

## Key Features and Benefits

- Quick
- Clean
- Safe
- Reliable
- Laser-Measured Precision—Typical precisions of +/-0.01 feet \*
- Eliminates the need to enter a manhole or to place a rod into the structure
- Weather resistant
- Eliminates confined space entry
- U.S. Patent No. 6,920,394



## The Tool for Survey and GIS Professionals

The patented **V.depth™** measure-down system integrates state-of-the-art measuring equipment in a new and innovative device that facilitates quick, easy and accurate measurements to locations at inconvenient or inaccessible depths. **V.depth** was designed for use by surveyors, engineers, GIS professionals and others who require a quicker, cleaner, safer and more precise alternative to collect as-built information.

## Laser-Measured Precision

The **V.depth** system utilizes the Leica Disto™ Lite Laser Distance-Meter mounted in a precision-engineered, anodized aluminum bracket together with a SmartTool™ Builders Angle Finder. **V.depth** allows pipe inverts and sizes to be determined accurately with laser-measured precision using a slope measurement and vertical angle. An adjustable brace allows the user to establish the **V.depth** tool on a solid base from which to make the depth measurement with confidence and accuracy.

## Eliminate Health and Safety Concerns

**V.depth** eliminates the need to enter a manhole or to even place a rod or any other device into the structure. Concerns over confined space entry—such as ventilation, bottled air, extraction devices and necessary support personnel—are not an issue when using **V.depth** since all measurements are taken from outside the structure. Even the insertion of a “measure-down” rod into the manhole is eliminated by relying on the remote measuring capabilities of the **V.depth** system.



## Testimonials

“We have used the V.depth™ tool for gaining invert elevations of sanitary sewer lines for over a year now and have had excellent results. We have used V.depth on several North Carolina Department of Transportation (NCDOT) projects including a congested section of roadway fronting North Carolina State University that required nighttime work only due to traffic flow. We are also using V.depth on several GPS/GIS projects for municipalities throughout North Carolina, Virginia and Alabama. The initial learning curve is very quick, production level is good and the quality of data is excellent.”

Tim Van Gelder, PLS  
McKim & Creed, P.A.  
Cary, North Carolina

“In addition to improving speed and accuracy of depth measurements, the V.depth measurement device has proven to be very effective for deriving coordinates of underground facilities which are offset laterally a significant distance from the ground surface opening.”

Philip Meis  
Utility Mapping Service, Inc.  
Salt Lake City, Utah



## Achieve Reliable Measurements

The reliability of the V.depth systems measurements are unrivaled. There is a maximum  $2\sigma$  error of only +/- 5mm for the Disto and pitch readings in 1/8 inch per foot increments for the Angle Finder. The precision of the measurement on a 10-foot-deep pipe in a 4-foot-diameter manhole using V.depth is expected to be +/- 0.04 feet although tests reveal typical precisions of +/- 0.01 feet.\* Jurisdictional inspectors have great respect for the accuracy and advantages of as-built measurements made with V.depth technology. No physical measurement technique can duplicate the quick and clean results achieved with precision-engineered laser technology.

## Easy to Maintain, Transport and Store

The V.depth system is delivered in a padded, weather-resistant Pelican™ case that protects the equipment while providing easy and safe transport and storage. The Leica Disto Lite is dust and splash proof, and the Angle Finder is weather and water resistant. This combination of technology provides for a long-lasting and low-maintenance V.depth system. The Disto Lite can even be easily removed from the V.depth bracketing system for use in other appropriate applications.

## Performance Specifications

### Leica Disto™ Lite Laser Distance-Meter

Measuring Accuracy ( $2\sigma$ ) at short range	Typically +/- 3mm with a maximum +/- 5mm
Measuring Accuracy ( $2\sigma$ ) at long range	Typically +/- 3mm with a maximum +/- 5mm and +/- 5ppm
Smallest unit displayed	1mm
Range	0.2m – 200m
Time for a Measurement	0.5 sec

### Macklanburg-Duncan SmartTool™ Builders Angle Finder

Pitch readings	1/8 inch/foot
Display	Decimal degrees, % slope, or pitch
Time for a measurement	Updates continuously

\* Range and accuracy are dependent on atmospheric conditions and background radiation. The laser distance meter will not accurately measure a distance through water or sediment. Alternative measurement techniques and locations (i.e. top of pipe, side of pipe, etc.) may be required to produce accurate pipe invert measurements. See manufacturer's documentation for specifications.