RoadMap GPR Services

Asphalt and Granular Thickness

Road condition data on the CPATT (Centre for Pavement and Transportation Technologies) test road at the University of Waterloo was acquired at speeds of 40 to 80 km/h (30 to 50 mph). The patented RoadMap SmartTrailer enables acquisition of surface coupled GPR data combined with digital video. All data are synchronized, and collected at pre-defined spatial intervals. DMI and GPS provide precise positioning.

The CPATT test road is marked in red and yellow on the Google Earth map in Figure 1, using the integrated GPS data.

Figure 2 shows a 100 m section of data (yellow line in Figure 1). The section shows asphalt over granular, over subgrade with the asphalt-granular and granular-subgrade boundaries clearly visible. A short section of thicker asphalt is evident between 360 m and 364 m.

The data in Figure 2 are a subset of the full 700 m CPATT test road. RoadMap automated horizon analysis generated for the full test road are shown in Figure 3.

GPR travel times were converted to depth by estimating velocity from feature responses in the data itself and by correlating with core thickness data. An example of a RoadMap layer thickness summary report is shown in Table 1.

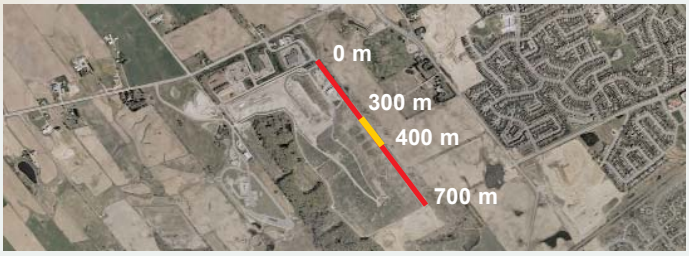

Figure 1: *Google Earth map showing the 700 m CPATT test road.*

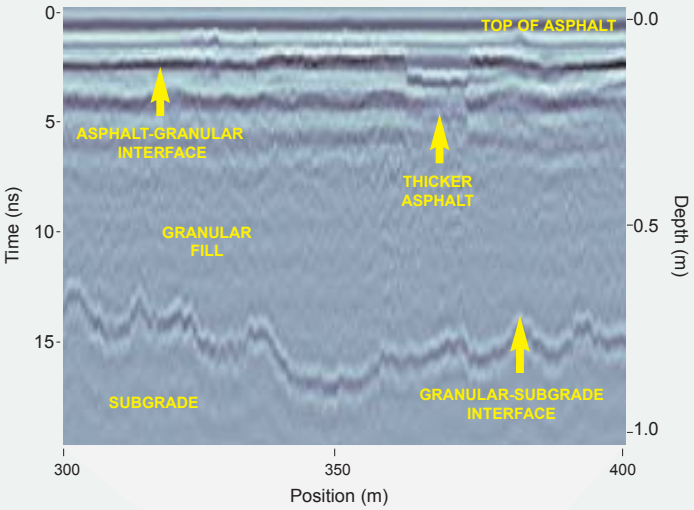

Figure 2: *GPR data section from 300m to 400 m - see the position on the Google map.*

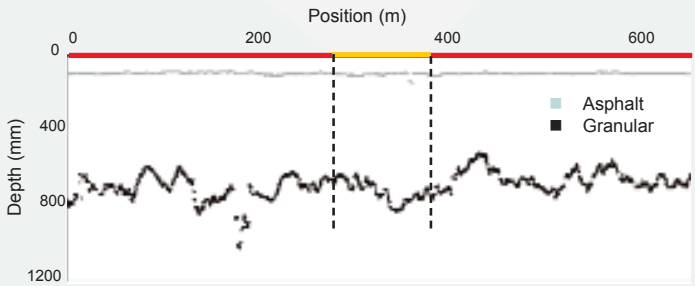

Figure 3: *Interface depths for the CPATT road after applying RoadMap automated horizon analysis and depth conversion.*

Table1*: RoadMap layer thickness statistics*

Layers	Average thickness (mm)	Standard Deviation (mm)	Number of measurements
Asphalt 1	97	5	3376
Asphalt 2 (360 m - 364 m)	142	3	18
Granular	592	67	3146

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