HIGHLY PLASTIC, CALCAREOUS CLAYS ARE PREVALENT THROUGHOUT ALABAMA. SLOPE FAILURES OCCUR FAIRLY FREQUENTLY IN THESE CLAYS, AND EXPERIENCE SHOWS THAT THESE CLAYS HAVE VERY LOW MOBILIZED SHEAR STRENGTHS WHEN THEY FAIL. THE EXACT MECHANISM OF THESE FAILURES IS CURRENTLY UNKNOWN, BUT IT IS SUSPECTED THAT THE CLAY COULD POTENTIALLY BE A STRAIN-SOFTENING MATERIAL WHICH WOULD LEAD TO LOCALIZED ZONES OF SOFTENED MATERIAL. STRAIN-SOFTENING OF THESE SOILS IS EXPECTED TO LEAD TO A REDUCTION IN THE IN THE ELASTIC MODULI, WHICH MAY BE VISIBLE IN A PROFILE OF SEISMIC VELOCITIES AS A LOW VELOCITY ZONE IN AN OTHERWISE STIFF CLAY DEPOSIT. TRADITIONAL METHODS FOR INTERPRETING SEISMIC GEOPHYSICAL DATA MAY NOT BE ABLE TO DETECT THESE LOCALIZED ZONES, BUT FULL WAVEFORM INVERSION (FWI) OFFERS A POTENTIAL ALTERNATIVE.


REFERENCES: