

Concrete NDT

City of Phoenix Uses GPR to Inspect Lined Sewer Pipes

The Project

The City of Phoenix, Arizona requested GEOVision Geophysical Services to provide a GPR assessment of several buried concrete sewer lines. The inspection was done in order to discover if corrosion or other damage had occurred, which often happens to this type of lined concrete pipe in a moist setting.



Project Description

The particular pipes in question had been lined with PVC, a measure that is often taken to protect concrete pipes from corrosive gases. Normal inspection methods such as video could not provide a full view of any pipe damage in this instance since cameras inserted into the pipes would only record damage to the lining. Coring is another method that would not return satisfactory results due to expense, inconvenience, and hit-or-miss results.

GPR was identified as the required inspection method due to its ability to penetrate the liner and pipe. GPR could also show 3D views of deteriorated sections, which could then be compared to downhole video data that was previously collected.

A GSSI SIR-20 and 1500 MHz antenna were mounted to a four-wheel drive tractor unit called "Brutus." Also attached to Brutus was video and lighting equipment that would aid in this unique inspection. Brutus, with all equipment attached, was carefully lowered into the underground pipes to perform the survey.

Project Outcome

GPR positively identified deterioration in two of the pipe runs. There were three locations within the GPR file where the video-identified defects correlated exactly with locations on the GPR profile identified as deteriorated.

GSSI's equipment was successfully utilized to visually identify locations where concrete deterioration occurred. GPR also confirmed what the prior video analysis had reported and proved that GPR will save time and money in the future when used as the main inspection method.

After the assessment, GEOVision recommended that the City of Phoenix take sample cores of the pipes to give a final confirmation of the deterioration. A limited number of defects were found in the pipes overall, so only periodic GPR inspection was recommended by GEOVision in order for the city to monitor possible larger issues that may arise in the future.



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