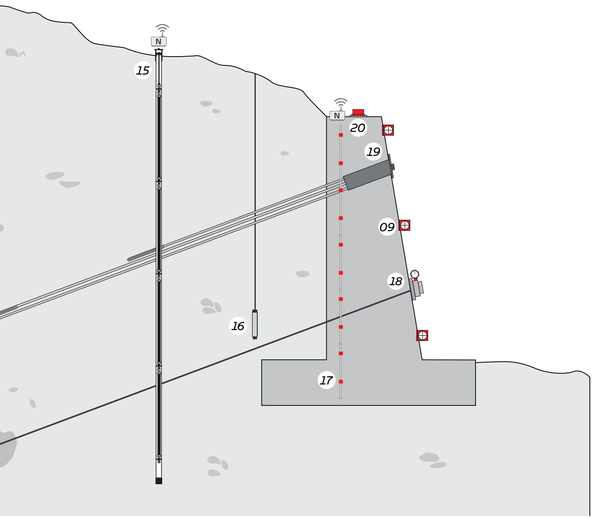
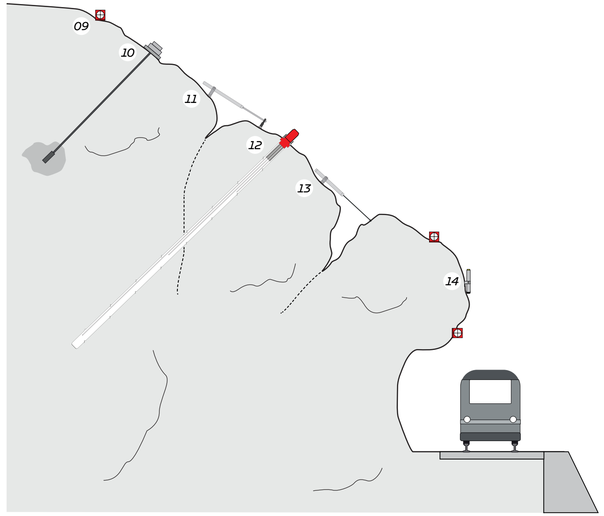
RETAINING WALL
MONITORING

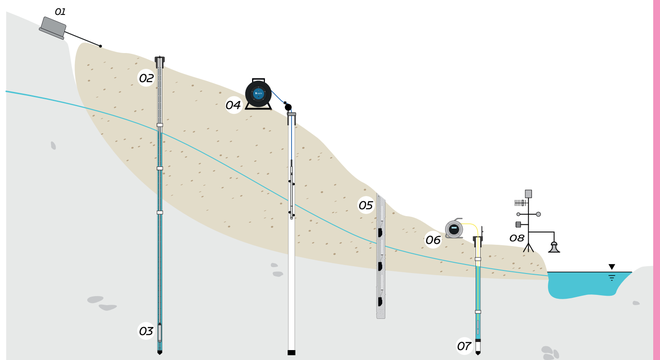
Drawings not in scale



ROCK MASS
MONITORING



ROTATIONAL
LANDSLIDES



INSTRUMENTS

01 Wire crackmeter	Monitoring of cracks in rock masses or ground displacement
02 Standpipe piezometer (slotted tube)	Measurement of water table with water level indicator or pressure transducer
03 Vented pressure transducer	Measurement of water level in standpipe piezometer
04 Brain mems inclinometer system	Monitoring of horizontal displacements in sliding area
05 Multipoint piezometer	Multiple pore pressure readings at different depths
06 Water level indicator	Monitoring of water table level in standpipe and Casagrande piezometers
07 Casagrande piezometer (blind tube)	Pore pressure or water table with water level indicator or pressure transducer
08 Meteorological station	Monitoring of meteorological parameters such as rain, wind, temperaure, etc.
09 Optical target or miniprism	Monitoring displacement withgeodetic methods

INSTRUMENTS

10 Electric anchor load cell	Measure anchor tension
11 Jointmeter/ crackmeter	Measurement of small cracks in rock mass or buildings
12 Borehole extensometer	Monitoring subsurface displacements in rock masses
13 Wire deformometer	Surface displacement monitoring in rock masses
14 Waterproof tiltmeter	Monitoring rotation in big rock masses
15 MD-Profile array	Monitoring of deep lateral movements in sliding areas
16 Vibrating Wire piezometer	Monitoring of pore water pressure
17 LT-Inclibus array	String of tiltmeters to monitor horizontal displacements in concrete
18 Hydraulic anchor load cell	Measurement of anchor tension
19 Mexid miniaturized MPBX	Monitoring subsurface movement and related deformation of retaining wall
20 Tiltmeter (horizontal application)	Monitoring rotation of wall

READOUT AND DATALOGGER

MIND redout

OMNIAlog multichannel datalogger

Wireless system

LANDSLIDES SAFETY AND MONITORING
www.sisgeo.com

DISCOVER
ALL THE PRODUCTS

LANDSLIDES SAFETY AND MONITORING
www.sisgeo.com

Eddyfi Technologies
Remote Monitoring
SISGEO

FOCUS ON
Excavation in Unstable Slope
Arosa, Switzerland

The Arosa Schafisgade project includes construction of three houses with each six luxury apartments. The houses are located in a potential unstable slope. During excavation work adjacent houses above the new built ones had to be monitored geodetically. Between the new excavation and the existing houses, two boreholes were drilled and monitored by inclinometers to detect level and magnitude of soil deformations long before construction work started. The excavation was carried out within a shotcrete retaing wall with soil nailing.

For geodetic and geotechnical monitoring the Swiss company Meisser Vermessungen was contracted. Sisgeo was appointed as a supplier for the geotechnical monitoring systems.
Prior to starting excavation work, digital tiltmeters were installed to monitor the existing houses. The boreholes, situated uphill of the excavation, were then equipped with in-place-inclinometers.

In both boreholes, a series of digital and biaxial probes, each 2 m long have been installed. The tiltmeters and the in-place inclinometers were connected to Sisgeo's OMNIAlog data acquisition system. This unit, equipped with a router and GSM/GPRS-modem, sends the retrieved data regularly to a FTP server.

A project website was especially setup for this application to refresh the displacement graphs and the alarm status automatically.
Vibration monitoring was operated during a short critical construction phase. In addition, the geodetic monitoring of the houses and the retaining wall is carried out with a robotic total station. Both are also included within the monitoring project website.

This complex monitoring system has proved to be very effective and reliable. So far the houses showed clear, but still small deformations and also the in-place-inclinometers showed clear response to the excavation work.

Maratea Rockfall, Italy

San Leo landslide monitoring, Italy

Vico Equense rock wall, Italy

REFERENCE *PROJECTS*

Italy

Maratea landslide monitoring
Plan de Corones landslide
Miglionico landslide monitoring
Laurinziano landslide monitoring
Montelupone rock consolidation monitoring
Molunghi landslide monitoring
Permafrost monitoring, Gressan
Perticara landslide
Niscemi landslide
Gerace rock consolidation monitoring
Slope monitoring, San Vito Romano
Rock masses monitoring, Crocefieschi-Busalla

Europe

Slope monitoring, Coslada - Spain
Landslide monitoring, Karlik - Czech Republic
Landslide monitoring, Moscow - Russia
Preddvor landslide - Slovenia
Slope monitoring - Greece
Vorobyovy Gory landslide - Russia
Landslide monitoring, Sochi Region - Russia
Partnachklamm warning system for rock falls - Germany
Landlislide monitoring, Sibiu - Romania
Stuttgard landslide monitoring - Germany
Pipeline slope monitoring - Greece
Landslide monitoring SGI, Stockholm - Sweden
ESRC Project Landslide monitoring - Russia

Other Countries

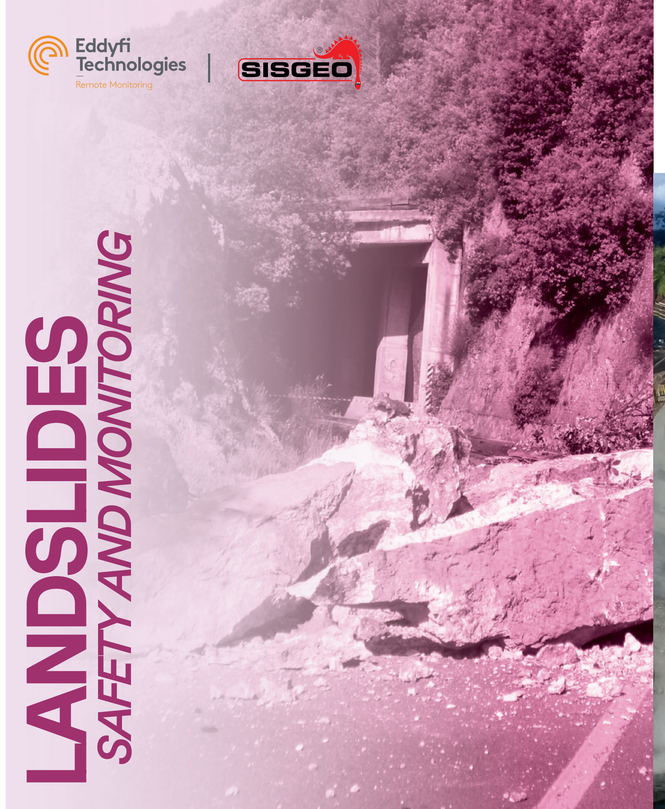
NEA landslide monitoring - Georgia
Langkawi Project - Malaysia
Landslide monitoring Highway West - Georgia
Landslide monitoring - South Taiwan
Tamparuli-Ranau Sabah Package 2 Project - Malaysia
Landslide monitoring - Australia

DISCOVER OUR WORLD
ON WWW.SISGEO.COM

SISGEO HEADQUARTER
Via F. Serpero 4/F1 - 20060 Masate (MI) - Italy
Tel. +39-02.95.76.41.30
info@sisgeo.com

Eddyfi Technologies — Remote Monitoring | SISGEO

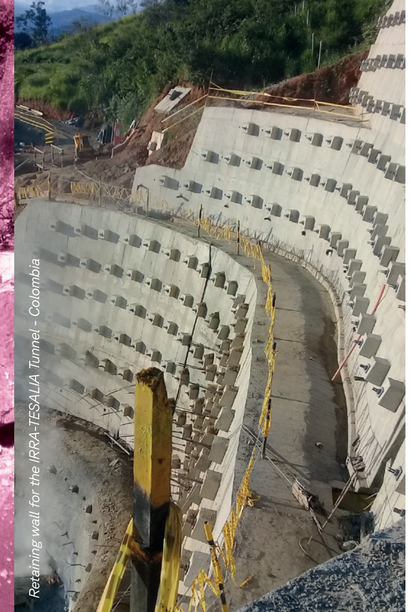
LANDSLIDES
SAFETY AND MONITORING



Retaining wall for the IRRA-TESALIA Tunnel - Colombia

LANDSLIDES *SAFETY AND MONITORING*

Landslide monitoring refers to the process of monitoring the stability of slopes and identifying potential landslides. Landslides and slope stability monitoring involves the use of various techniques and instruments to continuously monitor the behavior of slopes and detect any signs of instability.



It involves installing sensors, such as inclinometers, piezometers, and tiltmeters, which measure the movement, deformation, and water pressure within a slope. These sensors provide nearly-real-time data, that is analyzed to identify any changes or trends that may indicate an increased risk of landslides.
The data collected through geotechnical landslide monitoring is used to assess the risk of landslides and to develop appropriate measures to mitigate the risks. This can include slope stabilization measures, such as the installation of retaining walls, anchors, or drainage systems, as well as the implementation of early warning systems to alert nearby communities of an impending landslide.

Main landslides *types*

Rotational landslide
Translational landslide
Lateral landslide
Rockfall
Topple
Debris flow

LANDSLIDES SAFETY AND MONITORING EN_LOT_05_2025