

Cornell University Fall Creek Pedestrian Bridge Means Restriction Project

Client:

The Pike Company and
Cornell University

Location:

Cornell University,
Ithaca, NY

Products Provided:

A Structural Monitoring System including accelerometers, weather monitoring station, data collection and management system including video camera integration used to monitor weather conditions and corresponding basic bridge behavior.

Value Provided:

- Sensors monitor and trigger during event driven conditions
- Video camera captures real-time movements of the bridge
- Triggered event data is processed and sent to an FTP location for instant evaluation and to provide deflection measurements from acceleration

Background & Project Challenges

A Means Restriction system was installed to limit access to lethal means of self-harm as an effective strategy to prevent self-destructive behavior, including suicide. The system is comprised of horizontal stainless steel mesh nets, supported by steel struts projecting from the bottom of the bridge structure at each side of the bridge. Eight foot high vertical mesh wing-walls are attached to the sides of the panel system located below bridge deck level. The mesh net system is composed of 3 millimeter (0.19 inch) marine-grade stainless steel cable netting with a 140 millimeter grid (6 inch) attached to a horizontal steel strut system. The net and wing-walls have a high-performance black coating to reduce visibility. The contractor's project included installation of sections of eight-foot high black chain-link fencing at all abutments, thermal sensors located below bridge deck level on each side of the bridge and a campus run video monitoring system.



The nets are part of a multi-pronged approach by the university to address students going through especially difficult times in light of the multiple suicides over the past two decades, which include six deaths during the 2009-2010 academic year. Three of those deaths occurred in March alone. The nets are replacing fencing that were previously put on the bridge.

Geocomp Role & Accomplishments

Geocomp's challenge was to design and install sensors, a data logger and a data management system inside an environmentally controlled enclosure to collect real-time data at high-peak weather conditions, trigger the system to collect and store data and a video sequence of the behavior of the bridge. All of the sensors were installed from the underside of the bridge, 110-ft above the rushing waters of Fall Creek and Ilenroc bluestone sheer cliffs. Six accelerometers and a weather station monitoring wind speed, wind direction and ambient temperature are part of the monitoring system installed below the bridge deck. A rolling trolley system was used to access the underside locations at quarter and mid span. During a weathered event, the monitoring system will trigger on and collect a 30 second burst of data at 100 Hz on all channels and wind conditions continuously recorded at 10 minute intervals along with video of the bridge movements. The purpose of this system is to monitor and measure the behavioral changes of the bridge through the ever changing weather of Ithaca now that the structure is cocooned by the new netting.