

# Application Spotlight



## Ground Penetrating Radar for Concrete Engineering

*Key Words: Ground Penetrating Radar, GPR, Concrete, Scanning, Engineering*

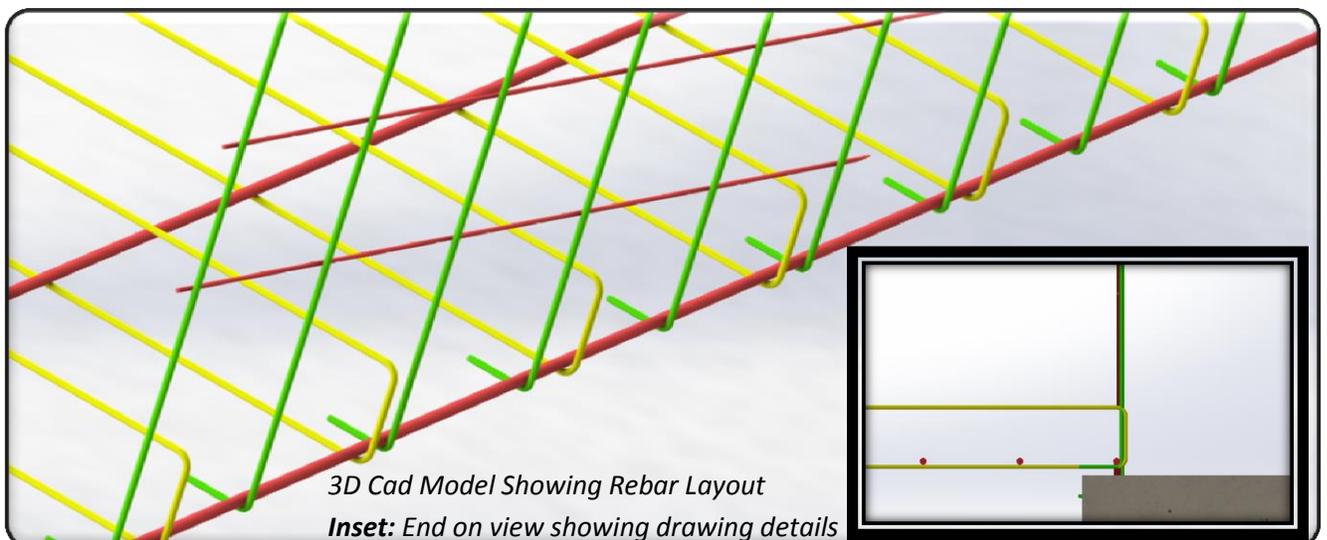


In 2015 Maverick was involved in a project in Edmonton. A concrete parkade ramp had been damaged by water and freeze/thaw cycles. Engineers were working on a solution, but had no existing drawings or references which explained how the ramp had been built originally.

Maverick arrived on-site and proceeded to gather Ground-penetrating Radar (GPR) data on various portions of the ramp which allowed us to determine construction techniques which were used.

The ramp section consisted of a driving surface, a wall, supporting columns, beams and other construction features. The question was whether the ramp was hanging structurally from the vertical members, or whether the ramp was self-supporting and the walls and columns were basically weatherproofing. GPR scanning was conducted on the interior and exterior faces of the wall, the top and bottom surface of the ramp, the faces of the column and all available surfaces on the connected beam. The data was analyzed in real-time and the surface was marked with the location of the rebar. In addition, the data was recorded into our GPR system memory so that it could later be used to develop a CAD based 3D model. The quantitative analysis available from the 3D model generated allowed engineers to determine the severity of the type of failure and to apply appropriate levels of remediation in a timely and cost-effective manner.

All parties involved were happy with the results of the scan. The tenants of the building were able to return the parkade ramp to service as quickly as possible and with minimal disruption to their daily lives. The property manager was able to apply the necessary repairs and limit the scope of the remediation, therefore saving time and money. The engineers were able to design appropriate remediation with confidence and to update as-built drawings for the 30+ year old structure.



*3D Cad Model Showing Rebar Layout*

*Inset: End on view showing drawing details*

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