

## Detection of Voids in a Concrete Slab

Difficulties arose during the construction of the spillway of a dam. Constructed monolithically in two 0.5 m layers, it was suspected that voids were present between the layers. The owners and their consultant PJ Materials Limited considered that it was imperative to detect and rectify the problem, to prevent premature deterioration due to freezing and thawing. Ground Penetrating Radar (GPR) was used in tight parallel traverses across the surface of the slab which were subsequently analyzed by computer to produce images of horizontal slices through the data. Figure 2 shows a slice of data at 0.5 m depth, the boundary between the two layers. The slices of data revealed that there were voids at the interface between the two monolithic layers. It was recommended that exploratory grout holes were extended through to the layer below which confirmed the presence of voids at the interface. Subsequent pressure grouting used over 200 litres of superfine cement and epoxy resin to fill the voids.



Figure 1. View of Dam Spillway

Figure 3 illustrates the ground penetrating radar equipment. It is a highly portable battery operated machine which uses high frequency radio waves similar to a cell phone and consequently poses no health hazard to the operator or anyone in the vicinity.



Figure 3. GPR in use

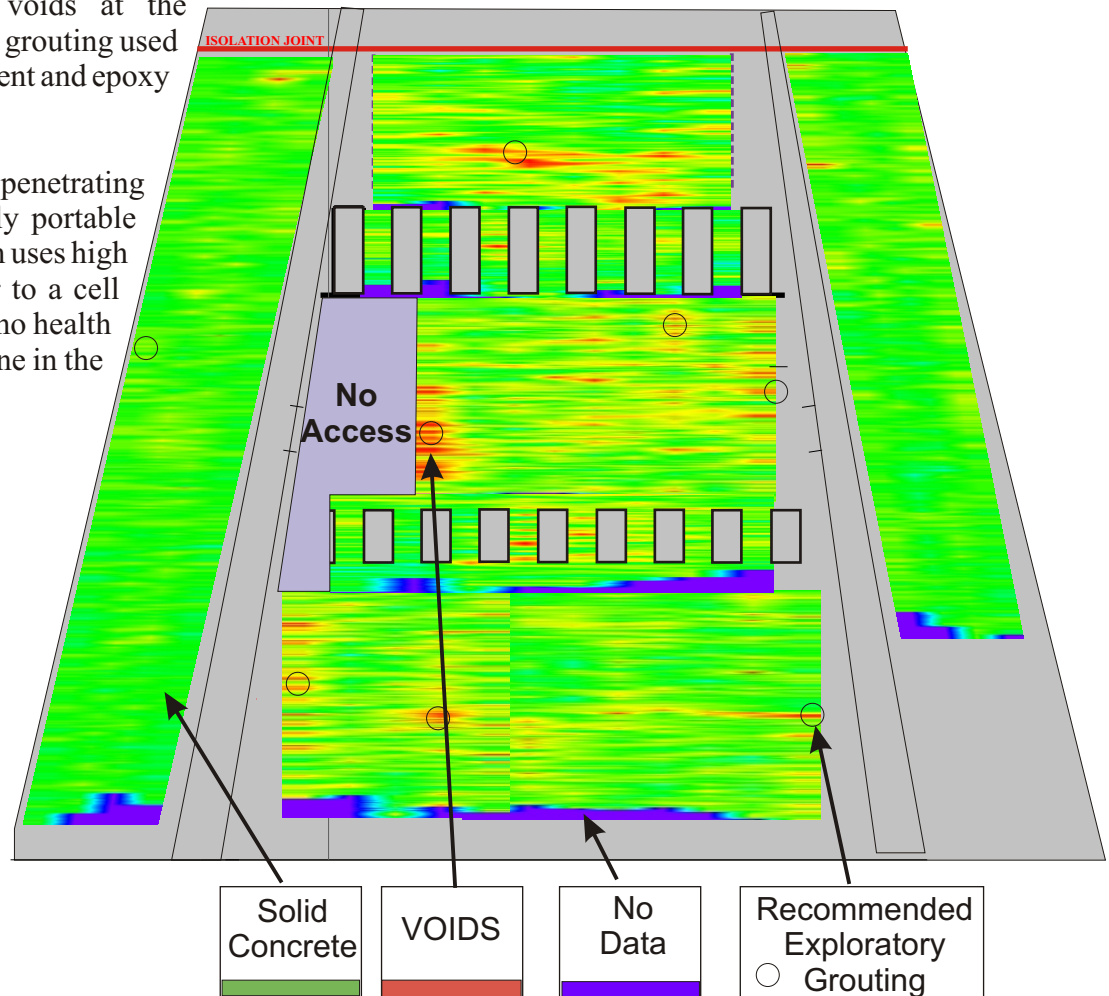


Figure 2. Computer developed slices through spillway slab

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