Shaft Area Profile Evaluator

Shaft Area Profile Evaluator (SHAPE®)

Wireless Data Acquisition of Drilled Shaft Radius, Volume and Verticality

Fast. Accurate. Cost Effective.

Drilled shafts are rarely ideal cylinders, and irregularities can affect capacity, durability and performance. SHAPE® is a cost-effective, quality assurance testing device used for deep foundations such as drilled shafts, bored piles, slurry walls, and more to ensure the design intensions are satisfied for the project.

PDI offers SHAPE units for both wet and dry excavations. The Standard and Cabled SHAPE have eight ultrasonic signals scanning the sides of the shaft prior to placing concrete in wet conditions. SHAPE-AIR for dry excavations utilizes Lidar sensors. All SHAPE units provide a quick and economical view of the shaft verticality, radius, shape and volume. The SHAPE Cabled collects data in real time with the use of a cabled connection to the device as it descends and ascends the length of the excavation.

SHAPE® offers:

- Three systems to fit your excavation needs – SHAPE for wet pours; SHAPE-AIR for dry shafts; SHAPE-Cabled with cable connection for real-time data collection
- Quick connection to Kelly bar or can be used with an optional winch system
- Multi-channel ultrasonic device to scan the sidewall condition of wet pour drilled shafts (SHAPE – standard and cabled)
- Multi-channel Lidar sensor device to scan the sidewalls of a dry excavation (SHAPE-AIR)
- Wireless or cabled acquisition calculations of shaft profile to determine shaft verticality, radius, and volume
- Data acquisition at a rate of approximately one (1) scan per second
- Eight (8) channels scanned simultaneously
- SHAPE's drilling stem advancement rate is approximately one (1) foot per second, offering 360˚, 2D and 3D profile views.

Features	SHAPE®*	SHAPE®-AIR**	SHAPE Cabled*
Ultrasonic Sensors	✓		✓
Lidar Sensors		✓	
Mounts to Kelly bar adapter	✓	✓	✓
Mounts to winch system	✓	✓	✓
Dry shafts		✓	
Wet shafts	✓		✓
Min shaft diameter	26 in (71 cm)	20 in (51 cm)	26 in (71 cm)
Max shaft diameter	20 ft (6 m)	20 ft (6 m)	26 ft (71 cm)
Real-time data acquisition	✓***	✓***	✓

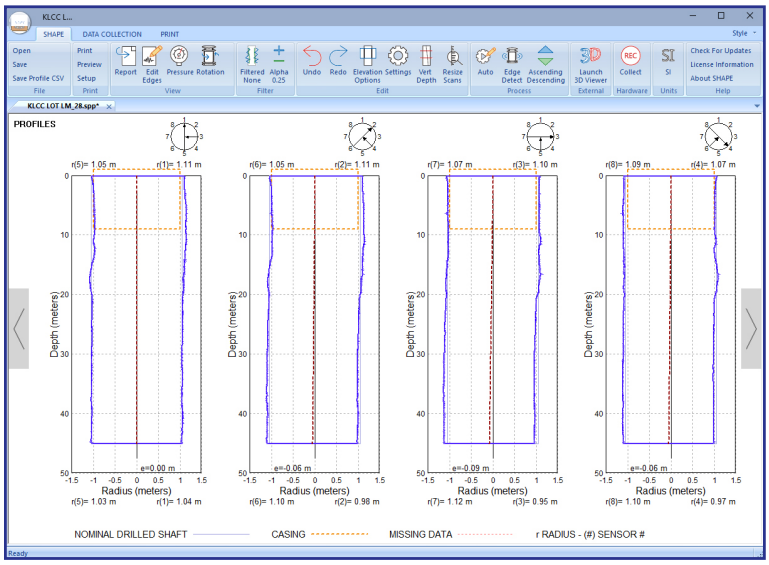
* The minimum radial measurement is 8 inches using Ultrasonic measurement method and the Maximum is 10 feet.
** The minimum radial measurement is 5 inches using LIDAR measurement method and the Maximum is 10 feet.
*** Real-time analysis available upon SHAPE unit ascension to the surface.

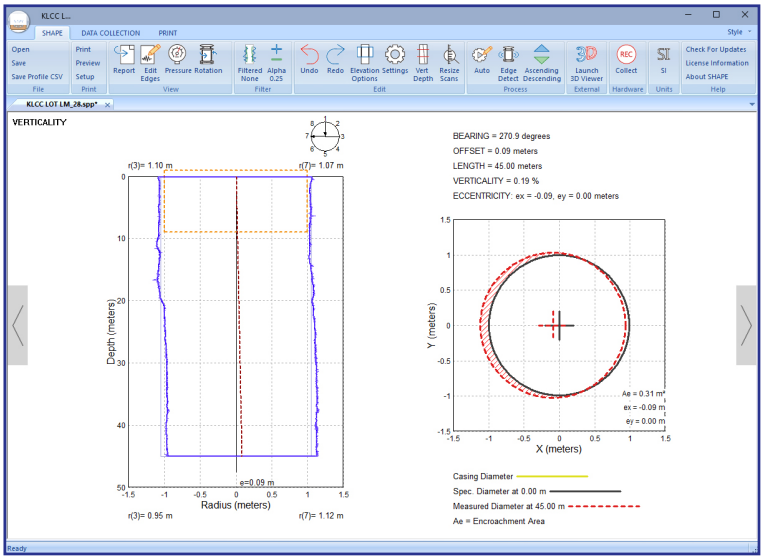
SHAPE® Data Collection Software

SHAPE® software generates reports based on data collection during testing. The software allows users to view or edit the collected data with the following features:

- Edit Edges – select edges for the circle fit process
- Pressure – view how the pressure increased during descension and decreased during ascension
- Sensor Data – view measured pulses
- Report – view the sensor profiles containing their verticality and eccentricity information

The program produces a 3-dimensional image of the boring by calculating the distance between each sensor and the excavation wall. The SHAPE® calculates the distance by measuring the wave speed in slurry at each measurement depth.





- Quick, cost effective views of the excavation to ensure design intentions
- Ultra-sonic or Lidar sensors providing 360°, 2- & 3-Dimensional profile views
- Wireless or cabled data acquisition

For additional information, visit www.pile.com/shape.