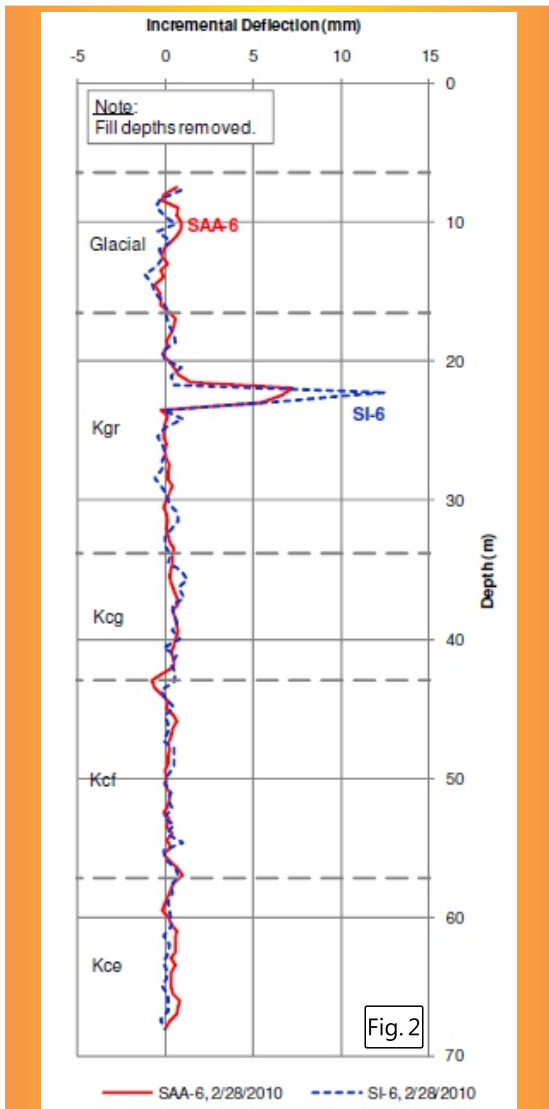


Figure 1.: Comparison of horizontal displacement versus depth curves obtained with the ShapeAccelArrays (SAA), inclinometer probes, and string potentiometers at the conclusion of a lateral load test. (Source: Rollins et al. 2009).

Figure 2: Incremental displacement profiles, downslope direction. (Source: Birch et al. 2011).



Inclinometers are one of the most useful tools in civil and geotechnical engineers' toolbox, allowing them to monitor soil and structural deformations. ShapeAccelArrays (SAAs) are a new tool which can also be used to monitor deformations. Since the SAA was first introduced in 2005 as an option to monitor deformations, several authors have compared results obtained using SAAs to those obtained for adjacent inclinometers.

Deformations observed while laterally loading a pile cap are shown in Figure 1. As shown in the figure, the results from the tests indicated that SAAs can provide precision comparable to that from an inclinometer, for static loadings (Rollins et al. 2009).

Birch et al. (2011) presented data from a well-instrumented test fill in which both slope inclinometers and SAAs were installed. They found that the conventional inclinometers and the newer SAAs were both useful for monitoring soil deformations. Incremental data for SAAs and inclinometers are shown in Figure 2 (Birch et al. 2011). As can be seen, the results are very similar.

Rollins, K., et al. (2009) "Monitoring Displacement vs. Depth in Lateral Pile Load Tests with Shape Accelerometer Arrays", in *Proceeding of the 17th International Conference on Soil Mechanics & Geotechnical Engineering, Alexandria, Egypt, October 5-9. Vol. 3. pp. 2016-2019.*

Birch, S., et al. (2011) "Comparison of Slope Monitoring Techniques from a Test Slope at the Suncor Oil Sands Mine." in *Proceedings of the 5th Canadian Conference on Geotechnique and Natural Hazards Conference, Kelowna, BC, Canada, May 15-17.*