

OTDR GROUND MOTION MONITORING SYSTEM LAYOUT

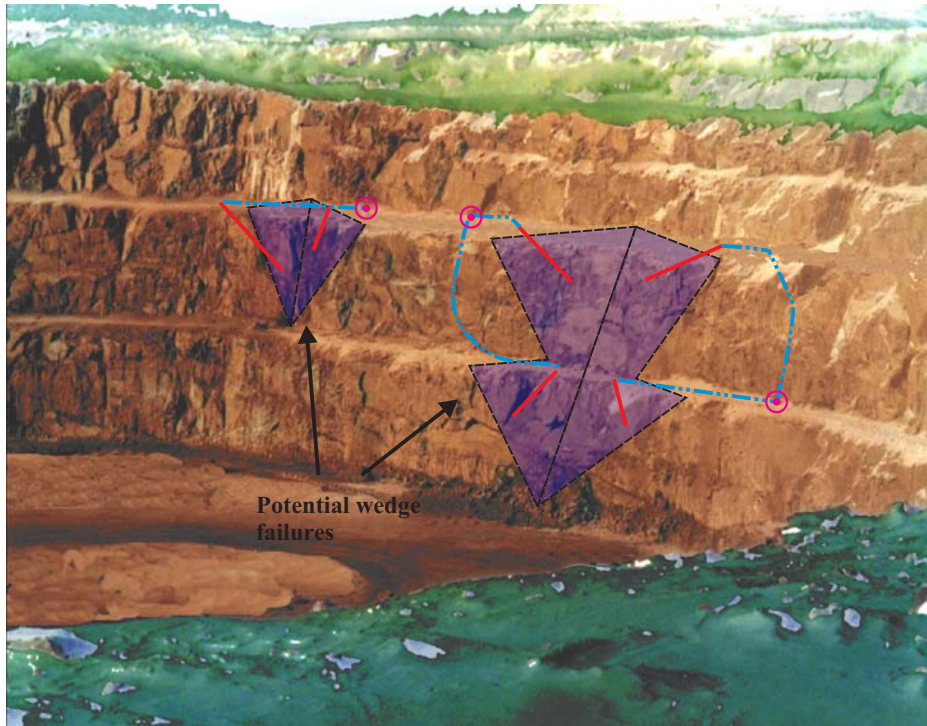
At present, two systems are available for geotechnical OTDR ground motion monitoring. These are single point, manual hookup systems and automated network systems.

Single point systems require that an operator walk to the pickup point, attach the OTDR unit to the cable, take the reading, and store the trace in memory. All monitoring cables are picked up in the same fashion. When the operator returns to his/her office, this data is downloaded from the instrument into a PC computer. At that point, manual comparisons can be made between the original, baseline, trace for each cable and the present trace. Alternatively, the data set can be sent for analysis to a remote site via e-mail or direct modem communication.

Network monitoring systems require that the individual monitoring cables attach to a main trunk line. This trunkline extends from a climate controlled enclosure to the area being monitored. Within the enclosure, the trunkline is segregated into individual fibers and each attached to a port on an optical switch. Computer control rotates OTDR testing through each fiber on a pre-determined schedule. System alarms are set for event detection, with the alarm being transmittable in a variety of means. Data can be downloaded for remote analysis at a distant site.

At this point, a system does not exist where individual OTDR units are available for multi-point monitoring from a local remote point in the field. In other words, if a system was required for monitoring seven cables in a local area, and this system was required to remotely collect and send the data via radio to a collector site, it does not presently exist. It can be developed relatively quickly as OTDR modules exist for PC computers. The PC would act as a datalogger/controller in tandem with optical switches for the individual fibers. Transmission could be by any number of means once the data is collected. However, as stated, this system is not immediately available.

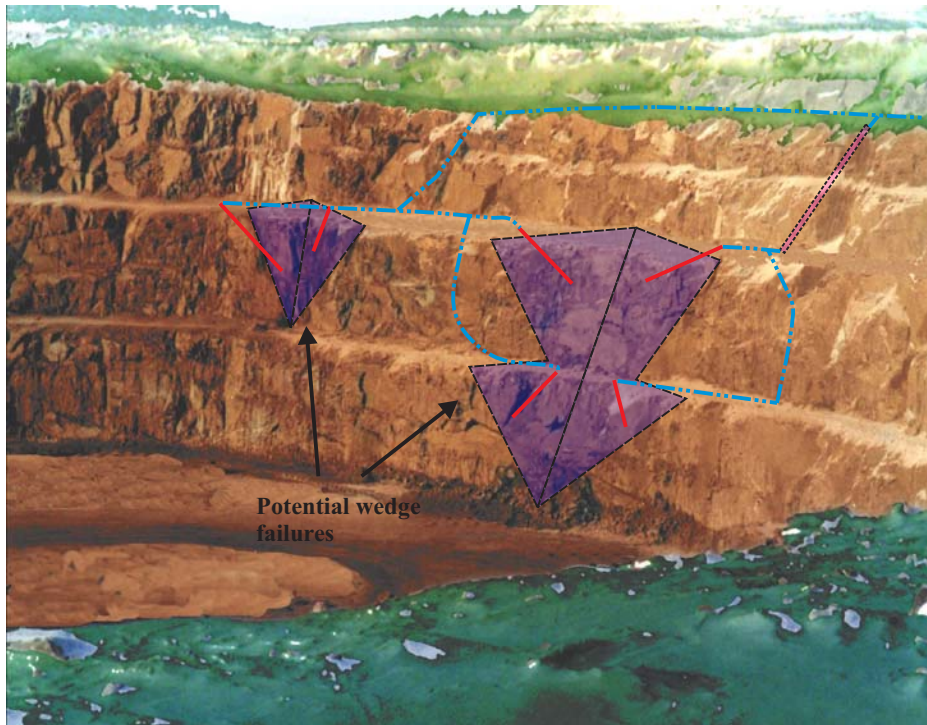
PERCEPTUAL LAYOUT - MANUAL OTDR PICKUP



— Fiber optic trunk line (armored)
— OTDR ground motion sensors

⊙ Manual connection/pickup point

PERCEPTUAL LAYOUT - AUTOMATED OTDR SYSTEM



— Fiber optic trunk line (armored)
— OTDR ground motion sensors

⋯ Drill hole for fiber optic cable transfer

