

Applications

ShapeArrays (SAAs) are designed for high resolution automated monitoring of deformation in soil and structures.

Typical applications include:

- Monitoring longitudinal settlement in embankments and structures
- Monitoring deformation in excavation walls
- In-situ monitoring of unstable slopes
- Measurement of borehole alignment



Installation

SAAs are supplied pre-assembled on reels which can be loaded onto reel stands to facilitate installation. The method of installation used is dependent on the application and type of SAA being installed:

SAAV

The most versatile model of SAA, can be used Vertically, Horizontally or in an Arc.

They are often installed vertically and used to measure lateral deformation.

The sensors are fed off the reel and into pre-installed inclinometer casing. Once in the hole, a cap is secured to the inclinometer casing to allow a compression clamp to be fitted. This compresses the SAA string into the casing, ensuring accurate measurement of deformation. Once the headworks are complete the SAA is connected to a digital node to automate readings.

SAAX

A more economical option for settlement monitoring applications that must be installed horizontally. SAAX can be installed into casings as normal but are also useful for rail monitoring where they can be attached directly to the rail using specialised clips.

Specifications

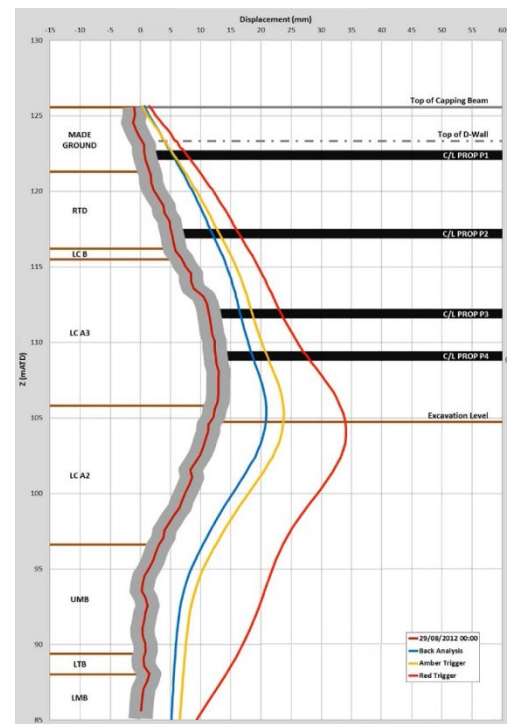
Precision:	0.09mm/m
Temp Rating:	-20 to +60 °C
Segment Lengths:	250mm 500mm 1.0m

Operation

SAAs are arrays of rigid segments connected by flexible joints that cannot twist. Each segment contains three MEMs accelerometers to individually measure their orientation. The measured values, combined with fixed segment lengths, allow for precise calculation of the shape of the sensor string.

The axes of the array must be aligned to an outside reference, for example along the wall of an excavation. Changes to the shape and deformation of the sensor string can then be related to known directions and its installed location.

Depending on the model used, the inherent flexibility of SAA systems allows for easy reuse of sensors in different configurations and lengths.



Key Advantages

Easy Installation:

ShapeArrays are supplied on reels with robust construction making them simple to install.

Versatile:

Several models are available to provide an optimal solution for a variety of uses.

Low Maintenance:

SAAs are reliable, having the potential to measure continuously for years.