

# **RADCON<sup>®</sup>**

## **FORMULA #7**

ABILITY OF RADCON #7 TO MAINTAIN A  
WATERTIGHT SEAL ON CRACKS FOR A FULL THERMAL CYCLE

*16-18 March 1995*

*Prepared by*  
**RADCRETE PACIFIC Pty Ltd**

## INTRODUCTION

The aim of this report was to evaluate Radcon Formula #7's waterproofing capability on cracks in concrete during a full thermal cycle. To prove this, a Radcon #7 sealed crack is to be ponded with 150mm head of pressure for a period in excess of 24 hours to represent at least one full thermal cycle of a typical day.

Additionally, untreated cracks were ponded as a control on site to observe the performance of cracked concrete with no attempt at waterproofing.

The pond tests were carried out for a period of 48 hours on a site that was treated with Radcon #7 in July 1988.

It should be noted that this site had previously been tested by the Building Research Centre, University of New South Wales in the "Condition Survey of Applications using Radcon Formula #7". The Survey was being conducted as part of our final ABSAC appraisal.

ABSAC stands for Australian Building Systems Appraisal Council, which is a technical advisory committee to appraise and control building product used in the Australian market. It is made up of members from CSIRO and other affiliated bodies.

## TEST SITE

The test site chosen was:

“ST LEONARDS CORPORATE PARK”  
39 Herbert Street  
ARTARMON

Area treated:	2,000 square metres
Treated by:	Kratrim Pty Ltd (Approved Applicator)
Application Date:	July 1988
Specification Acceptance:	Ray Condon Consulting Engineer
Property Managers:	Mr Richard Wetherell - Operations Manager State Super Board 02-438 1106 (on-site)

Site Notes: This site is a four level car park with normally reinforced decks. It was Radcon #7's first major car park sealing job undertaken with severe leakage evident. A total of 300 lineal metres of leaking crack ranging from 0.5 - 2.5mm in width were evident prior to treatment.

Radcon #7 was treated to the entire top level which is completely exposed. The treatment was a complete success, however some major cracks required two or three treatments to gain a 100% seal. These re-treated cracks obviously contained large voids which required additional product to bridge the cracks entirely.

It should be noted that the site had been leaking for a period of approximately 9 months prior to the Radcon #7 application. This is the reason for the extensive calcium leaching (staining) on the underside of the slab.

## TOP CAR PARK DECK



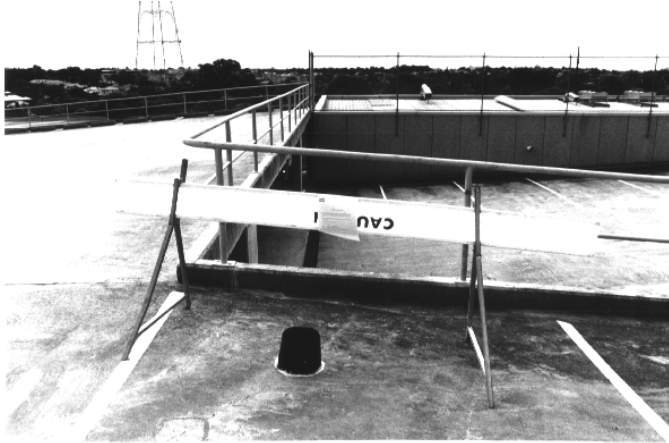
## TEST AREAS

The areas tested will be named Crack #1, #2 & #3. A container was siliconed over selected cracks in the concrete to enable a head of pressure up to 150mm to be ponded.

### CRACK #1 ~ RADCON #7 TREATED

This crack is located on the top deck of the car park that is exposed to the weather. It was treated with Radcon #7 and has maintained a seal since the application in 1988.

#### Location Shot ~ Crack #1



#### Detail Shot ~ Crack #1



Underside ~ Crack #1



### CRACK #2 ~ CONTROL

This crack is located on a lower level that is exposed to wind-driven rain and leaks during raining periods. No attempt has been made to waterproof this crack.

#### Location Shot ~ Crack 2



#### Detail Shot ~ Crack 2



#### Underside ~ Crack 2



### CRACK #3 ~ CONTROL

This crack is located on a lower level that is exposed to wind-driven rain and leaks during raining periods. No attempt has been made to waterproof this crack.

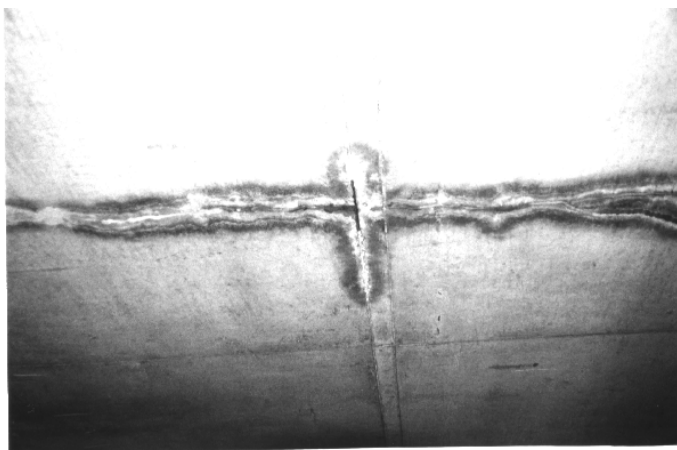
#### Location Shot ~ Crack #3



#### Detail Shot ~ Crack #3



#### Underside ~ Crack #3



## METHODOLOGY

DATE	TIME	TEMP.	HUMIDITY	CRACK #1 ~ RADCON #7	CRACK #2 ~ CONTROL	CRACK #3 ~ CONTROL	COMMENTS
Thursday, 16 March 1995	8.00pm	19°C	60%	40mm ~ Head of Pressure At 15 minutes there was no leakage either along the <u>surface</u> or <u>underside</u> of the crack.	40mm ~ Head of Pressure Within 15 minutes water was tracking along the <u>surface</u> and <u>underside</u> of the crack.	40mm ~ Head of Pressure Within 15 minutes water was tracking along the <u>surface</u> of the crack only.	
Friday, 17 March 1995	6.30am	14.6°C	77%	40mm There was no leakage either along the <u>surface</u> or <u>underside</u> of the crack.  The container was topped up to 150mm.	40mm Water tracking along the <u>surface</u> of the crack had extended further and the <u>underside</u> of the crack water was still leaking. A drip had formed.  The container was topped up to 150mm.	40mm Water tracking along the <u>surface</u> of the crack had extended and on the <u>underside</u> of the crack there was no water leakage.  The container was topped up to 150mm.	On closer inspection of Crack #3 there were signs of oil stains and surface laitance that may have inhibited the initial penetration of water. (see photo)
<b>OFFICIAL SITE INSPECTION</b>	10.30am	23.4 °C	47%	150mm There was no leakage either along the <u>surface</u> or <u>underside</u> of the crack.	150mm Water was tracking more severely and leaking out of the <u>surface</u> of the crack, and the <u>underside</u> was leaking with water drips forming along the crack.	150mm Water was tracking more severely and leaking out of the <u>surface</u> of the crack, and <i>now</i> the <u>underside</u> of the crack was leaking with water drips forming along the crack.	The additional pressure appears to have broken the surface laitance (#3) causing leakage. This crack is not normally exposed to wind driven rain.
	1.30pm	28.2°C	45%				High
Saturday, 18 March 1995	5.48am	18.7°C	73%				Low
	1.11pm	31.7°C	36%				High
	6.30pm	26.6°C	51%	150mm There was no leakage either along the <u>surface</u> or <u>underside</u> of the crack.  Containers removed.	150mm Water was still tracking along the crack and drips were still forming on the underside of the slab.  The crack was not leaking as profusely as when the head of pressure was initially raised to 150mm.  Containers removed.	150mm Water was still tracking along the crack and drips were still forming on the underside of the slab.  The crack was leaking at the same intensity as previously observed.  Containers removed.	It appears that Crack #2's leakage may have slowed as a result of some autogenous healing within the crack.



## CONCLUSIONS

From the observations made from the on-site test, it can be concluded that Radcon #7 has the ability to maintain a long term waterproof seal on cracks passing right through concrete even when exposed to a full thermal cycle.

Naturally this has been the case since the original application but has been specifically demonstrated in this on-site test.

These findings complement the recommendation of Radcon #7 to be used for waterproofing concrete (including cracks), in high traffic conditions and even when exposed to high thermal stress.

By also observing the controls it can be concluded that cracks left untreated on this site leaked, whereas those treated with Radcon #7 have maintained a waterproof seal since the application in 1988.