

SR 99 Tunnel Project

Monitoring equipment on buildings – Automated survey machine

WSDOT and its contractor, Seattle Tunnel Partners, are installing automated monitoring equipment on buildings along the SR 99 tunnel route to collect information and measure any building movement before, during and after tunnel construction. By closely monitoring buildings, the project team can mitigate potential building damage.

How does this equipment work?

An automated survey machine (also known as an Automated Motorized Total Station or Cyclops) is a survey instrument that operates silently and takes readings of monitoring points installed on nearby buildings. The instrument will take measurements continuously, 24 hours a day, and will detect if there is any building movement. Information will be sent remotely to the project team. The equipment requires a power source, and the project team will work with property owners to discuss access to a power outlet.

How big is the machine?

The automated survey machine is 1 foot by 6 inches. A small case attached to the machine contains a computer and remote communication system. The equipment is mounted on a metal frame with support arms.

How is it installed?

Each automated survey machine requires a custom installation approved by the property owner, and will either be installed on the side of the building or on the rooftop.

On side of building: Three steel support arms will be bolted into the side of the building using ½-inch bolts. If the building is masonry, the bolts will be installed in the mortar joints to limit impacts.

On rooftop: Crews will attach a 4-foot tall support pole to a 3-foot square brick and concrete support base. Three steel adjustable arms will be bolted to the building parapet with ½-inch bolts.

How often will crews need building access?

Installation of the equipment will take from one to several days. After installation, crews will need quarterly access to the equipment for routine maintenance. More frequent access may be needed just after the equipment is installed to calibrate the machine. Crews will work with property owners to minimize disruptions.

When will it be removed?

Equipment will remain on buildings until the tunnel opens to traffic, in late 2015. At that time, crews will remove the equipment and restore building surfaces.



Typical installation of automated survey machines

Questions or concerns?

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