

ASPARi equipment list			
Hardware			
	Item	Quantity	Remarks
1	GPS receiver/rover (Trimble)	5	with accessories
2	GPS base station (Trimble)	1	with accessories
3	RTK bridge	1	
4	PQI sensor	1	
5	Laser linescanner (Raytek)	1	with accessories
6	IR camera (Voltcraft)	2	
7	IR camera (Flir)	1	with accessories
8	IR camera (Fluke)	1	
9	Thermologger (Extech)	1	
10	Thermologger (Voltcraft)	1	
11	RFID reader (Casio)	1	with a set of RFID sensors
12	Wireless HT sensor (Sensite Solutions)	1	
13	Interrogator (Technobis)	1	
14	Fiber optic cables (Technobis)	16	
15	Timelapse camera (Brinno)	2	
16	Camcorder (JVC)	1	
17	Digicam (Panasonic)	1	
18	Microphone (VideoMic)	1	
19	Flash disk (Lexar)	12	
20	Bluetooth receiver (GlobalSet)	2	
21	WiFi range extender (Netgear)	2	
22	WLAN Antenna	1	
23	Laptop	3	
24	RTK power supply battery	1	
25	Battery 12Ax9Ah	4	
26	Automatic lead acid battery charger	2	
27	Tripod	2	
28	Safety jacket (heavy/light)	2/5	
29	Safety helmet	4	
30	Weather station (Davis)	1	
Software			
	Item	Quantity	Remarks
	Matlab	1	
	Android Studio	1	

The ASPARi research unit owns a range of differential GPS, temperature and other sensors for the monitoring of asphalt paving, compaction and other similar construction processes. To monitor equipment movements, five GPS receivers are complemented with a high-end base station and a RTK bridge to improve GPS accuracy to sub-10 centimetre levels. The temperature of paved asphalt layers is monitored using a laser linescanner, several classes of high-end infrared cameras and automated temperature thermologgers. An Interrogator and an RFID reader are used to read fibre optic and RFID sensors during the construction process and post-construction to monitor the structural health of the compacted asphalt

layer. A PQi density sensor is used to monitor density progression during compaction activities and a portable weather station to set up at the construction site to monitor weather conditions. Various video and time-lapse cameras are used to complement GPS and other measurements so that construction activities can be fully captured and traceable for post construction discussions with construction teams.

The unit uses various commercial software applications and a range of in-house developed algorithms to process construction monitoring data.