Leading Construction Company

BranRock Wall Scanning Report

27 October 2014
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1. Scanning Results

To whom it may concern,

This document is to state that Non Invasive Concrete Scanning (GPR) was undertaken by UNITED SCANNING SERVICES PTY LTD on the 23rd of October 2014 at the Permanent Buildings site at BranRock.

United Scanning performed multiple scans on five different Ritek walls throughout the site to determine if there were any voids in the concrete. We established a base line by scanning a wall that was confirmed by LCC as being of sound build. Once we had this baseline we scanned five walls chosen by LCC that they believed were the worst affected walls. United Scanning then scanned these walls in multiple locations taking care to go over the worst affected areas.

Marker points were then drawn on the wall so that the exact location of the scan could be determined and so that the scan of the wall and the image of that location could be compared. We believe that the scans of the worst affected areas appear no different to our baseline scan indicating that there are no major voids in the areas we scanned. We have found some abnormalities and their locations have been marked in our report. Our findings and images to support these results are outlined in our report.

If you require any more information, please let us know.

Matthew Hill
2. Location of scanned walls

Wall A is wall 28
Wall B is wall 32
Wall C is wall 58
Wall D is wall 57
Wall E is wall 20

The walls that we scanned are marked in yellow

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3. Baseline Scan One – Wall 34

This image shows the first of two areas we used to establish a baseline scan. The lines running through the panels are consistent and even. LCC decided that this wall was acceptable to use as a baseline.

The scale marked on the wall relates to the scale at the top of the scan. The red line in each image is the same point. You can see that the scan is consistent the whole way across. The numbers running down the left of the scan relate to the depth. The scan is 150mm deep, the same depth as the Ritek walls.
4. Examples

This image shows what the scanner sees when we pass over a core hole (or a void). Notice how there is an indent in the black section on the scanner screen. This indent is the scanner passing over the void. The red lines show the location of the hole on the scanner. The scan was taken over the hole and then the scanner was moved next to the hole to show both the hole and the scanner screen.

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This image shows what the scanner sees when we pass over a join in the boards. Notice how the black hole at the top left of the scanner screen appears larger than the two to its right. This is not a void in the concrete it is simply the scanner passing over the join in the boards. Once again the two red lines show where the scan is in relation to the wall.
5. Wall A - 28

This image gives an overview of the scans performed on wall A. Wall A had four horizontal scans, or passes (only three are visible in this image), three vertical passes and one detailed scan over a particularly bad section. All three sections can be seen in this image. Arrow indicates direction of scan.
These two images are of the first two horizontal scans on wall A. You can see that the scan data is consistent across the whole wall on both scan one and two. Two possible abnormalities were detected. They have been marked by a blue box in the above images.
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We have included the base line scan again as a reference point for the previous scans.
Wall A Vertical Scan One and Two

This image shows the first two vertical scans that were performed on Wall A. Three abnormalities were detected. The abnormalities are most likely caused by the CFC sheet pulling away from the concrete creating a small air pocket. The air pockets would be about 10mm deep.

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Vertical Scan Three

The section marked in red is a pre-existing core hole.

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6. Wall B - 32

This scan data runs from left to right, but the numbers in the photo run from right to left. The red and yellow lines show where the two joins in the sheets are and how they correspond to the scan image. You can see that the scan is the same the whole way along the wall.

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Detailed view of hollow section of wall B.

The section marked in red is the section shown in the scan. One abnormality was detected here. It is marked in blue.
7. Wall B - Doorway

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Overview of scans around doorway in Wall B.

Left side doorway – Wall B

Scans around left side of door. Area marked in red is the area that has been scanned. A potential abnormality has been marked with a blue square. The abnormality is most likely caused by the CFC sheet pulling away from the concrete creating a small air pocket. The air pockets would be about 10mm deep.
Left Side doorway – Hollow area – Wall B

This section of the wall was hollow so we did a separate scan of the section marked in purple. Scan revealed one potential abnormality marked in blue. The abnormality is most likely caused by the CFC sheet pulling away from the concrete creating a small air pocket. The air pockets would be about 10mm deep.
Area scanned above the doorway – Wall B.

The two sections in blue above are most likely caused by the CFC sheet pulling away from the concrete creating a small air pocket. The air pockets would be between 10-20mm deep.
Right Side doorway – Wall B

Image shows scans performed on the right hand side of the door frame. Area marked in red is the area that has been scanned. The area marked in blue is most likely an air pocket caused by the CFC sheet pulling away from the concrete.

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8. Baseline Scan Two – Wall 54

We moved to a new section of the building so we took a new baseline. The new baseline (baseline two) was taken from wall 54.

New baseline scan. Red line shows the joint between two boards.

Baseline One. Minimal difference between the two baseline scans.
9. Wall C - 58

This image shows an overview of the two areas that were scanned on wall C. The area marked in yellow is the area that was scanned. Blue ticks are not related to this work. The area marked in blue is shown in the next image.
This image shows a more detailed view of the scans performed on wall C.

This section was chosen because LCC thought it looked particularly bad, but when scanned we can see that the scan comes up the same as the baseline. No voids were detected.
10. Wall D - 57

This image shows an overview of the scans we performed on wall D.

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This image shows the upper pass we made in wall D. No abnormalities were detected.
This image shows the lower pass we made in wall D. One abnormality was detected and has been marked in blue.
11. Wall E - 20

Overview of scans on wall E. Highlighted areas are the areas that were scanned.
Closer view of scans one and two on wall E

Scan one. Small abnormality found. Most likely it will be as a result of slight movement when scanning rather than a void in the wall.

Scan two. No abnormality detected.

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Wall E – Pass 3

Closer view of scan three on wall E. Purple box is the section that was scanned.

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Closer view of scan four on wall E

Four abnormalities were detected in this area. Given that they are at the bottom of the wall the concrete may not have been agitated correctly.

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