

LIFETIME WATERPROOFING AND PROTECTION FOR STRUCTURAL CONCRETE

RADCON[®] **FORMULA#7**



HOTELS & RESORTS

SITES OF INTEREST 2009

Radcrete Pacific presents: **Water Holding Vessels**

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SITE DETAILS:

COUNTRY	- Mauritius
SITE	- InterContinental Mauritius Resort Balaclava Fort
DEVELOPER	- Lateral Holdings
CONTRACTOR	- China Jiangsu International
ARCHITECT	- DNA Architects India
ENGINEER	- Limbada Consulting
TREATED AREA	- Pools & Water Features

FIGURE 1-2.

RADCON #7 application on pool areas of the Balaclava resort.

RADCON #7 for the InterContinental Hotel, Mauritius.

The US \$50 million resort in Balaclava Fort, Mauritius will soon open its doors to travelers seeking an authentic destination experience.

RADCON Formula #7 waterproofed the two-tier infinity pool next to the beach and natural salt-water dip pool in the only natural lagoon on the island.

RADCON #7 technology is *suitable for use in marine environments* because it not only waterproofs but totally eradicates any salts reaching the first line of steel re-inforcing.

The resort is the first project in the hospitality category for the Indian developer, Lateral Holdings.

It offers large variety of relaxation activities, including a pool bar with live entertainment and Health Club.





WATERPROOFING
CONCRETE FOR LIFE

RADCRETE

Al Raha Beach Resort uses Radmyx



SITE DETAILS

COUNTRY: UAE
SITE: Al Raha Beach Resort
CONSTRUCTION: Turner Construction
APPLICATOR: Wadi Rum Decor
YEAR: 2011

Figure 1: Part of the Al Raha development

The Al Raha Beach Development is one of the biggest and most prestigious in the UAE. Located only 20 minutes drive from Abu Dhabi city centre, it covers a total area of over 6 million square meters and 11kms of coastline.

Within the development there are two large irrigation tanks, R1 and R2. It was discovered that R2 was leaking, Radmyx was applied to the cracks in the form of a slurry render and following this Radcon #7 was applied to the entire inside surface of the tank.

The contractor was so happy with the result, they will now also treat R1 with Radmyx.



Figure 2: Al Raha Beach Resort



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SITE DETAILS:

COUNTRY	- UAE
SITE	- Yas Hotel
CLIENT	- Aldar
TREATED AREA	- Rooftop
APPLICATOR	- Wadi Rum Decor
AREA	- 5,000 sq mtrs

FIGURE 1.

The Yas Hotel looming over the F1 Circuit.

The Abu Dhabi Formula One track hotel in need of RADCON Formula#7.

The Yas Marina Circuit, described as one of the most exciting Formula One tracks in the world, will reveal its array of unusual features to over 55 million spectators in November 2009.

The track runs through the 5-star Yas Hotel, an iconic grid shell structure projecting programmed lighting and image sequences visible for miles around.

This spectacular flag ship project of Aldar Hotel & Hospitality, set half on land and half on water, embodies every exciting and innovative aspect of modern design inside out.

RADCON Formula#7 was chosen to waterproof the rooftop of this "new formula for excitement" building spanning across the F1 race track.

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FORMULA#7** WATERPROOFING CONCRETE FOR LIFE

PALACE OF THE GOLDEN HORSES, KUALA LUMPUR

Developer: Mines City Hotel
Main Contractor: Strategic Alliance Construction JV (turn key)
Structural Engineer: Ove Arup & Partners
Design Architect: Wimberly Allison, Tong & Goo, USA
Architect: Michael Ong Chartered Architect
Landscape Architect: Belt Collins International
Area waterproofed: flat rooftops & entrance podium
Size: 30,000 square metres

Palace of the Golden Horses! Asia's most intriguing hotel. With Radcon #7 now entering its' tenth year of export from Australia to the Asian region we are proud to have been involved as the principal waterproofing system on this magnificent project.

Palace of the Golden Horses is situated just outside the Kuala Lumpur city centre on the shores of a 150 acre lake in The Mines Resort City. There are a total of 401 guest rooms and 80 suites with this 5 star hotel offering the utmost in luxury accommodation.



FIGURE 17 - TREATED ROOFTOP

The Hotel is managed by the Signature Hotel Group Sdn. Bhd., which is a joint venture between the Sovereign Hotel Group Ltd. of the US and Country Heights Holding Bhd. of Malaysia. This project forms part of The Mines Resort City, a mixed 382.84 ha development project with recreational and entertainment facilities.

There were a number of factors why Strategic Alliance Construction chose Radcon

Formula #7 for the key waterproofing of this massive project - a key reason was speed of application. The construction of this project also used tilt-up panels to maintain a fast tracked schedule.

Radcon Formula #7 was utilised to waterproofing 25,000 square metres of flat rooftop construction. The rooftop was cast in-situ and allowed to cure prior to the product application. We have included a picture here of the inside of one of the domes so that you appreciate the high risk associated with such an application, also the potential for consequential damage if leakage occurs.



The other key area of waterproofing involved the suspended front entrance foyer. There was some 5,000 square metres of Radcon #7 waterproofing on this deck which can be seen here finished with paving and landscaping in Figure 18.

This entrance level was a focal point for trades and construction activity. The fact that Radcon #7 penetrates the concrete and cannot be damaged from surface abrasion meant that SAC were able to use the area and continue all construction activity without requiring any protection of the waterproofed surface. We counted some 10 vehicles working in this area at any one time during construction which included bull-dozers, back hoes, trucks and fork-lifts photographed here in Figure 19.



FIGURE 18 - ENTRANCE TO PALACE OF THE GOLDEN HORSES



FIGURE 19 - BUSY SUSPENDED ENTRANCE AREA DURING CONSTRUCTION

A weakness of traditional membrane systems is that they require complete protection from this level of construction activity and even then there is still a high risk of damage leading to premature failure.

A key element of successful waterproofing on any site is in the hands of the applicator. As the saying goes, 'you can have the best product in the world, but if the applicator is not competent, then the product is useless'. All the waterproofing on this project was undertaken by our exclusive applicator for Malaysia - Brunseal.

Other key projects waterproofed recently in Malaysia include: PT100, a 5 Tower Office block for Australian based McKerrell Lynch Architects, Pan Pacific at the new KL International Airport for Australian based Multiplex Constructions, and the new Light Rail Transport Stations for UK based Taywood Engineering (Taylor Woodrow).



FIGURE 20 - PALACE OF THE GOLDEN HORSES, KUALA LUMPUR

THE DATAI RESORT, MALAYSIA

This exclusive resort is located on the Island of Langkawi off the north-east coast of Malaysia near the border of Thailand. The resort was constructed by Penemba Construction and Radcon Formula #7 was used to waterproof approximately 3,000 square metres of concrete.

Radcon Formula #7 was specified by Arkitek Jururaneang Malaysia (AJM) for waterproofing the entire pool deck area

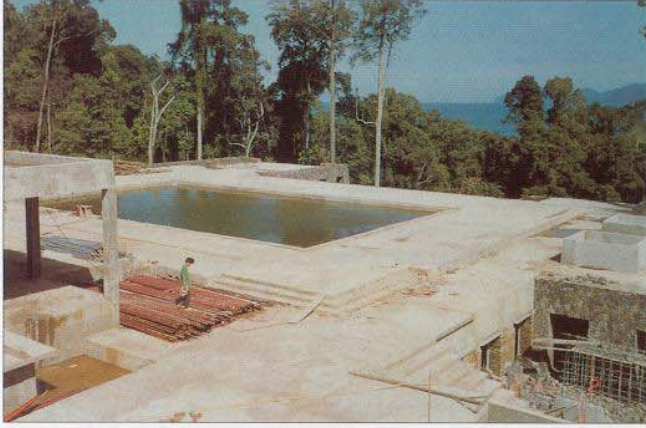


FIGURE 28 - EXPOSED DECKS DURING CONSTRUCTION

which is located over habitable living areas, the tiled walkways, and the large exposed forecourt area at the entrance of the resort.

In remote areas such as these, Radcon #7 is very convenient to ship due to its compact nature. Five 200 litre drums is sufficient to waterproof up to 5,000 square metres. This can save significant time and money when shipping.



FIGURE 29 - THE DATAI RESORT BY NIGHT

GRAIN BERTH, PORT KEMBLA, NEW SOUTH WALES

The Port Kembla Port Corporation (formerly the MSB Illawara Ports Authority) who is responsible for the maintenance of many wharf decks was faced with a number of large cracks up to 2.5mm on their Grain Berth located in the Inner Harbour at Port Kembla.

The wharf deck was constructed in 1979, using Ordinary Portland Cement as the binder and during its life had developed some regularly spaced cracks running perpendicular to the wharf's length. Overall the wharf is in good condition but the cracks were leaking profusely which allows chlorides direct exposure to the reinforcement.

A number of products were considered from water repellents to cementitious crystal growth products. Radcon Formula #7 was chosen because the treatment would seal any crack right the way through, not just the top or the bottom. And secondly, the product will accommodate the movement associated with high thermal stress which is significant considering the length of the wharf. And finally, the complex gel that is created by the reaction between Radcon #7 and calcium is highly alkaline which maintains a passive environment for the steel reinforcement.

The cracked areas were thoroughly cleaned and then flood

sprayed with product. Due to the size of the cracking, they were taped on the underside to allow the product to pond and absorb into the cracks' face and form a gel. Due to the



FIGURE 30 - ONE OF MANY CRACKS IN THE DECK



FIGURE 31 - GRAIN BERTH, INNER HARBOUR

age of the leaking cracks, a calcium solution was used as the first watering to replace the calcium that had been leached out. This was considered essential to increase the reaction speed and bulk up the crack. The final two waterings were performed using normal tap water.

Upon practical completion, the treated areas were pond tested to confirm a seal had been achieved. A few stubborn cracks did require re-treatment to achieve a 100% result. To monitor the performance of the Radcon #7 treatment, the Port Kembla Port Corporation performs annual pond tests. The treatment was completed in mid-1993. The success of this treatment has led to other applications to the Multipurpose Berth and Outfitting Berth also located in Inner Harbour.

RADCON #7 FIX FOR BADLY CRACKED SLAB IN HANOI

HANOI CENTRAL HOTEL

Client: SAS Ctamad
 Specifier: Taylor Thompson Whitting
 Main Contractor: Bilfinger & Berger
 Application: Radcon Vietnam

Radcon Vietnam, under the guidance of Mr Cao Thanh Thai, has been building the reputation of Radcon #7 concrete waterproofing since 1995. With a 100% success rate to date, and the ability to offer long term protection (10-year waterproofing guarantee), this compares more than favourably with the 1-year guarantee offered for local materials.

Even though applying Radcon #7 is a fairly straightforward process, Radcrete Pacific and Radcon Vietnam undertake strict quality control procedures. Coupled with Radcrete's ISO9002 certification, international specifiers and contractors often turn to the Radcrete Pacific team for help.

For instance, on this project, the contractor released the formwork too early on the car park in an effort to meet construction deadlines. As a result the deck slab suffered severe cracking throughout. Prior to the hand over of the project, the Ministry of Construction required the cracks to be sealed and then load tested. Radcon Vietnam conducted a map sketch of the existing cracks in the slab to ascertain the extent of the cracking and where it was mainly concentrated. This was then presented to the consultant for verification, along with a recommended procedure for the Radcon #7 application.

Radcon #7 can seal existing cracks up to 2mm, however some cracks were larger than 2mm and structural bonding was required. The decision was taken to grind and grout some of the larger cracks and epoxy inject.



MR CAO THANH THAI

Radcon #7 was then spray applied to all the car park decks. Once completed, and after the watering procedure which followed, the cracks were checked for leakage through ponding tests as part of the quality control.



HANOI CENTRAL HOTEL CAR PARK

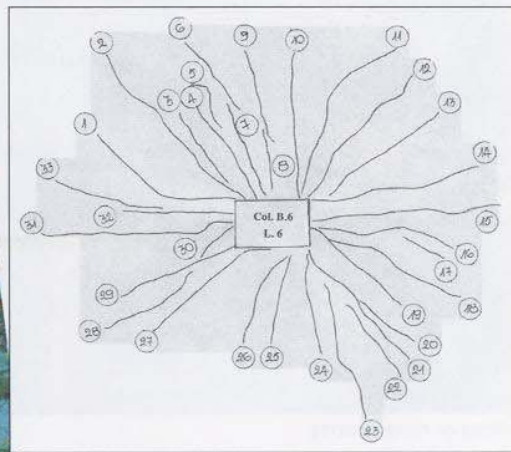
With the result found satisfactory by the consultant and the MOC, a load test was then conducted on the structure. After the load test, further ponding tests were conducted on areas nominated by the consultant. None of the treated cracks leaked. The job was then issued with Radcrete Pacific's standard 10-year guarantee.

Some other recent jobs in Vietnam:

- My Thuan Bridge - Deck Cracking BHE - Chloride Ion resistance Maunsell - Case hardening
- Ho Chi Minh President Tomb
- Indochine Park Tower
- Nestlé's New Factory
- Vinaglass Containers
- Water Project Tan Thuan EPZ
- Tri Nguyen Aquarium



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SITE DETAILS:

COUNTRY	- Jeddah, Saudi Arabia
SITE	- Al Corniche Hotel
TREATED AREA	- Swimming pool
APPLICATOR	- Isam Kabbani Group

FIGURE 1.
The Al Corniche Hotel Jeddah, Saudi Arabia.

Rooftop pool protected by RADCON Formula #7 technology.

The newly erected Al Corniche Hotel in Jeddah solved once and for all any potential waterproofing issues in the final stages of the construction.

The hotel is at the centre of the Corniche, a popular waterfront area said to be one of the most spectacular places in Saudi Arabia. It features over 400 open air sculptures and the gigantic King's Fountain, situated opposite the Al-Salam Palace.

It has an open air rooftop pool, which is exposed to extreme weather conditions. Any leakage present could cause serious water damage to the floors below and even disrupt the hotel's operations.

Isam Kabbani, Radcrete's Saudi representatives, had the perfect and inexpensive solution for this situation – RADCON Formula #7.

The specifiers were doubting this 'miracle' product at first but after realising RADCON #7 was the only solution claiming to fix any leaking cracks present as well as any future hairline cracking without re-applying the product, they gave Isam Kabbani the green light.

RADCON #7 was spray-applied to the rooftop pool concrete surfaces and as confirmed by a successful pond test, will be protecting and waterproofing the concrete for the life of the structure.

The product has been available in Saudi Arabia for several years and is building a solid reputation being used on landmark projects such as the Al Corniche, Jeddah Shopping Center and the Royal Terminal at the Jeddah International Airport.

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FIGURE 1.
Crystal Beach Resort, Saudi Arabia

SITE DETAILS:

COUNTRY	- Saudi Arabia
SITE	- Crystal Beach Resort
TREATED AREA	- Swimming pool
APPLICATOR	- Isam Kabbani Group

RADCON Formula #7 technology for pool protection.

Crystal Beach Resort is yet another privately own establishment recently opened in North Obhur, Saudi Arabia.

Situated on the shores of the Red Sea, it is a popular spot for divers and water enthusiasts offering rich marine life and unspoiled diving spots.

This exclusive recreational complex offers amongst other facilities a pool area which was in need of a reliable and permanent waterproofing solution.

Isam Kabbani, Radcrete's Saudi representatives, quoted RADCON Formula #7 and succeeded in winning this project over other available waterproofing products mainly due to RADCON's unique re-sealing characteristics.

It is particularly suitable for water holding vessels applications not only because of its potability certification but it also can withstand unlimited hydrostatic pressure.

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SITE DETAILS:

COUNTRY	- Trinidad and Tobago
PROJECT	- Marriott Courtyard Hotel
CONTRACTOR	- Beaver Construction
APPLICATOR	- Dover Waterproofing Technologies Ltd
DESCRIPTION	- All concrete roof sections waterproofed with RADCON Formula #7

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RADCON #7 - GRAND HYATT - DUBAI

Project: Hotel & Residence
 Consultant: Arkitek Int. (Engineers)
 Contractor: Ssangyong Engineering & Construction Co. Ltd.
 Application: Substation / Roof Car Park.
 Area: 900 sq. metres.

The Grand Hyatt Dubai is located just off Bur Dubai on the south bank of the Arabian Gulf's most exciting city.

When the Grand Hyatt opens in late 2002 it will represent one of the Middle East's largest and most luxurious conference hotels.

The area treated was a Car Park above the hotel sub-station.

The Middle East represents a new region for Radcrete so this small part of the Hyatt project is fairly typical in start up territories.

Put simply we were handed the



GRAND HOTEL DUBAI



GRAND HOTEL DUBAI

smallest yet highest risk waterproofing for the entire site.

That is an electrical sub-station with vehicular loading from above.

RADCON #7 - GETTING IT RIGHT FOR AUSTRALAND

Developer: Australand
 Builder: Australand / Walker Design & Construct Project.
 Applicator: Kratrim Pty Ltd.
 Area: 2945 sq. metres.

Rhodes Corporate Park Complex. Radcon #7 was used to waterproof podium slab over Car Parking area which incorporated Stage 1 of the commercial building complex, being the main entrance to Building C.

Possible water leakage through the concrete podium slab top, the parked vehicles below would be a major concern for the owner, especially with the area being tiled and landscaped to include a café for public use.



RHODES CORPORATE PARK COMPLEX.

A combined Radcon #7 (applied to the slab) and Radmyx (to the underside) system approach waterproofing gave full peace of mind to the builder and owner.

The fast application technique of Radcon #7 highlighted the advantage over traditional membranes to assist with the construction program without any delays.



WATERPROOFING
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RIN Grand Hotel Bucharest



SITE DETAILS

COUNTRY: Romania
SITE: RIN Hotel
APPLICATOR: Express Integrator
SIZE: 7,000 sq mtrs
YEAR: 2009

Figure 1: Rin Hotel Bucharest

The Rin Grand Hotel in Bucharest is one of the largest hotels in Eastern Europe. It was built in 2007 with an investment of 60 million Euros.

The basement areas were below the existing water table. Being close to the Dambovitza River there were significant problems with water leaking into the basement via the hundreds of thousands of tie holes and expansion joints so many pumps were required to keep out the river water. In some places the water was several feet deep although this caused no problems for Radmyx, which has provided a long term solution to a difficult problem.

The basement and the water tanks of this impressive structure have now been permanently waterproofed with Radmyx by our local distributor and applicator, Express Integrator and Unico Profit.



MOLEX FACTORY, SINGAPORE

Owner: Molex Singapore
 Main Contractor: Mei Hwa Construction Works
 Architect: Design International
 Engineer: De Consultants
 M&E Engineer: Lincolne Scott
 Area treated: Rooftop over factory
 Size: 3000 sqm

Reverton Engineering, our exclusive representatives for Singapore recently completed the waterproofing of Molex factory rooftop utilising only Radcon Formula #7.

The works were part of extensions to the existing factory as seen in Figure 21. There are plans for another level to be added at a later stage as indicated with columns already in place on the roof. The advantage of using Radcon #7 in this application is when future work is planned, the topping can simply be removed and work continued without the difficulties of removing a traditional membrane system.

Radcon #7 was applied directly onto the structural concrete followed by the 3 waterings. After this was completed a screed was laid to falls. Control joints were then cut into the screed at 600mm squares and filled with a hot pour bitumen sealant as seen in Figure 22.

Reverton, now into their fourth year of operations is building an enviable track record of Radcon #7 applications in Singapore.



FIGURE 21 - MOLEX FACTORY EXTENSIONS



FIGURE 22 - ROOFTOP WITH TOPPING OVER RADCON #7 TREATMENT

JOONDALUP RESORT, WESTERN AUSTRALIA

Architect: James Christou & Partners
 Engineer: Ove Arup & Partners (WA) Pty. Ltd.
 Main Contractor: Multiplex Constructions (WA) Pty. Ltd.
 Applicator: WA Waterproofing
 Area treated: Podium entrance & balconies
 Size: 2,000 sqm

The Joondalup Resort located just north of Perth was recently completed by Multiplex Constructions. The Resort includes 70 deluxe guest rooms and suites in the Hotel, and 30 spacious self-contained villas. These villas front onto a 27-hole championship course designed by internationally renowned Robert Trent Jones Jr.

Radcon Formula #7 was used for the waterproofing of all suspended concrete decks which included the balconies

overlooking the swimming pool as seen in Figure 24 and the Port Cochere showed in Figure 23. The application was completed by WA Waterproofing.

The normally reinforced concrete deck at the Port Cochere was treated with Radcon #7, prior to the laying of the brick paving seen in Figure 23. This slab had developed typical shrinkage cracks which passed right through the concrete and particular attention was paid to flood spraying any visible cracks during application.

On completion of the product application and watering procedure, the area was pond tested to confirm a watertight seal had been achieved. The Port Cochere is suspended over restaurant facilities and the Resort's management offices.



FIGURE 23 - JOONDALUP RESORT ENTRANCE

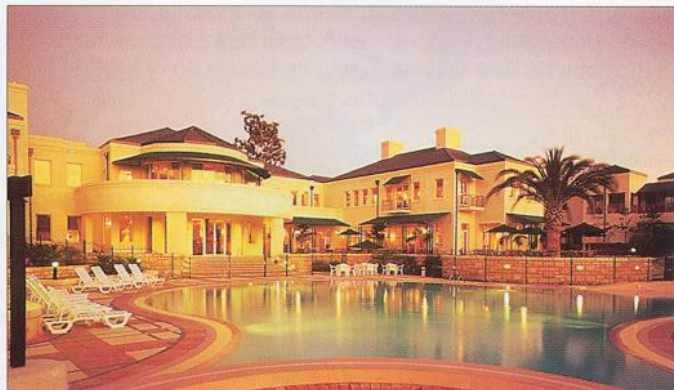


FIGURE 24 - SWIMMING POOL AREA