

The logo graphic consists of a stylized, three-dimensional diamond shape. The top half of the diamond is a light gray, curved shape that resembles a road surface or a stylized 'S'. The bottom half is a darker gray, also curved, creating a sense of depth and perspective. The word 'ROADSCANNERS' is written in a bold, white, sans-serif font across the center of the diamond.

ROADSCANNERS

Advanced Tools for Infrastructure Design & Management

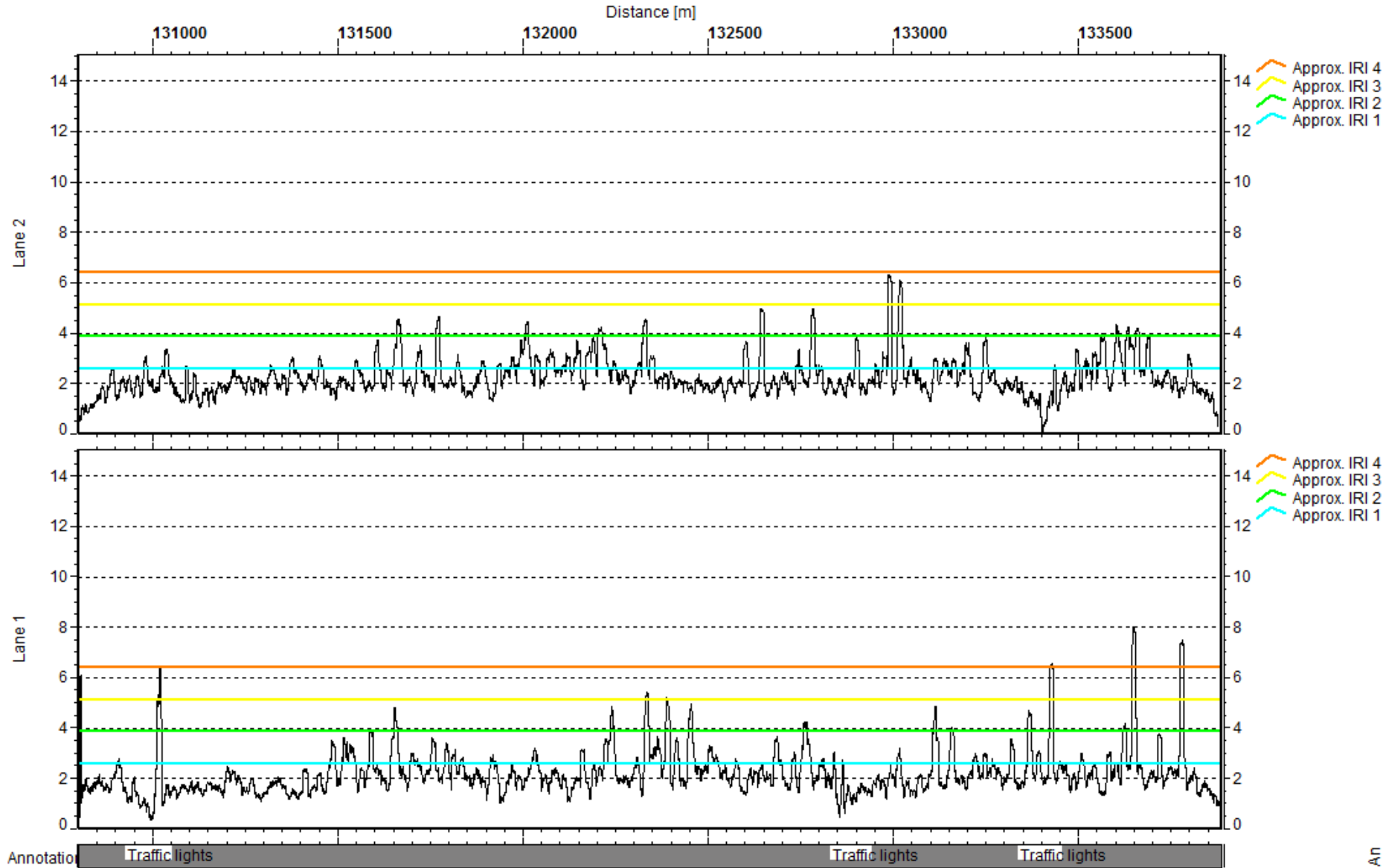
Section 9

Road 4, km 130,8-133,8



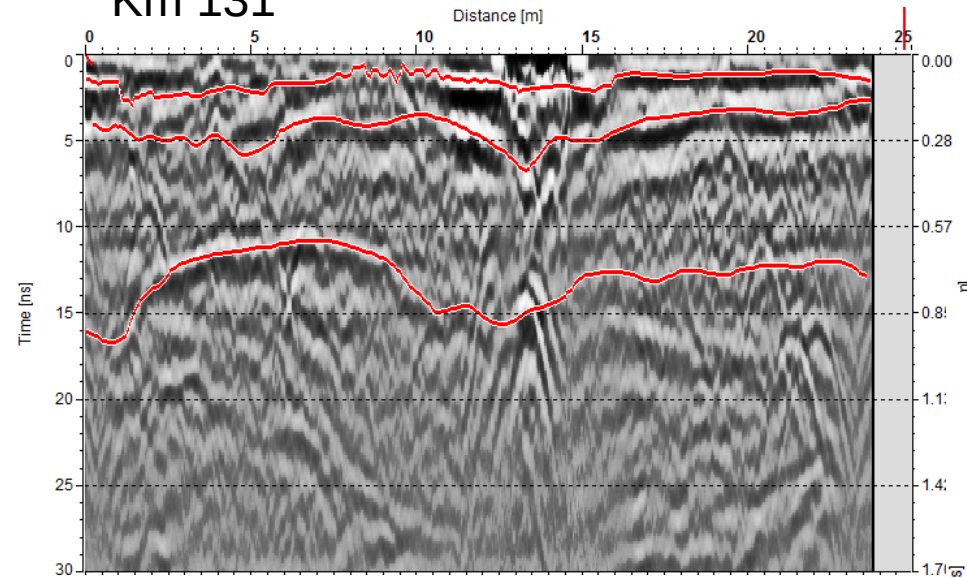
Roughness from Accelerometer Data

9_Road4_k130,8_133,8

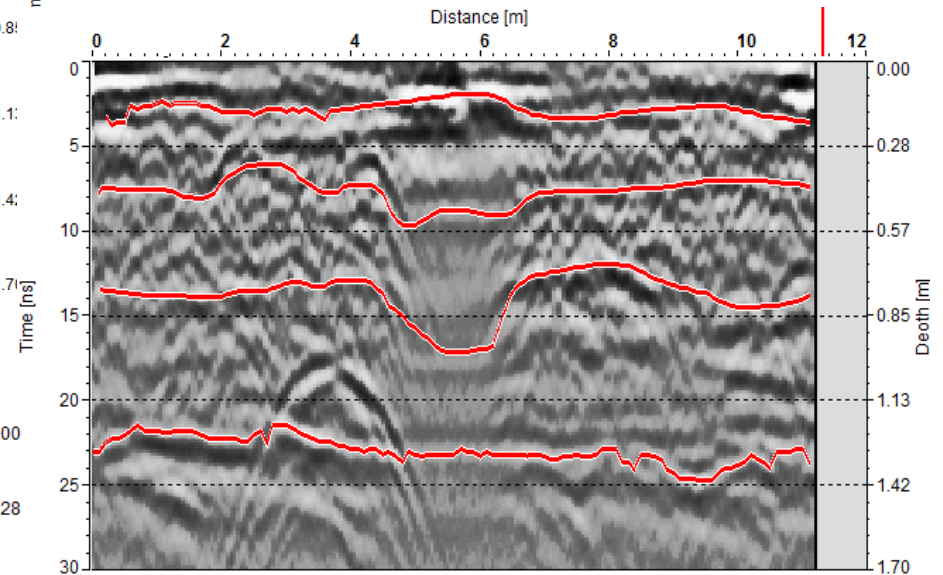


GPR Cross Sections

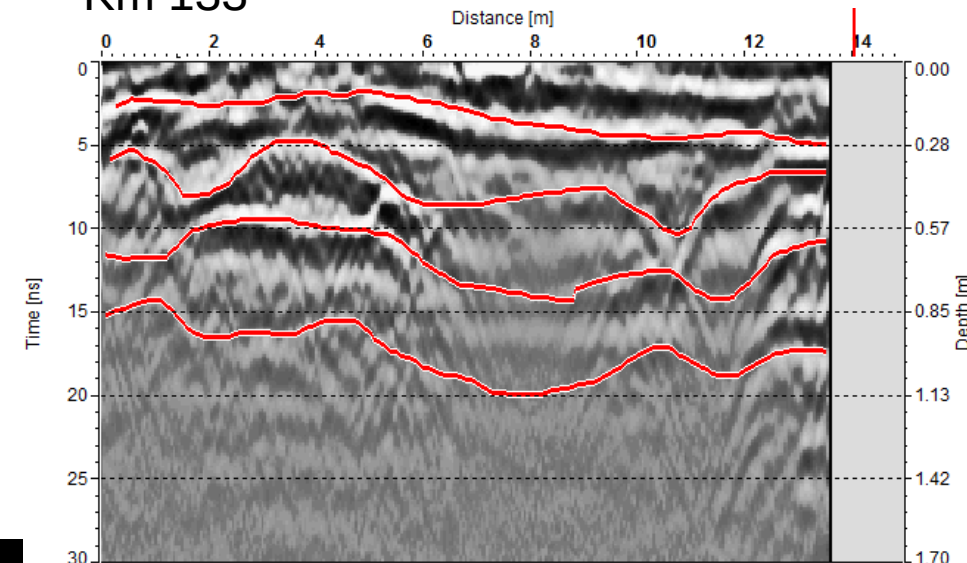
Km 131



Km 132



Km 133

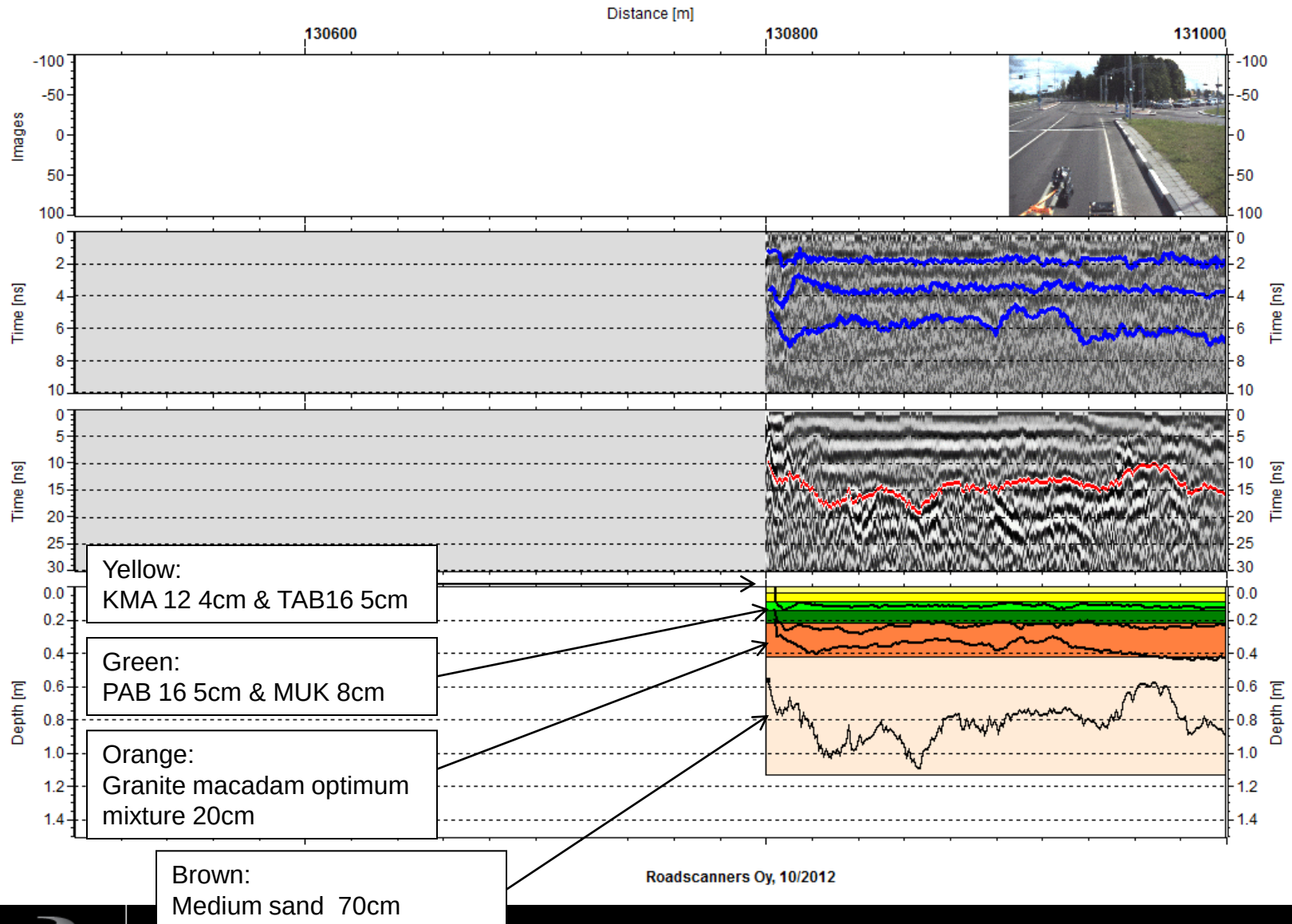


Materials	[cm]
Crushed aggregate mastic asphalt KMA 12	4
Dense asphalt concrete TAB 16 II	5
Porous asphalt concrete PAB 16	5
Precoated crushed limestone MUK 12/32	8
Granite macadam optimum mixture	20
Geotextile	

Explanation for longitudinal profiles

-Profiles are presented from Lane 1, right wheelpath

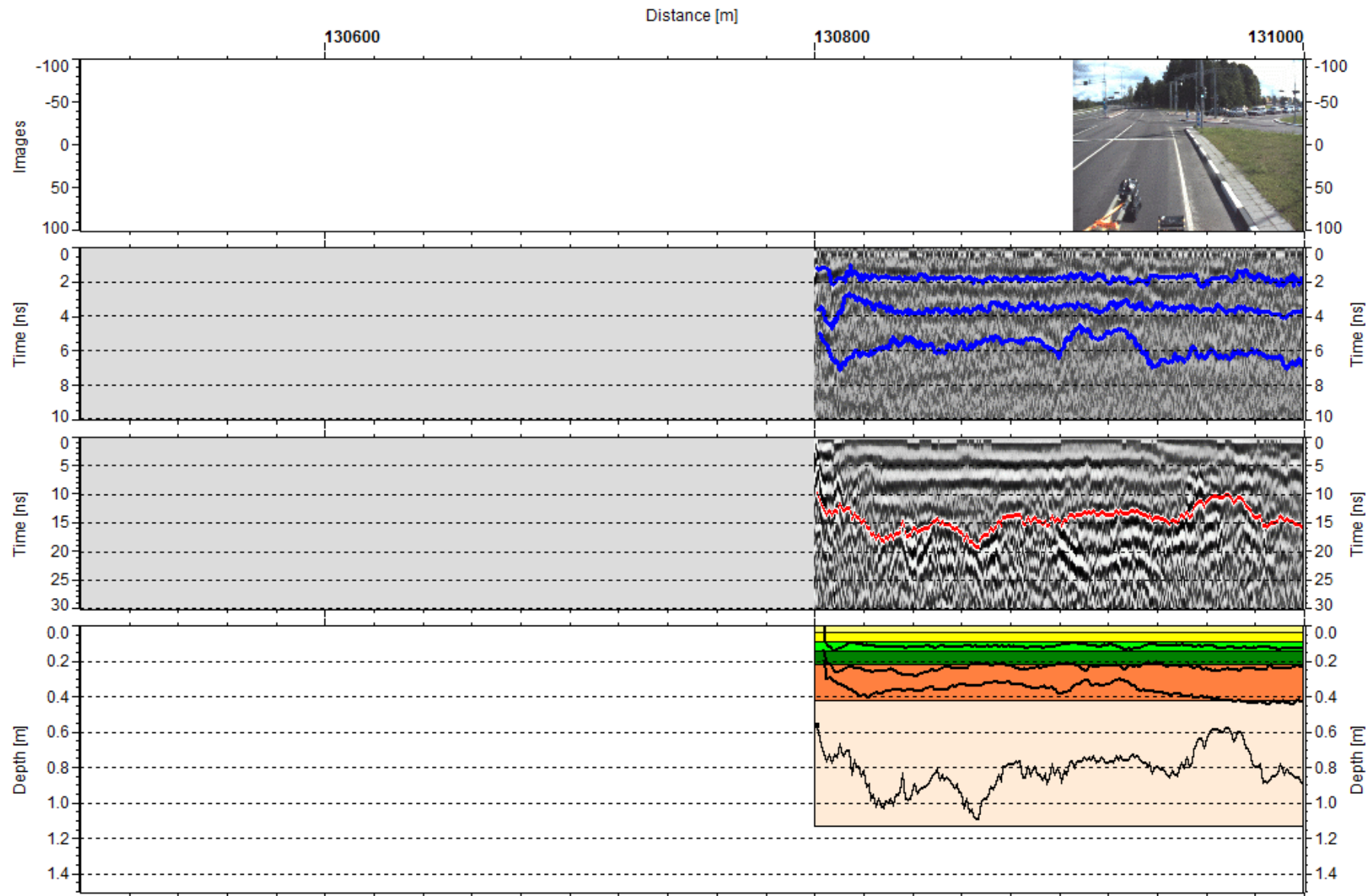
9_Road4_km130,8_133,8



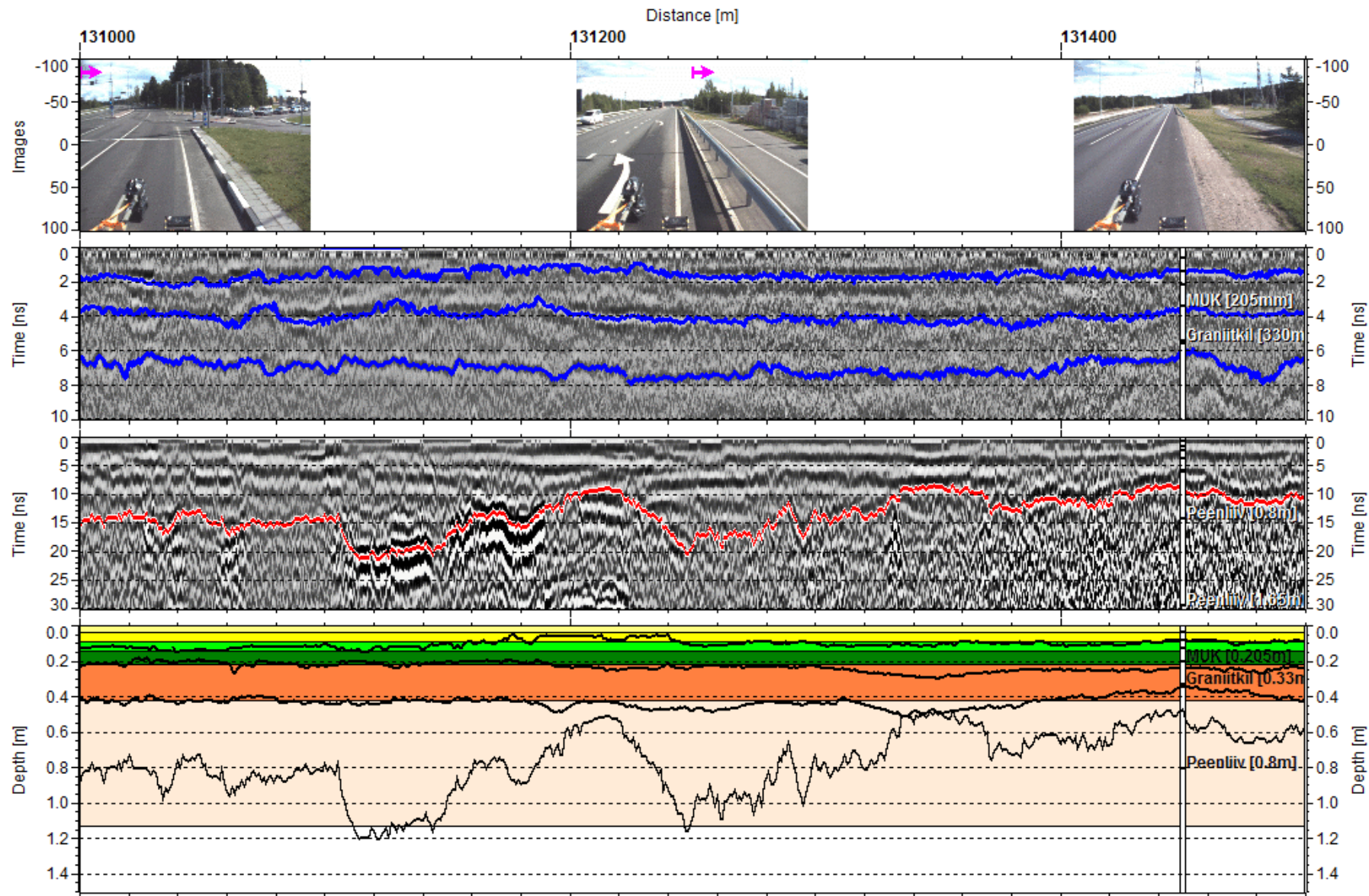
Images in
250m intervals

Air coupled
GPR data with
interpretation

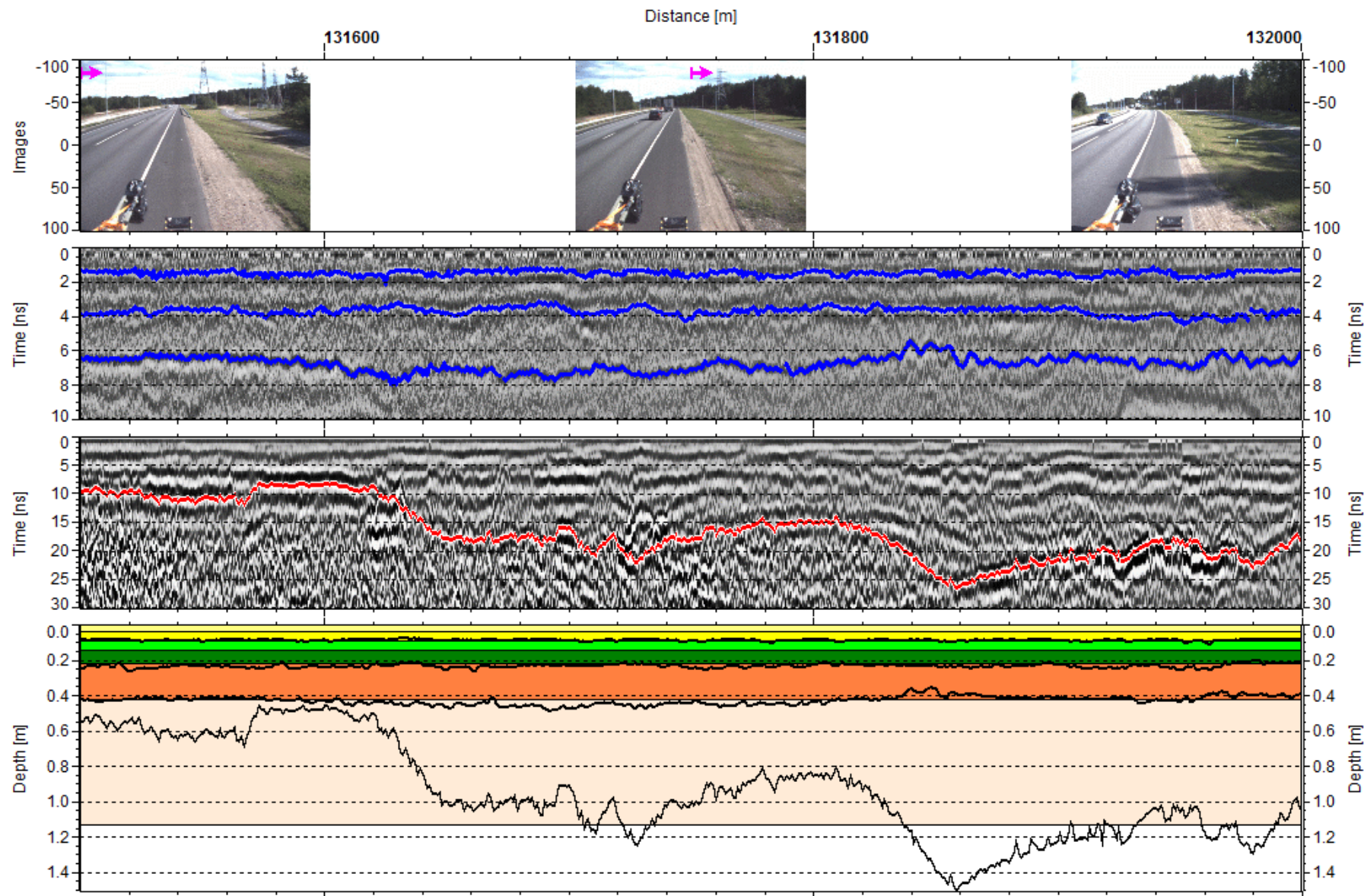
Interpretation
compared to
designed plan



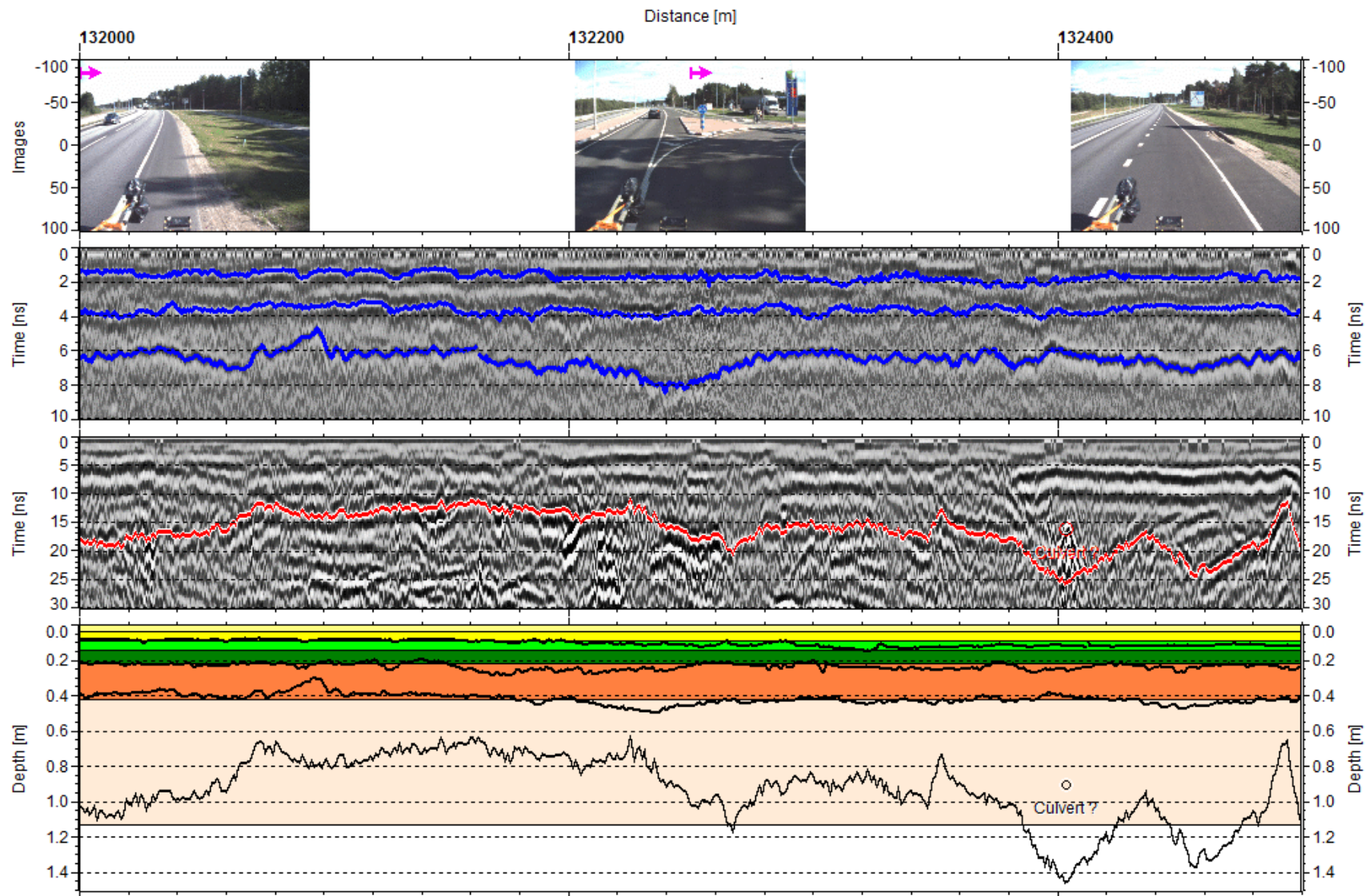
Roadscanners Oy, 10/2012



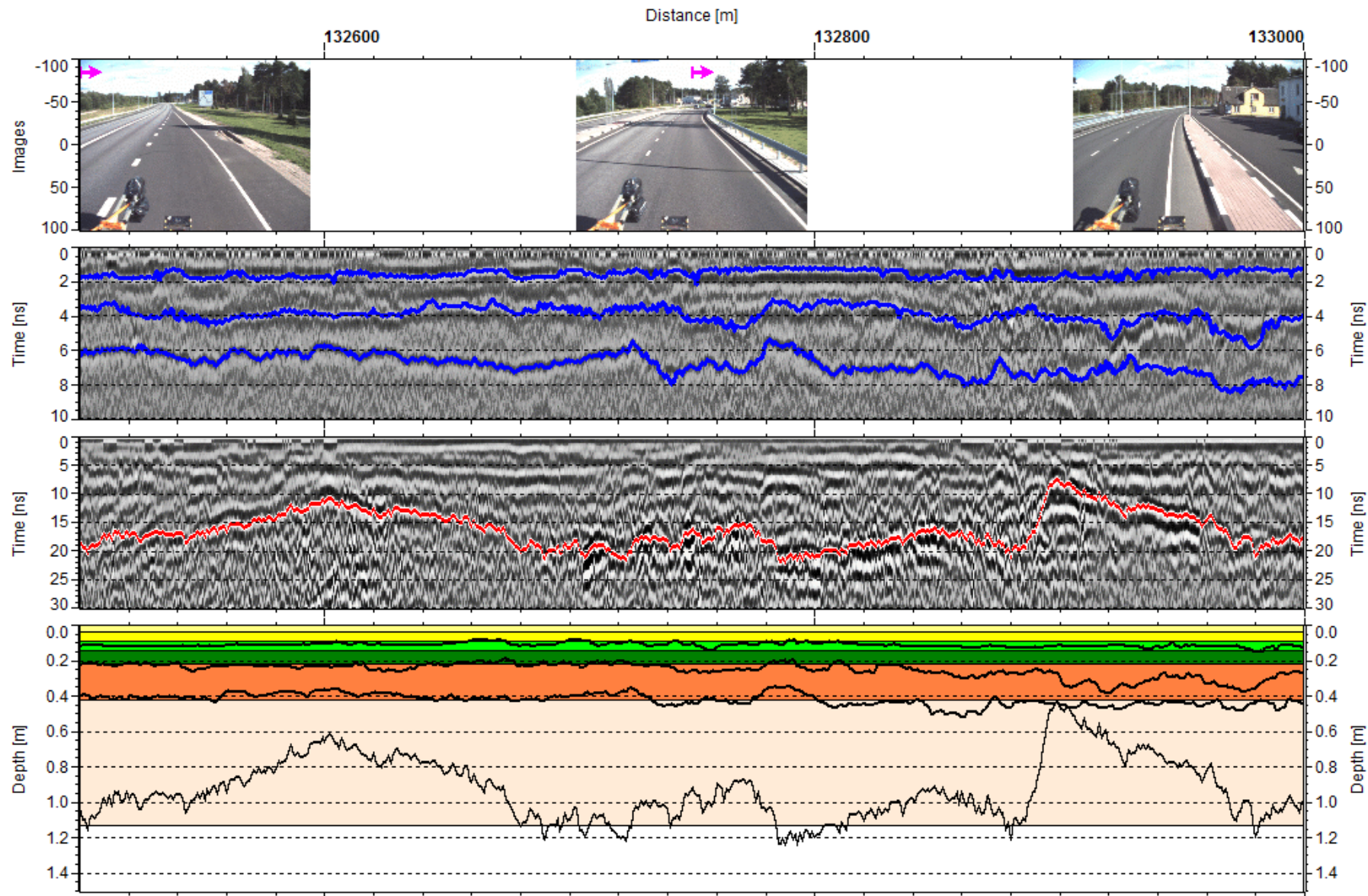
Roadscanners Oy, 10/2012



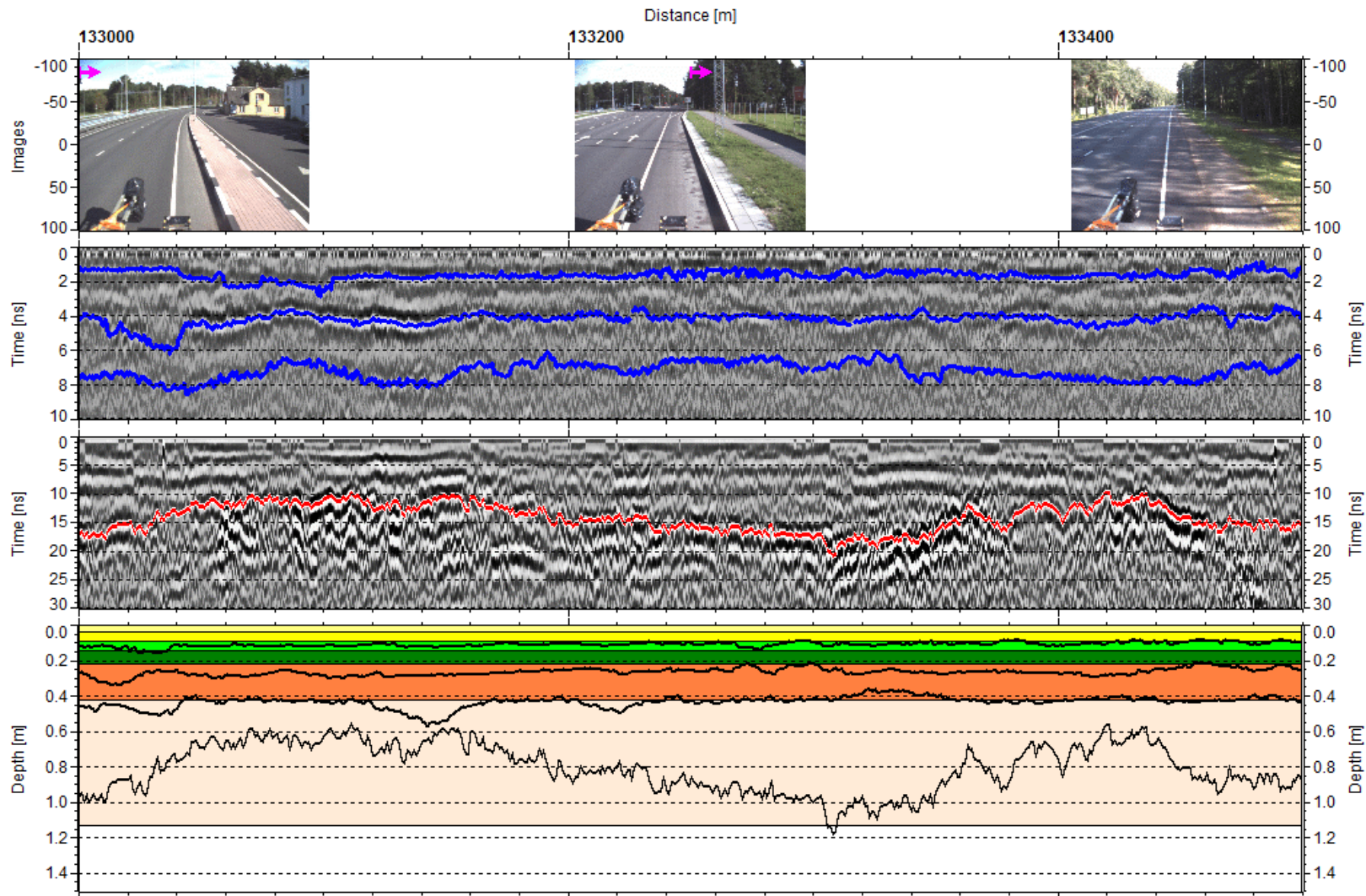
Roadscanners Oy, 10/2012



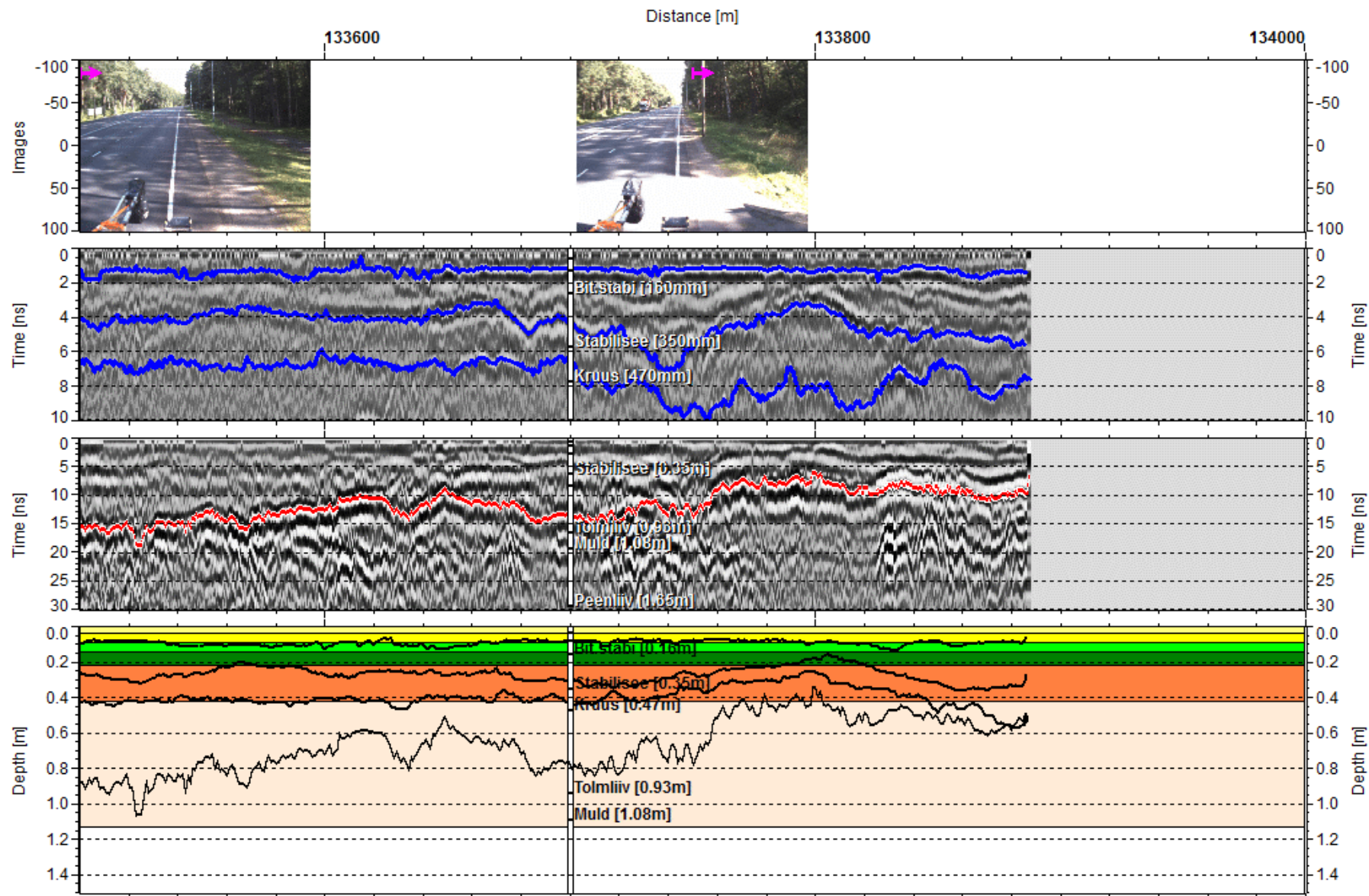
Roadscanners Oy, 10/2012



Roadscanners Oy, 10/2012



Roadscanners Oy, 10/2012

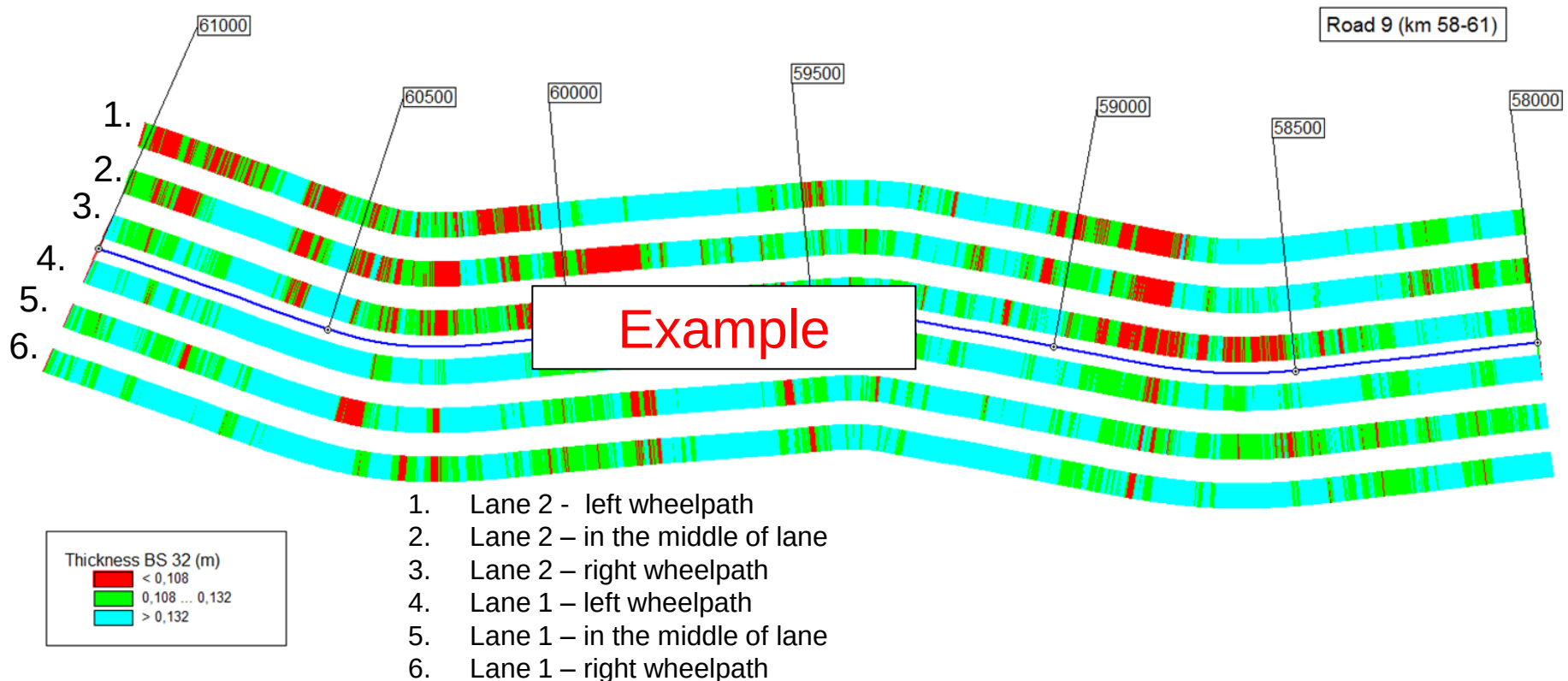


Roadscanners Oy, 10/2012

Explanation of Thickness Statistics and Maps

Table of average and statistical values:

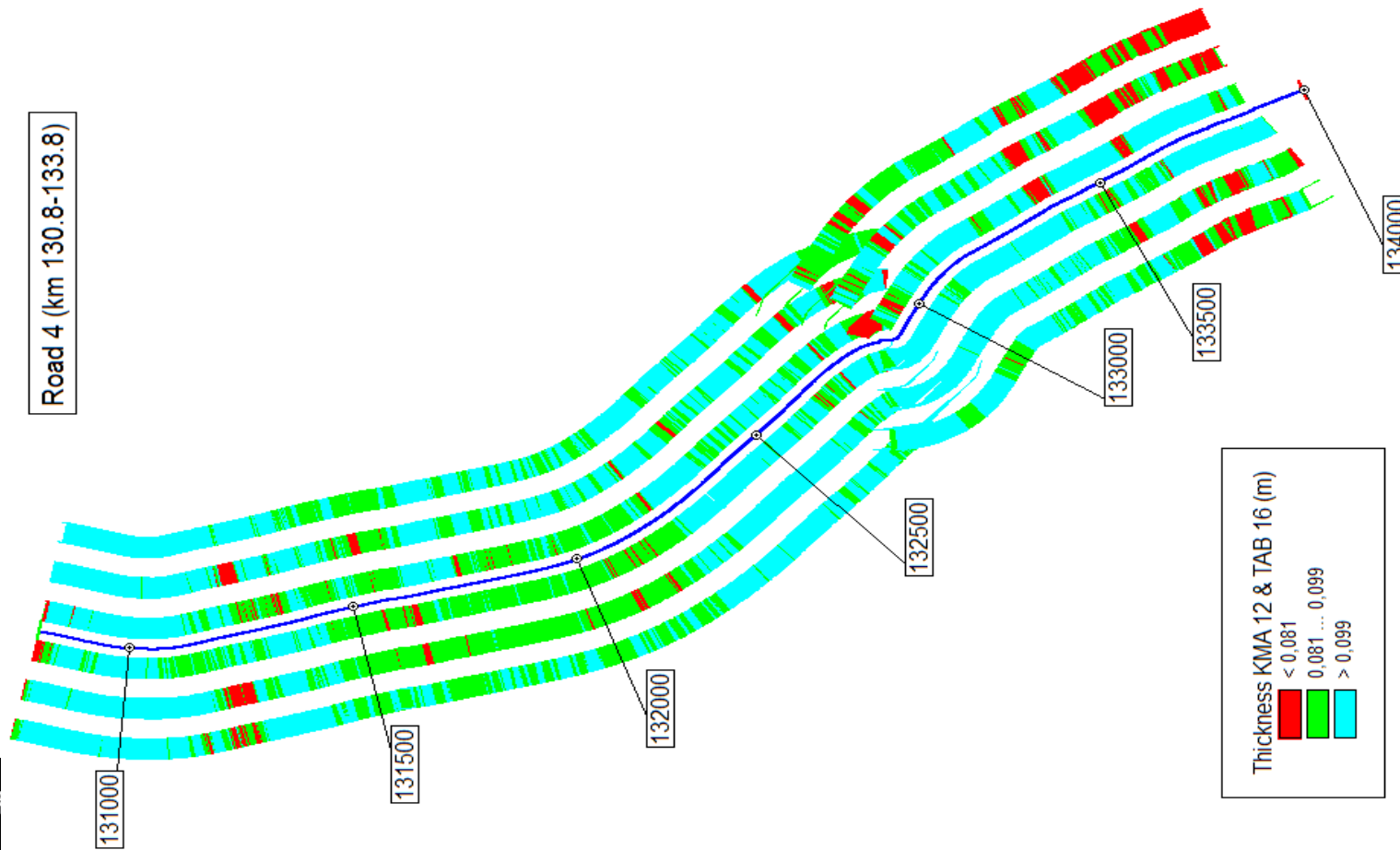
<i>Planned thickness = 0,04 m (TAB 12)</i>	L2 right	L2 middle	L2 left	L1 left	L1 middle	L1 right
Average layer thickness (m)	0.063	0.064	0.064	0.061	0.061	0.063
% of distance where thickness is more than 10 % under	0.0	0.0	0.0	0.0	0.0	0.0
Average undershoot from planned in "more	Example					
% of distance where thickness is more than 1						
Average overshoot from planned in "more than 10 % over" class (m)	0.023	0.024	0.024	0.021	0.021	0.023
% of distance where thickness is between +- 10 %	0.0	0.0	0.0	0.1	0.0	0.6
Standard deviation (m)	0.005	0.004	0.006	0.006	0.004	0.005



Maps of Layer Thicknesses

[1/4]

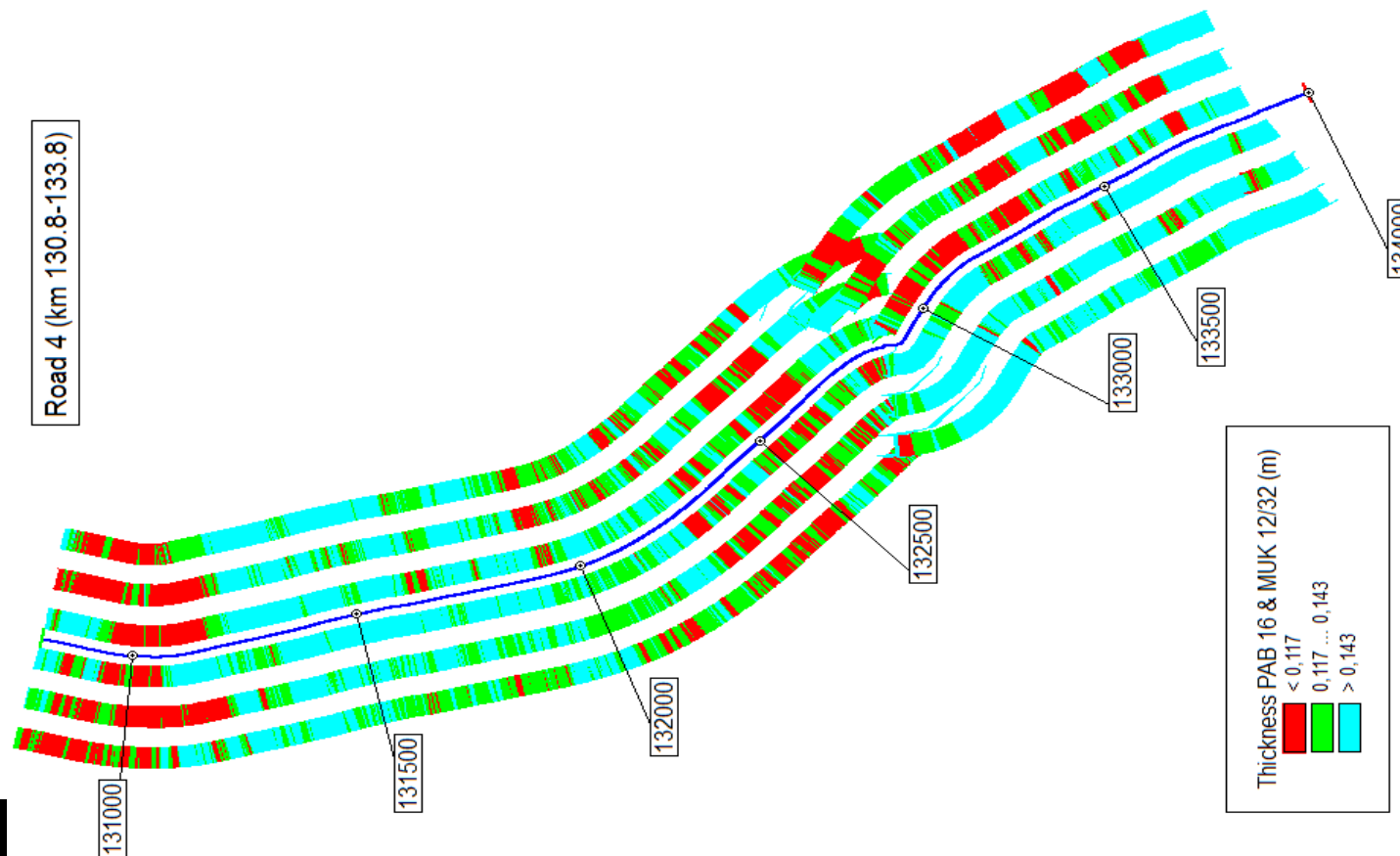
Planned thickness = 0,09 m (KMA 12 & TAB 16)	L2 right	L2 middle	L2 left	L1 left	L1 middle	L1 right
Average layer thickness (m)	0.103	0.103	0.105	0.104	0.102	0.103
% of distance where thickness is more than 10 % under	11.1	13.6	6.2	3.1	6.5	6.4
Average undershoot from planned in "more than 10 % under" class (m)	-0.017	-0.017	-0.015	-0.016	-0.017	-0.014
% of distance where thickness is more than 10 % over	57.6	58.6	57.0	57.3	56.9	58.0
Average overshoot from planned in "more than 10 % over" class (m)	0.027	0.026	0.029	0.027	0.025	0.025
% of distance where thickness is between +- 10 %	31.2	27.9	36.8	39.6	36.6	35.6
Standard deviation (m)	0.020	0.020	0.021	0.018	0.017	0.016



Maps of Layer Thicknesses

[2/4]

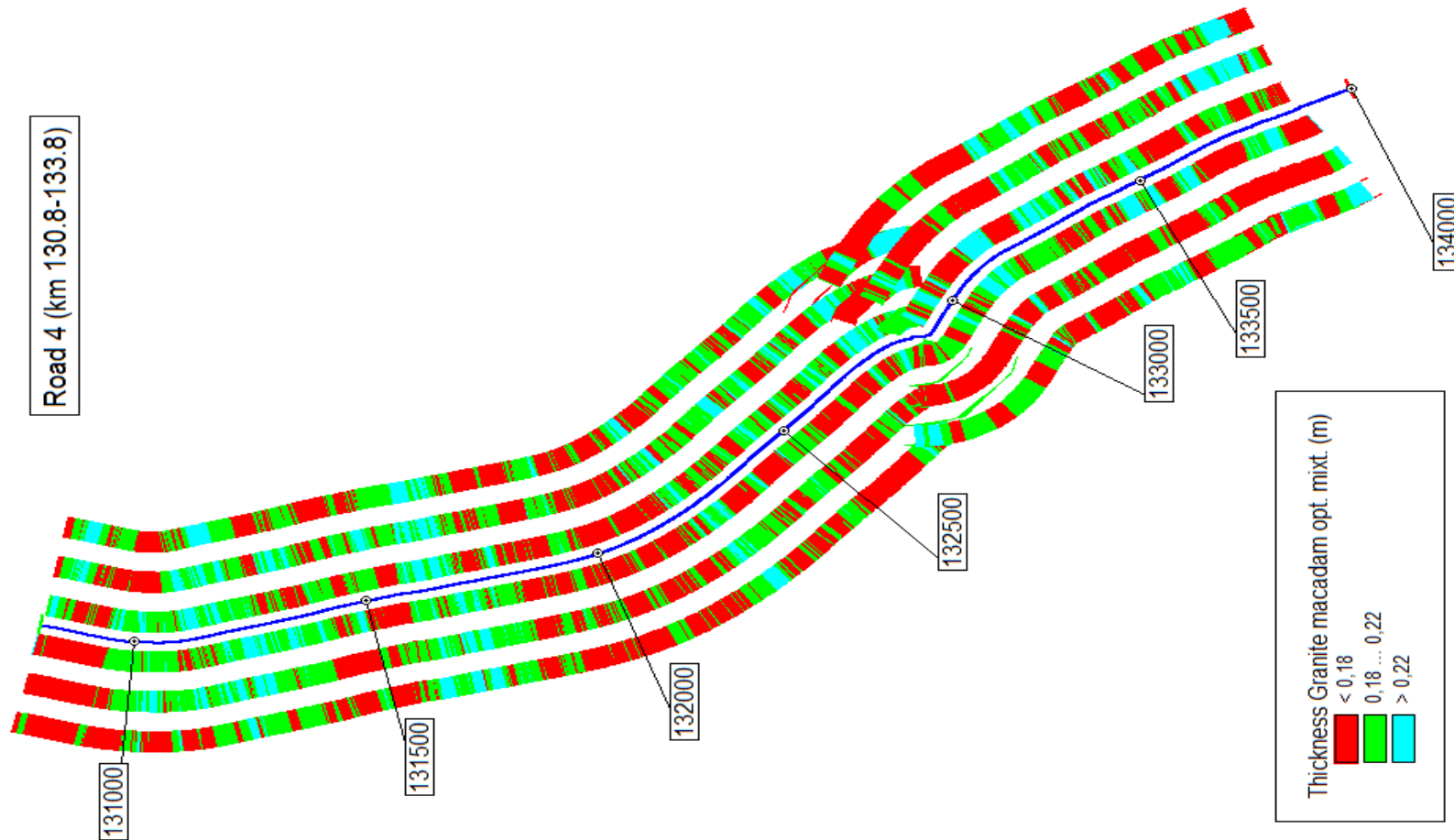
Planned thickness = 0,13 m (PAB 16 & MUK 12/32)	L2 right	L2 middle	L2 left	L1 left	L1 middle	L1 right
Average layer thickness (m)	0.135	0.131	0.138	0.148	0.142	0.143
% of distance where thickness is more than 10 % under	28.5	32.2	27.7	14.9	20.5	18.2
Average undershoot from planned in "more than 10 % under" class (m)	-0.032	-0.034	-0.031	-0.025	-0.029	-0.026
% of distance where thickness is more than 10 % over	33.0	33.0	43.8	58.5	46.4	42.7
Average overshoot from planned in "more than 10 % over" class (m)	0.042	0.038	0.038	0.037	0.038	0.042
% of distance where thickness is between +/- 10 %	38.5	34.8	28.5	26.7	33.2	39.1
Standard deviation (m)	0.035	0.034	0.033	0.028	0.033	0.035



Maps of Layer Thicknesses

[3/4]

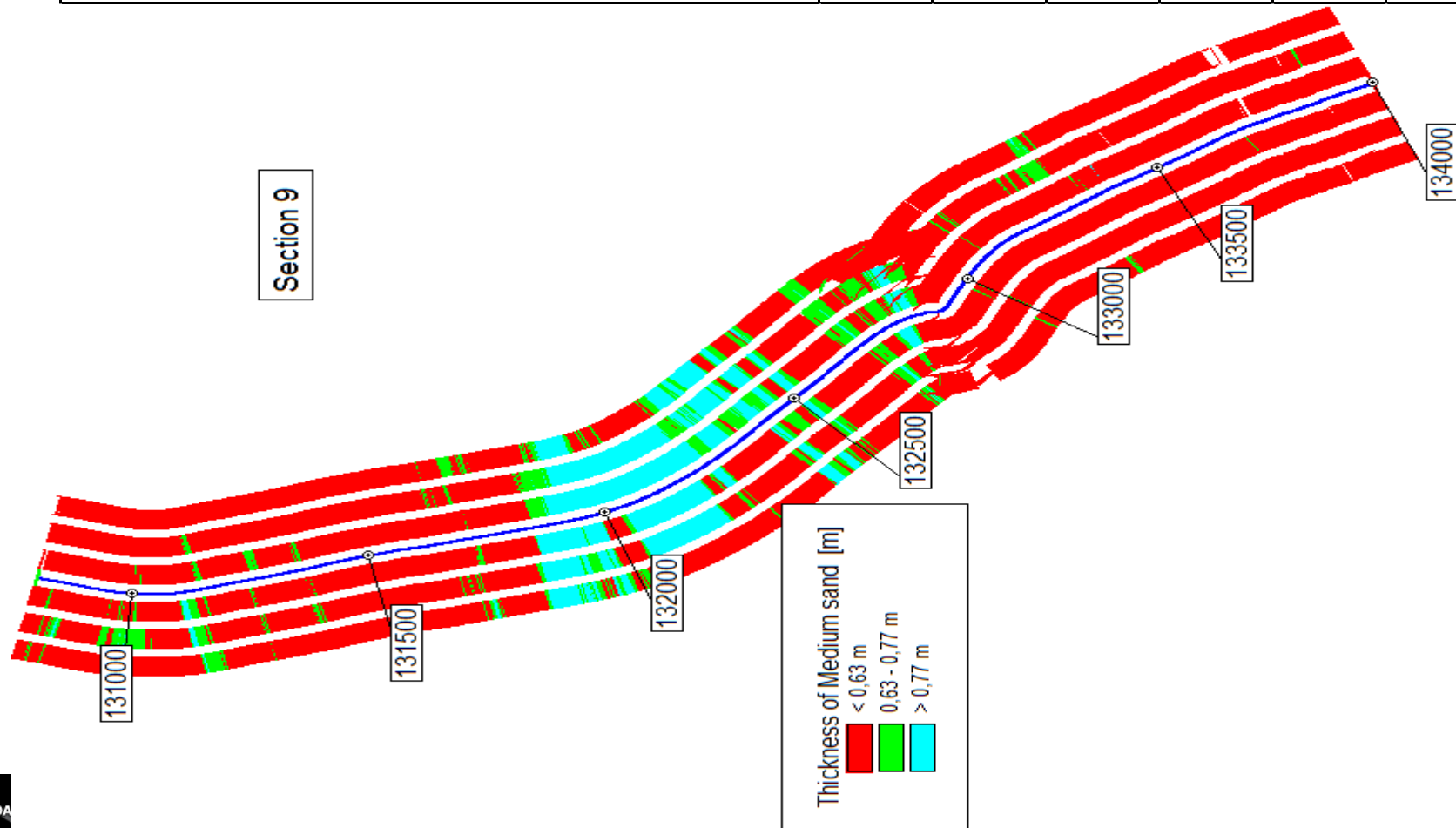
Planned thickness = 0,20 m (Granite Macadam Opt. Mixt.)	L2 right	L2 middle	L2 left	L1 left	L1 middle	L1 right
Average layer thickness (m)	0.180	0.188	0.187	0.183	0.170	0.178
% of distance where thickness is more than 10 % under	47.4	38.5	41.1	44.8	54.4	52.4
Average undershoot from planned in "more than 10 % under" class (m)	-0.050	-0.050	-0.048	-0.048	-0.060	-0.048
% of distance where thickness is more than 10 % over	12.8	19.8	17.7	13.8	8.7	10.7
Average overshoot from planned in "more than 10 % over" class (m)	0.040	0.038	0.041	0.039	0.033	0.044
% of distance where thickness is between +- 10 %	39.8	41.8	41.2	41.4	36.9	36.9
Standard deviation (m)	0.037	0.039	0.038	0.037	0.041	0.036



Maps of Layer Thicknesses

[4/4]

Planned thickness = 0.70m (Medium sand)	L2 right	L2 middle	L2 left	L1 left	L1 middle	L1 right
Average	0.420	0.489	0.491	0.473	0.457	0.407
% of thickness more than 10 % under	83.7	71.6	72.4	79.3	78.7	84.9
Average undershoot from planned in "more than 10 % under" class	-0.338	-0.345	-0.343	-0.318	-0.327	-0.343
% of thickness more than 10 % over	7.7	17.3	17.6	13.5	10.7	5.7
Average overshoot from planned in "more than 10 % over" class	0.168	0.268	0.284	0.276	0.244	0.177
% of thickness between +- 10 %	8.6	11.1	9.9	7.2	10.6	9.3
Standard deviation	0.217	0.279	0.282	0.256	0.234	0.211



Explanation of Rut Analysis from Laser Scanner Data

- Rutting was calculated from the laser scanner data using the wire rutting method and rutting was averaged over 5m distances.
- Rutting was analyzed from both driving lanes and from both wheel tracks.

