# Lot 1: Response-type IRI equipment (2 pieces)

Response-type International Roughness Index (IRI) equipment (based on accelerometers) will be used to measure road roughness mostly on local roads that are mostly in poor condition. The surface can be either paved or unpaved. The following requirements apply:

- The measurements are based on an accelerometer
- Can be installed on any vehicle without additional help from the manufacturer
- Measurements are recorded during survey and transferable to a personal computer
- Any software required for the measurements or data transfers to be included
- The IRI readings should be visible inside the vehicle during the survey
- IRI can be recorded by 5 -meter interval at minimum and 100 meters at maximum
- The equipment should include a GPS and the results should include GPS coordinates, IRI by mm/m, date, time and distance from the survey start
- The equipment should be usable for monitoring IRI deterioration trends on both sealed (paved) and unsealed (unpaved) roads
- The quality of the IRI data should be adequate for determining which road sections are in need of repair
- The equipment should provide accurate repeatable outputs irrespective of type of vehicle (on which it is mounted), suspension and passenger load
- The equipment shall not require daily or annual calibration to produce IRI of the road

# Lot 2: Traffic counter (5 pieces)

Traffic counters will be used mainly on the main roads having 1-2 lanes per direction with Annual Average Daily Traffic reaching over 10 000 vehicles. The traffic will typically be counted for a week at one traffic counting point before moving to another point. The following requirements apply:

- Non-destructive: does not break the pavement
- Classification of the traffic to at least 5 different vehicle types
- The counters can be locked to avoid theft
- The counters have enough power for 1-month counts
- Installation and removal of counters should be fast (less than 1 hour)
- All the software for counting and data transfer should be included
- The data can be transferred to a personal computer
- Protected from weather and operational in all weather conditions
- Traffic counter should be able to measure vehicle speed

# Lot 3: RAMS Server specifications (1 piece)

Road Asset Management System (RAMS) server computer will be used to run Road Asset Management System with Microsoft SQL Server Database and web-based Geographic Information System. The server computer has the following minimum requirements:

1 x Configure-to-order Server 1 x CTO Server 1 x Intel Xeon-Gold 5122 (3.6GHz/4-core/105W) FIO Processor Kit (or similar)

1 x 32GB (1x32GB) Dual Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory Kit 4 x 12TB SATA 6G Midline 7.2K LFF (3.5in) LP 1yr Wty Helium 512e Digitally Signed Firmware HDD

- 1 x 12G SAS PCIe Plug-in Controller
- 1 x Raid 5 w/SP Drive 1 FIO Setting
- 1 x 350W ATX FIO PS Kit
- 1 x Microsoft Windows Server 2016 (16-core) Standard FIO Pre-installed UEFI English SW
- 1 x UPS with Management Card Slot
- 1 x MS WS2016 16-Core Standard Support
- 1 x UPS Less Than 3KVA Support
- 1 x Server Rack Cabinet
- 1 x Installation SVC

#### Lot 4: Right-of-way camera (2 pieces)

Right-of-way camera will be used to take photos and/or video from local roads that are typically unpaved and in poor condition. The photos will be used for road condition assessment. The camera will be mounted on the car. The following requirements apply:

- Vehicle-mounted
- Durable housing
- Power solution for multiple day surveys (internal battery, external battery or power cable to the vehicle)
- All the software included to operate the camera and to transfer the images
- Pictures can be transferred to a personal computer
- Usable in any weather conditions
- GPS included
- Metadata for the pictures should include at least the GPS coordinates and timestamp
- High Definition (HD) picture quality
- Cables, mounting equipment to be included

#### Lot 5: RAMS User Workstation specifications (2 pieces)

Road Asset Management System (RAMS) workstations are used by main RAMS users. The workstations will run Geographic Information System (QGIS, ArcGIS), road inventory tools and Road Asset Management System - MS Windows desktop application. Each workstation has the following minimum requirements:

- 1 x i7 processor
- 1 x 16 GB memory
- 1 x 256 GB SSD drive
- 1 x 2 TB HDD
- 2 x 24" Full HD Panels
- 1 x Windows 10 Operating System
- 1 x Keyboard
- 1 x Mouse