	6,02	3,56	6,72	10,08	3,56	10,08	6,787	6,72	3,261	20,36	3	4,082	-8230,207	0,09	0,997	2020,907	57,123
75	70	80	5,34	3,61	5,75	9,79	3,61	9,79	6,383	5,75	3,138	19,15	3	3,917	-7896,078	0,147	0,99	2021,147	54,675
85	80	90	6,57	4,28	6,47	8,3	4,28	8,3	6,35	6,47	2,013	19,05	3	2,504	-5045,442	0,121	0,984	2023,122	37,222
95	90	100	5,57	4,03	6,73	10,47	4,03	10,47	7,077	6,73	3,234	21,23	3	4,056	-8175,643	0,026	1	2020,857	57,081
105	100	110	6,16	4,26	8,27	10,31	4,26	10,31	7,613	8,27	3,078	22,84	3	3,729	-7515,88	0,376	0,933	2020,992	53,589
115	110	120	4,31	3,6	7,63	10,04	3,6	10,04	6,395	7,63	2,998	25,58	4	2,358	-4751,197	0,616	0,775	2022,984	36,548
125	120	130	4,22	7,14	8,6	9,8	4,22	9,8	7,44	8,6	2,406	29,76	4	2,121	-4271,159	0,173	0,973	2023,137	34,558
135	130	140	4,46	5,91	9,55	11,31	4,46	11,31	7,808	9,55	3,168	31,23	4	2,748	-5534,955	0,331	0,942	2021,652	42,937
145	140	150	4,49	6,2	9,31	11,56	4,49	11,56	7,89	9,31	3,157	31,56	4	2,774	-5588,288	0,25	0,967	2021,58	43,358

Video and 360 Video

Road Doctor uses now newest VLC media player libraries to enable fast 360 video playback. The new drivers make possible also to change contrast, saturation, brightness, etc. of the video. The old one was custom made and had problems with large video sizes. The old player is still used to make possible to show single 360 images. The 360 video can also be zoomed and panned with mouse buttons.

As a new feature it is also possible to set a location shift for video. This makes possible to synchronize the view location to actual data location. Also reverse played video can be set so that they show the same location at the same time. This combined with the synchronized playback of multiple videos makes analysis easier than before. Also, the playback and pausing/reversing video has now new quick tools, which enable handling the video without clicking the video or actual play/pause button. As a new feature video can be started or paused with center mouse button or with spacebar key. If Control button is pressed simultaneously, the video starts to play reverse.

Specially if the video distance shift is combined with the Road Width tool that comes with the **Diagnostics** module, the actual location of interest can be pin pointed, as in the image below.
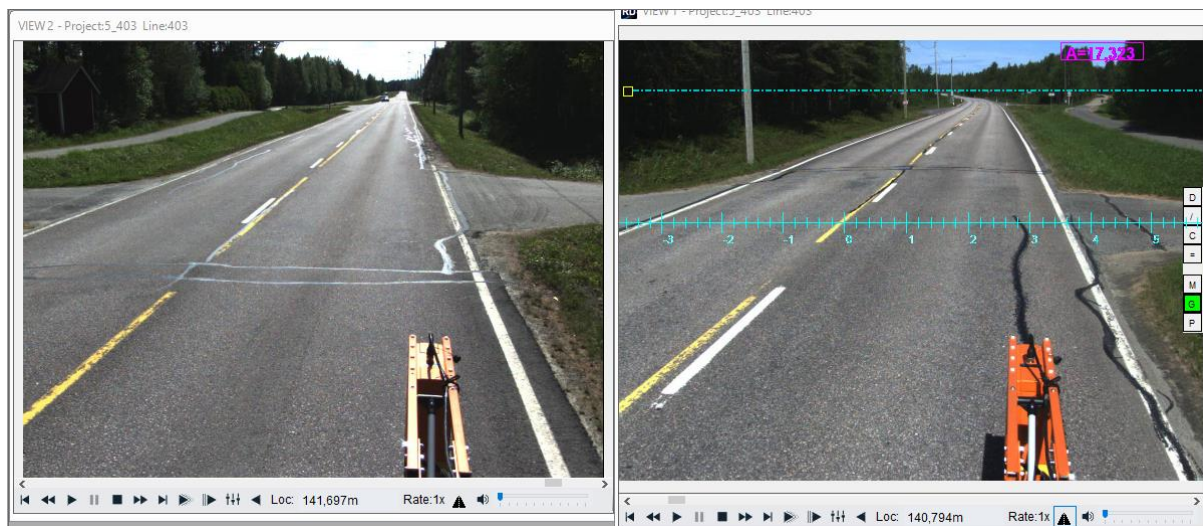
GPR Tools

A new tool *'Save All Traces to Clipboard'* in Road Doctor's single scan view makes possible to output GPR data contents shown on the screen to clipboard and from there to table view or any other table tool for additional processing. The tool copies the distance and time range which is shown on the screen. Scans can be skipped if every scan is not needed. The operation is very quick. The data can be linked from table view to project tree and it can be shown on the screen as a normal surface image. All the Database filtering tools which are available in **Surface** module are available. Now the mouse scroll button can be used to move data up and down in the scan view and if Control is pressed, it is possible to zoom in and out.
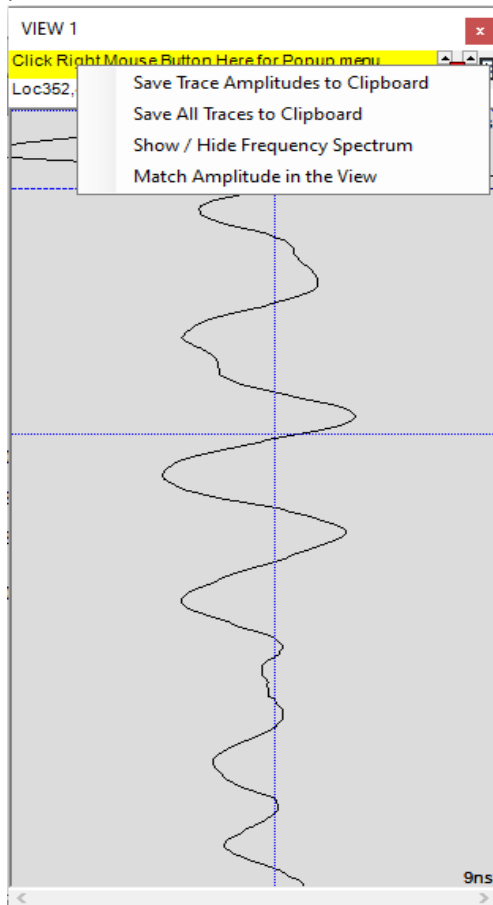
In the similar way as with GPR plain data view, it is possible to save the amplitudes shown in **GPR-**modules slice view to clipboard. This makes possible to use own amplitude analysis tools and, also, use other software to show the data from slices. Or as with plain data views, use it as a Road Doctor database and with Surface view. Also, the routines used for slice views calculated based on interpreted layer interface is much faster than before.

As a new feature it is possible to link also 3D Radar's .3dra GPR files with multiple channels in the same way as single channel files. This makes processing and linking of large measurements much faster than before.

In the previous Road Doctor version there were a limitation, that single data array was not possible to be more than 2Gigabytes. This caused problems with very large and long GPR-files and also Laser scanner files. This limitation is now removed, and a single data section (GPR file or channel) that can be loaded into memory is now 2 Billion addresses, which means 8Gb. This makes possible to use the full power of modern fast computers.

Project Tree handling

Project tree handling routines are now optimized and the tree is resetted only when really necessary. The previous version reloaded everything always, if some data was removed or linked. This caused that the linking process could be quite slow, with very large projects.

See the complete list of changes in a separate document.