Geophysics International

CASE HISTORY - SINKHOLE STUDY

Petro-Sonde Survey - Civil Engineering Division

LOCATION. Hillsboro county, Florida.

TOPOGRAPHIC CONTROL. Brunton compass and tape measurements.

OBJECTIVE OF THE PETRO-SONDE SURVEY. To map the shallow limestone top beneath a suburban building structure to determine the presence or absence of a limestone depression that may be indicative of sinkhole development and account for foundation damage.

GEOLOGY. Extremely porous shallow marine limestone overlain by a zone of clays, sand, phosphates, and silt. This zone is overlain by unconsolidated sands.

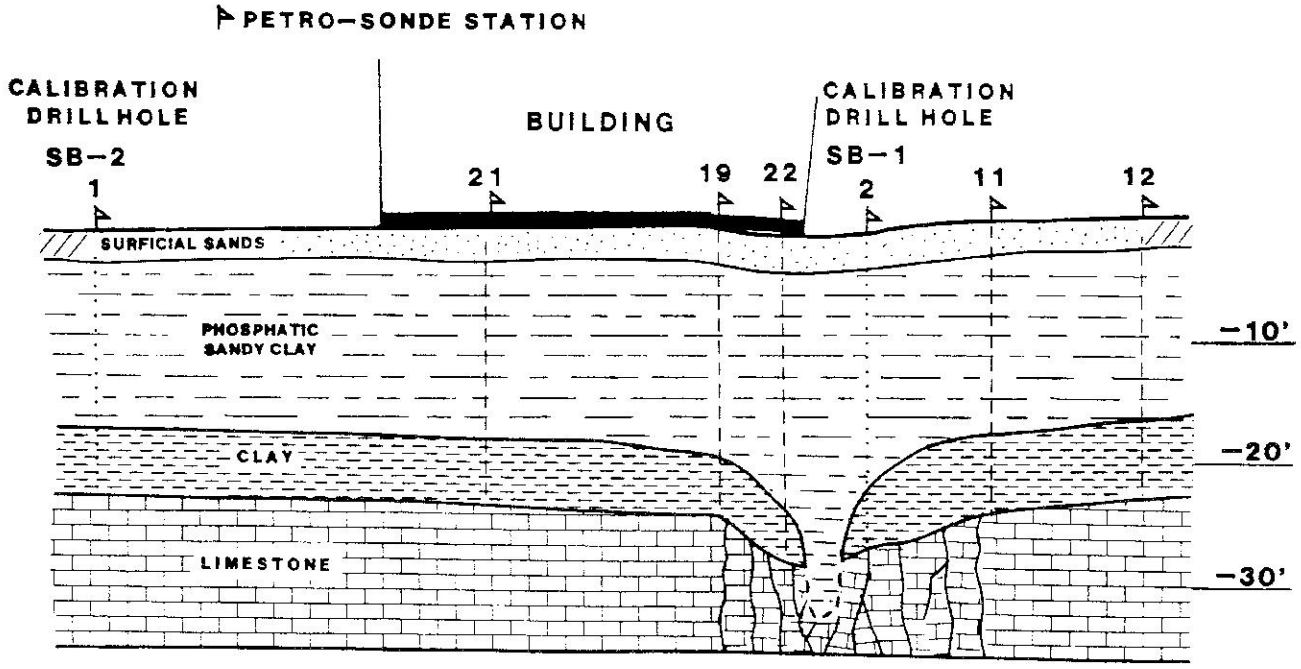
INFORMATION AVAILABLE. Driller's logs.

CALIBRATION STATIONS. Drill holes SB-1 and SB-2.

PETRO-SONDE SURVEY STRATEGY. Calibration was performed at SB-1 and SB-2 to identify the Petro-Log Graph pattern associated with the clay-limestone contact. 22 Petro-Sonde readings were taken in and around the property to delineate limestone top (Figures 1 and 2). Three statistical calibration readings were also taken at station SB-2 to account for time variations vs. depth (Figure 3). Due to the slight depth variations of the limestone top, ground elevation and statistical compensation measurements were carefully considered.

COMMENTS AND CONCLUSIONS. Survey results show a distinct depression in the limestone contact directly under the damaged corner of the building structure (Figure 4). The limestone depression was also encountered under a surface area with dry vegetation, a common side effect of sinkhole formation. The Petro-Sonde survey accurately detected the limestone depression in a total of 6 hours. This data along with other geologic data gives strong evidence of sinkhole development at this site.

FIGURE 3



GEOLOGIC CROSS SECTION AS INTERPRETED FROM PETRO–SONDE DATA.

FIGURE 4

10/85