

Using GPR Survey for Utilities Management



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Introduction



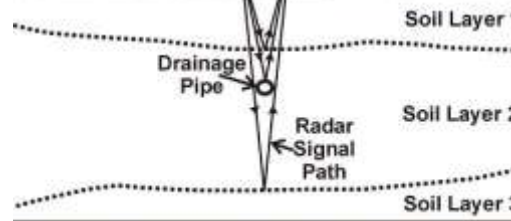
- What is GPR
- Why consider using GPR
- Three case studies
 - Pleasant Street
 - Morris Arts Performing Center
 - Soil Differentiation Cut/Fill
- Suggestions of preparation work before using GPR
- Q&A



Ground Penetrating Radar (GPR) involves the transmission of high frequency radar pulses from a surface antenna into the ground. The time elapsed from when the energy is transmitted to when it is received back at the surface is measured. This time varies based on reflection from buried materials, sediment and soil changes. With enough measurements moved along a grid, a three-dimensional picture of subsurface conditions can be created

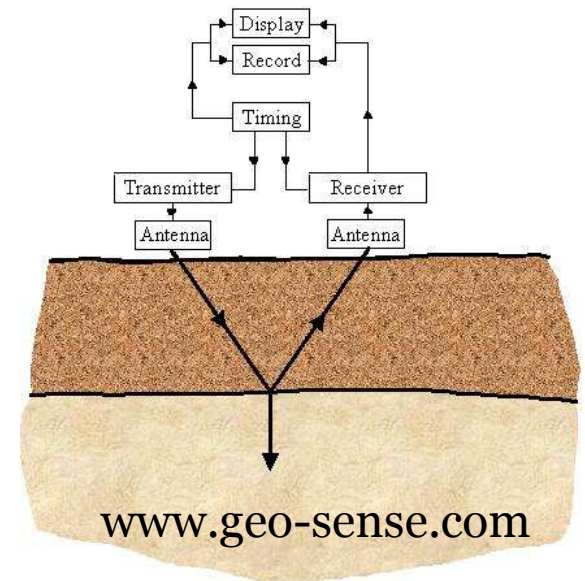
The physical properties that affect the radar waves as they travel through a medium are electrical conductivity and the magnetic permeability. Soils with salt or electrically conductive clay will reduce the depth of view. GPR does work well in sandy soil as a general consideration.

Note that metal objects will not be penetrated, so you won't see objects below a metal object



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What is GPR



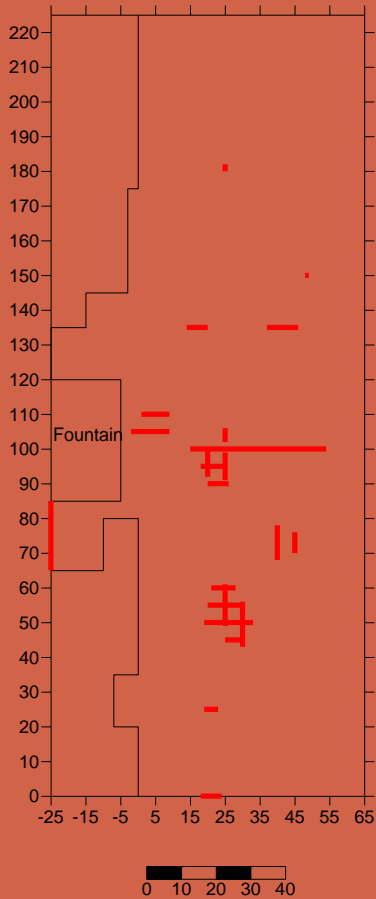
Why consider using GPR



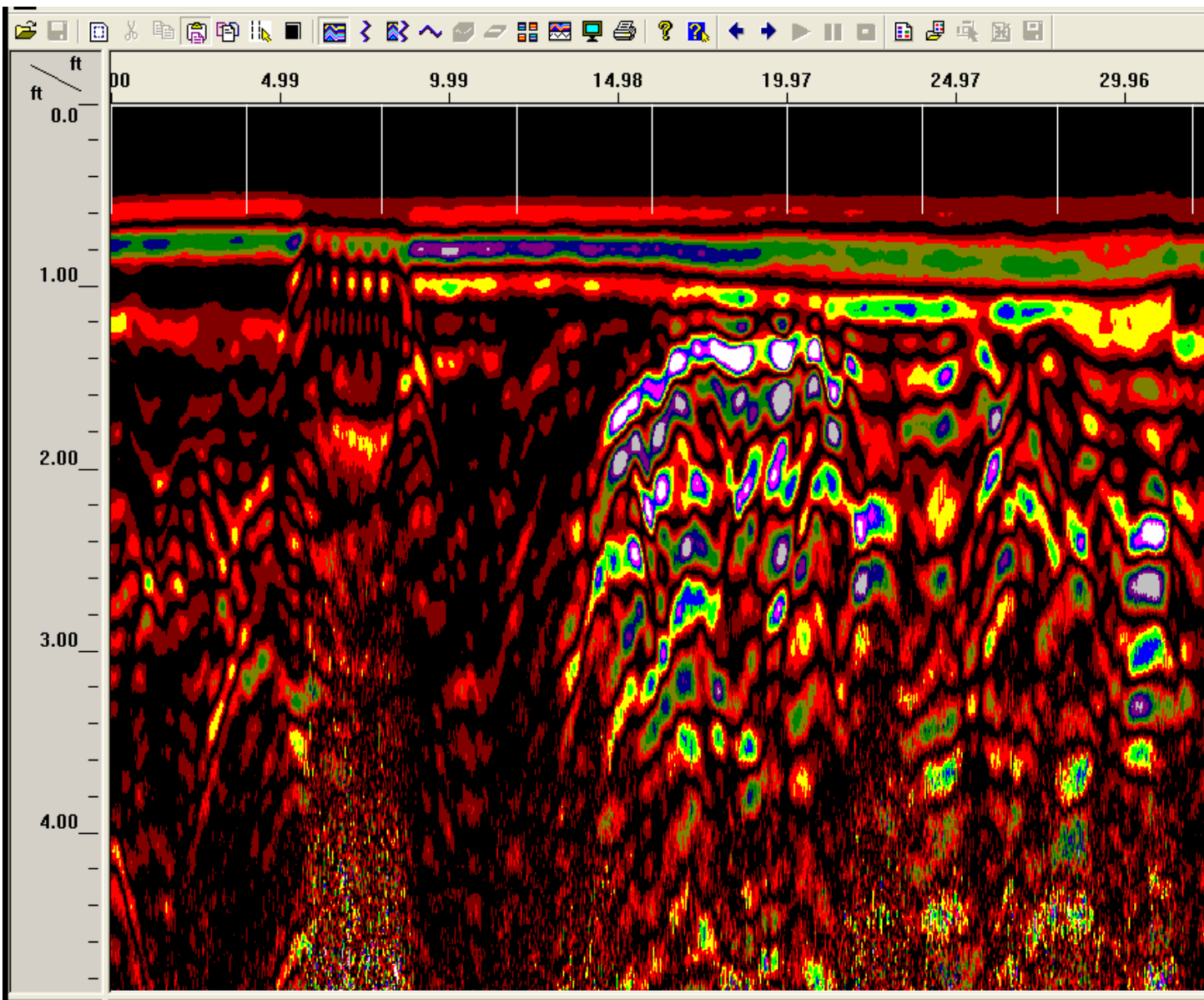
- Better assess potential subsurface conflicts in a non-destructive manner
- Gives real-time field depths of utilities
- Find voids in concrete slabs
- Locate vaults beneath sidewalks
- Locate reinforcing steel in concrete slabs
- Often find utilities or conditions that were unknown
- Can find utilities that are not metal
- Can pinpoint pothole locations for confirmation of underground situations

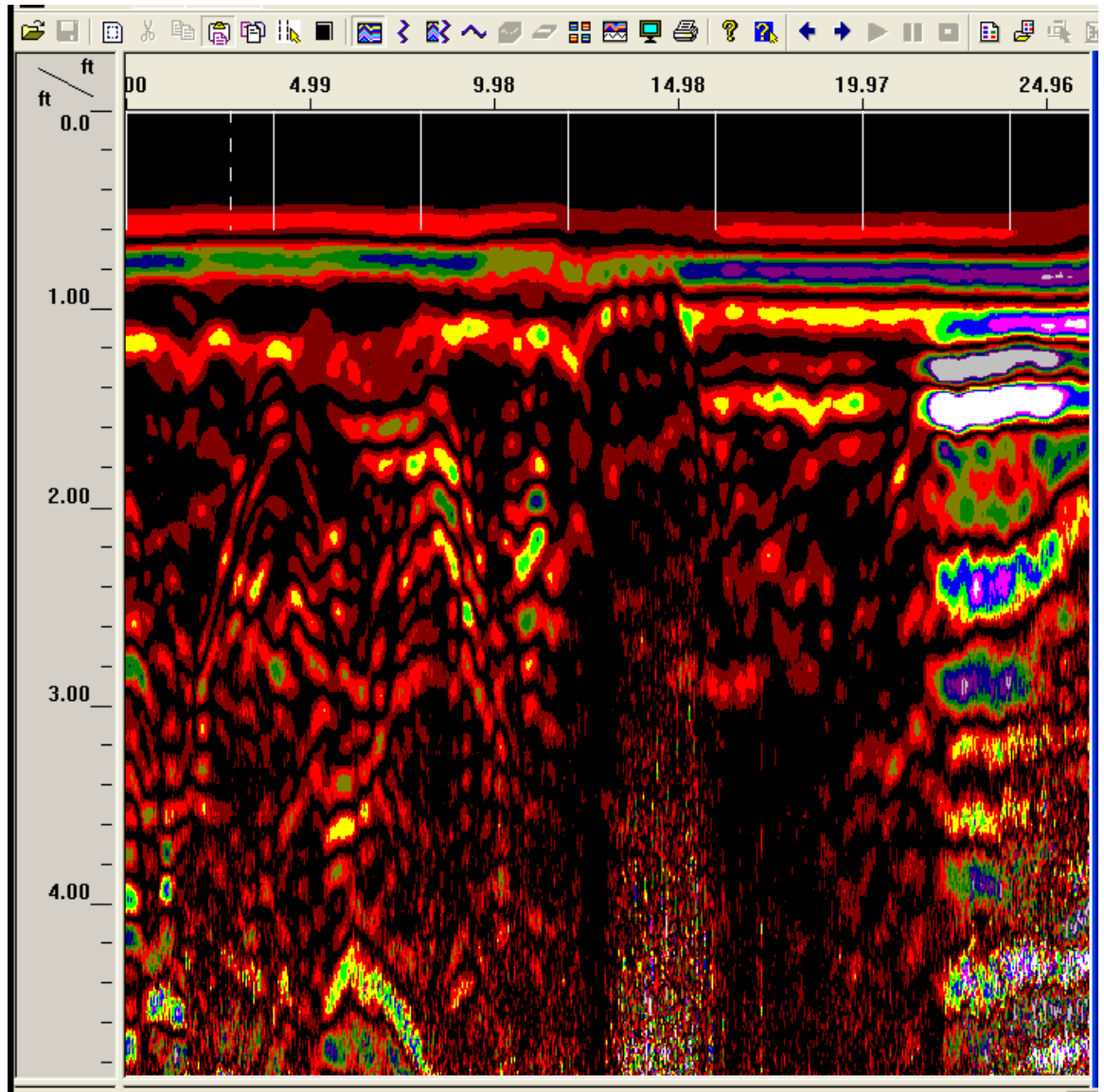


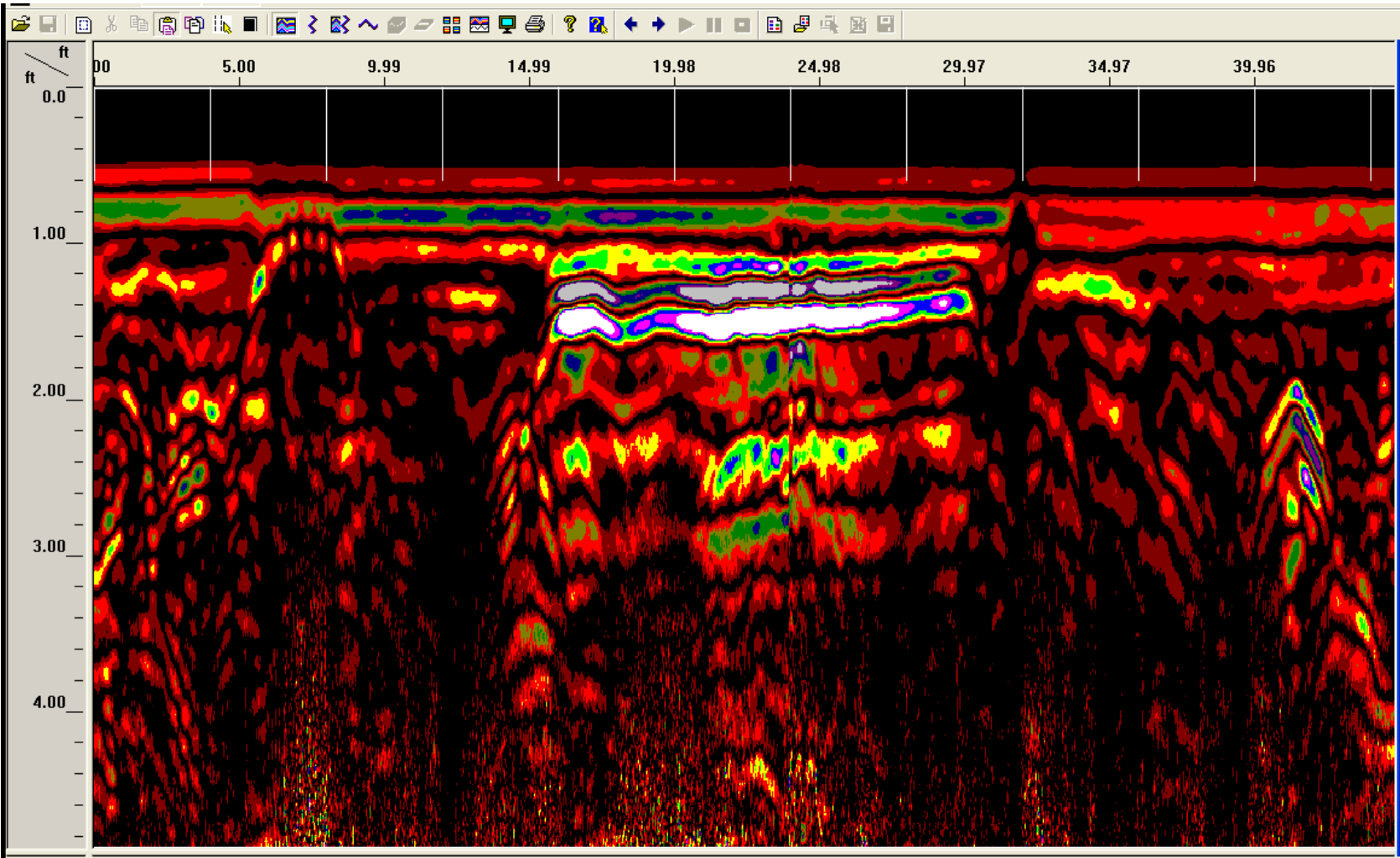
GPR successfully used to find location of voids below sidewalk

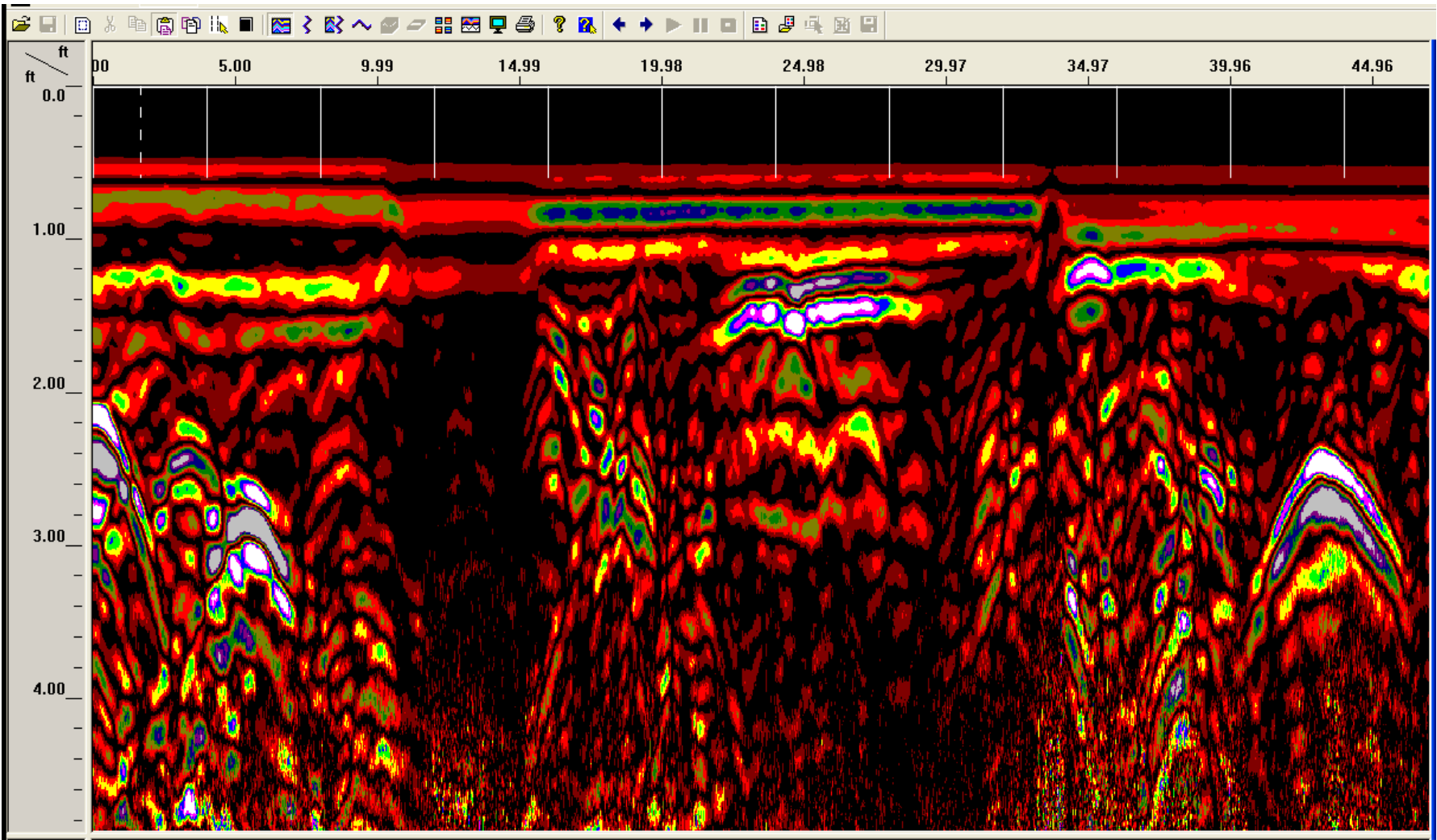


Case Study 1 – Morris Performing Arts Center



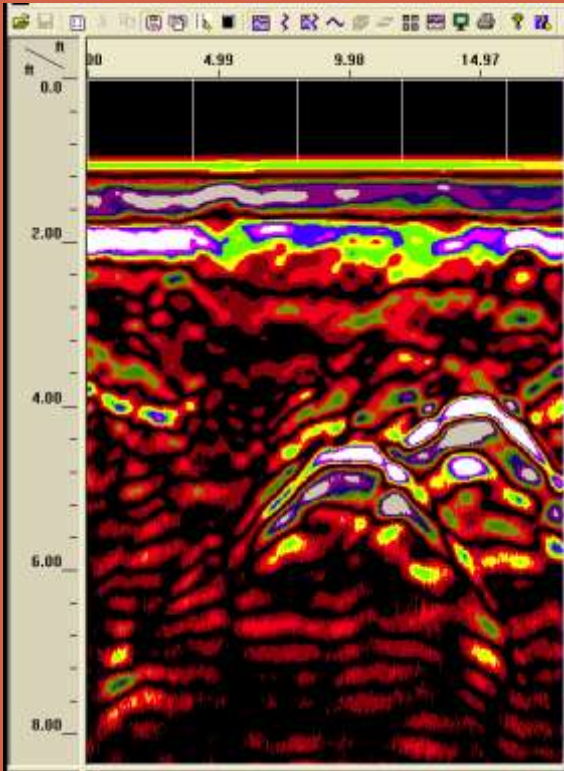






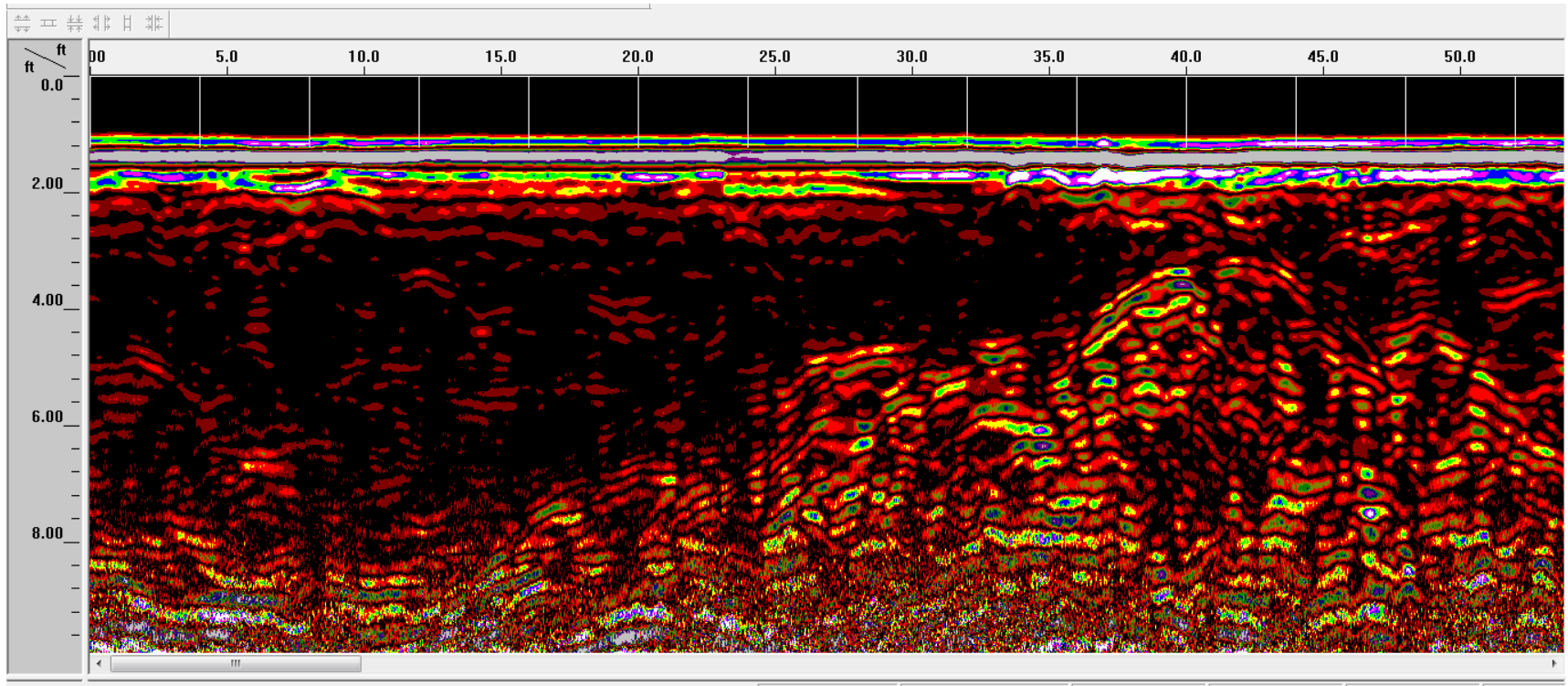


GPR used to find actual depth of water main profile in full roadway reconstruction



Case Study 2 – Pleasant Street Sewer Separation

Case Study 3



Suggestions of preparation work before using GPR



CONSIDER GATHERING YOUR KNOWN UTILITY INFORMATION OF WHAT YOU THINK YOU WILL FIND THROUGH AS-BUILTS AND SURVEYED RESULTS OF 811 SERVICE. THIS WILL ALLOW YOU TO CONFIRM SOME OF THE FEATURES YOU SEE IN THE GPR PROFILES.

Q&A



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