



Cyclops monitoring the Capitol



Cyclops setup with background references



2013 - 2014

3

Cyclops

3

in-place inclinometers

80

monitoring 3D targets

2

manual inclinometers

5

load cells

2

VW piezometers

A DETERIORATED HISTORIC BUILDING

The Virginia State Capitol building was identified as requiring monitoring when a deep excavation immediately adjacent to it was proposed. A real-time instrumentation system was installed, consisting of three SIXENSE Cyclops systems (Automatic Total Stations) with about 80 optical prisms, two in-place and one manual inclinometer and temperature sensors.

All the data was processed through software with a state of the art internet alert management system. The system proved to be an effective means of monitoring movements as well as helping to control the various phases of the construction. The alarm alerts issued by the system proved valuable.

KNOWN AND RECOGNIZED EXPERTISE

SIXENSE was chosen because of their expertise in precise measurements capabilities utilising the Cyclops real time monitoring system and their world renowned knowledge on monitoring historical structures and landmarks throughout Europe.

The challenges of this project included a very restrictive movement tolerance for an historic building, with deteriorating foundations and a deep excavation in very close proximity to the building. Any one of these factors would be sufficient to upset the 6.4 mm (0.25 inch) movement goal that was established by the design let alone when combined with other factors that could only exacerbate the situation.

The geotechnical instrumentation deployed for the project played a critical role in meeting these challenges. The precision allowed for trusted data, the real-time capability permitting better management of construction activities and its remote accessibility made for ease of access to data by all stakeholders.

With the excavation for the new Visitor Centre complete and its construction underway, the Capitol building movements were well within the goal of 6.4 mm (0.25 inch) mentioned. The maximum recorded movement remained at 4.3 mm (0.17 inch) as observed during the jet grouting period.





Richmond Capitol

Real-time monitoring of the Virginia State Capitol during adjacent deep excavation works

Richmond (VA) - UNITED STATES

