

## DETECTING AND IMAGING HISTORICAL GRAVES BY USING GROUND PENETRATING RADAR AND TIME DOMAIN ELECTROMAGNETIC METHOD

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This is a comprehensive summary of the geotechnical investigation of the historical Strickfaden Cemetery, in Cooper County, Missouri. As with most cemeteries, it is a culturally sensitive site and as such the ability to ground truth to constrain the data was not an option. Instead two non-invasive geophysical techniques; ground penetrating radar (GPR) and time domain electromagnetic tool (TDEM), were used to detect and image unmarked graves in the cemetery site. Based on the interpretation of both acquired data set, there is a relatively high correlation between both tools in locating the unmarked graves and determining the apparent depth to the top of the burial coffins or caskets. The study aims to provide sufficient information for the client in charge of the cemetery to place markers (wooden crosses or headstones) on each identified grave along with their historical records.

The class of Geophysics (5736) at Missouri University of Science and Technology conducted the survey of Strickfaden Cemetery were advised that the soil in the area contained clays, which would affect the penetration depth of the GPR pulses. But as the modern graves were marked, we were mainly trying to locate old unmarked graves, where the depth of the burial is approximately 1.0ft to 3.0ft as they were dug by hand and not machinery, as with modern graves. At the site we were informed that there were two main locations where there was a possibility for unmarked graves to be present; one in the NE corner, the other in the SW corner, with majority of the rest of the cemetery's graves being marked.