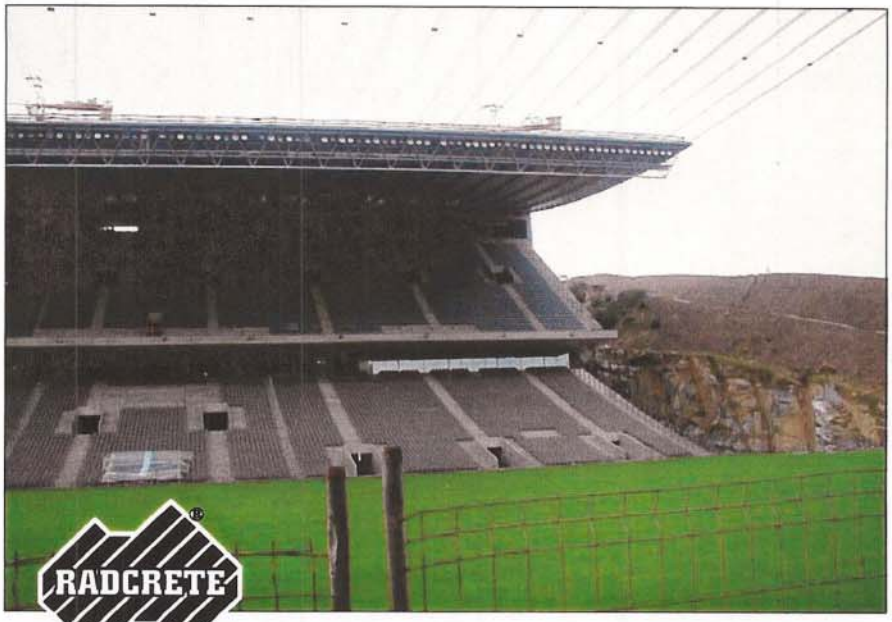
LIFETIME WATERPROOFING AND PROTECTION FOR STRUCTURAL CONCRETE

RADCON® FORMULA#7

SPORTING ARENAS
SITE REFERENCES

RECENT SITES OF INTEREST 2005



Trafficable Areas 4

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FIGURE 4.
One of the stands supported by the Monte Castro mountain

Braga Stadium Portugal

Designed by the architect Eduardo Souto Moura, the Braga Stadium was the first infrastructure project amongst the new Urban Center project in Portugal (inaugurated 30 December 2003).

SITE DETAILS:

COUNTRY	- Portugal
PROJECT NAME	- Braga Stadium
ARCHITECT	- Souto Moura
CONTRACTOR	- Soares da Costa
APPLICATOR	- Coala S.A.
SIZE	- 26,000 sq mtr

FIGURE 5.
Raising one of the stands carved into the mountain.

It was one of the venues of the UEFA Championships 2004 finals and described as novelty for all football fans.

The stadium was built into the slopes of the Monte Castro - a granite mountain wall, with steel cables connecting the two stands.

The project required new construction work for all seating being covered and including only lateral stands, since each end of the stadium consists of the rock walls of the hillside amphitheatre.

FIGURE 6.
Progress in the construction works

FIGURE 7.
Steel connectors completed

FIGURE 8.
The unique design of the completed project

SITES OF INTEREST 2009

Radcrete Pacific presents: Commercial Buildings

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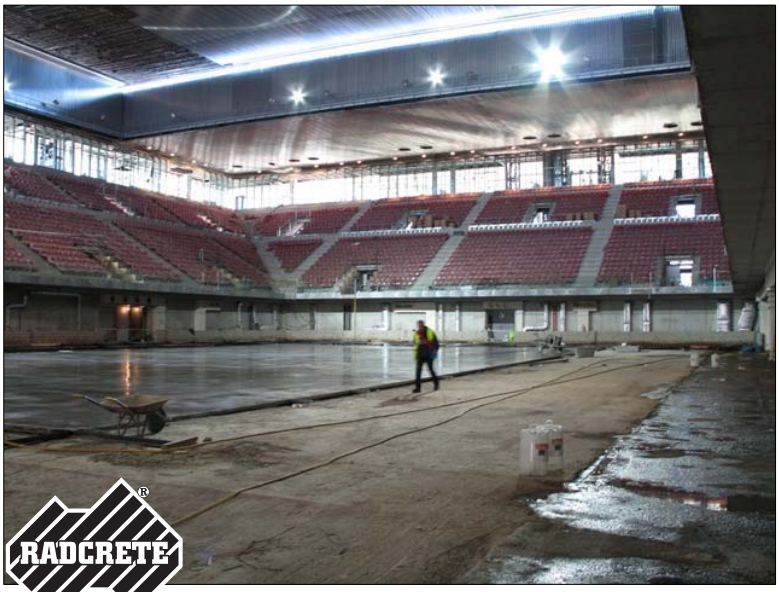


SITE DETAILS:

COUNTRY	- Spain
SITE	- La Caja Magica
CLIENT	- Madrid City Council
CONTRACTOR	- FCC
ARCHITECT	- Dominique Perrault
ENGINEER	- TYPSA
APPLICATOR	- Ariadna
SIZE	- 3,500 sq mtrs

FIGURE 1-4.
RADCON #7 application at the Magic Box tennis stadium in Madrid.

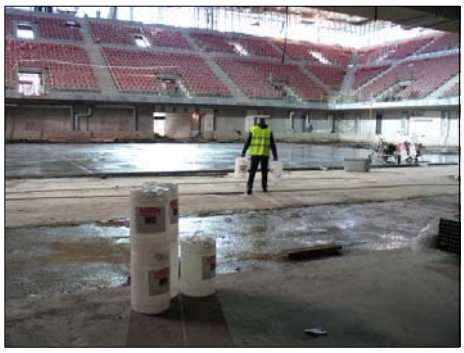
The ever changing La Caja Magica in Madrid lights up for the ATP Tour.

La Caja Magica (the Magic Box), a brand new tennis stadium recently opened for the ATP tour in Madrid, is build from sustainable materials, promoting sustainable development in conjuncture with one of Spain's most popular sporting events.

This constantly transforming structure, designed by the French architect Dominique Perrault, features a unique retractable roof that can be lifted like a lid, providing protection from the wind while still maintaining an outdoor event ambiance.

The walls are constructed from metal casing, which protects the structure from the sun but allows the air to pass through. When lit at night it completely disappears revealing the interior of the building.

RADCON #7 was applied to the €180 million project funded from the Olympic bids for 2012 and now 2016.



AREAS GO HAND IN HAND EVERY TIME

Client:	Public Works Dept. – Abu Dhabi
Consulting Engineers:	Ove Arup
Contractor:	RAPCO
Area:	680 sq. metres – Bridge Deck.

Radcon #7 is becoming the preferred waterproofing method in the UAE due to lifetime performance, ease of application and fast track construction.

We were very pleased to be working with Ove Arup yet again for this application.

Quite often in the Middle East, British Engineers rely on BBA approved products only.

This can be a recipe for disaster as BBA product approvals relate to compliance limited to England, Wales, Scotland and Northern Ireland.

This is a critical aspect due to the vastly differing climatic conditions so the BBA must limit approvals to local conditions only.

If specifiers have any doubts whatsoever that this is the situation they should contact BBA direct to verify our warning.

Using the BBA to specify bridge deck waterproofing in Hong Kong has led to widely publicised major failures. The BBA takes no responsibility and rightfully so!

ABU-DHABI BRIDGE

RADCON #7 – WIN STADIUM – WOLLONGONG

Builder:	Leighton Contractors Pty Ltd.
Architect:	Scott Carver.
Project Manager:	Incollmanagement.
Applicator:	Tovafare Pty Ltd.
Area:	3600 sq. metres.

New Western Stand to upgrade and increase seating capacity for Wollongong's Win Sports Stadium for upcoming 2002 Rugby League Football season. "Fast track" construction was necessary for season opening game in May.

Highlight of the "fast track" method of construction was to relocate the pre-cast seating concrete platts of the stand built for the Olympic Aquatic venue at Homebush for the 2000 Olympics.

Radcon #7 was chosen to protect the exposed concrete surfaces against the harsh salt spray environment due to its seafront location.

METRO CEBU WATER DISTRICT HEAD OFFICE

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SITE DETAILS:

COUNTRY	- Italy
SITE	- Stadio Alberto Braglia
APPLICATOR	- Radcon Italia Srl
TREATED AREA	- Stands
SIZE	- 15,000 sq meters

FIGURE 1.
RADCON #7 treated stands.

RADCRETE

The Alberto Braglia Stadium receives RADCON #7 lifetime protection.

The recently refurbished stadium located in Modena, Italy was originally built in 1936 and is currently home to Modena F.C.

RADCON #7 was spray-applied on the pre-cast stands after an acetic acid wash removing any residual release agents and opening up concrete pores to ensure required penetration.

Stands were further fitted with seating and coloured slip resistant resin surfacing.

RADCON prevents absorption below the concrete surface without any loss of surface adhesion.

SITES OF INTEREST 2010

Radcrete Pacific presents: Commercial Buildings

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SITE DETAILS:

COUNTRY	- Italy
SITE	- Stadio Euganeo
APPLICATOR	- Radcon Italia Srl
TREATED AREA	- Stands
SIZE	- 8,000 sq meters

FIGURE 1.
View of the Euganeo Stadium.

RADCON #7 treatment for renovations of the Euganeo Stadium in Italy.

RADCON #7 was applied to 8,000 sq meters in situ stands prior to installation at this Padova stadium renovation works.

Completed with new seat fittings and slip resistant resin coating, it now accommodates fans of the Calcio F.C. and numerous international sporting events.

RADCON Formula #7 forms a gel-like membrane inside the concrete, it therefore withstands thermal stress and does not get damaged by UV rays.

VERSATILE RADCON #7 SOLUTIONS FOR SINGAPORE

STERLING CONDOMINIUMS, BUKIT TIMAH, SINGAPORE

Main Contractor:	**Dragages Singapore Pte Ltd**
Architect:	**D.P. Architects Pte Ltd**
Approved Applicator:	**Reverton Engineering Pte Ltd**
Area Treated:	**26,200 Sqm**

Radcrete's Singapore representative, Reverton Engineering, recently completed Radcon #7 waterproofing to "The Sterling" luxury private condominiums in the upmarket Bukit Timah district.

The areas treated included the rooftop swimming pool, covered link way and wet areas.

Reverton Engineering has, time and time again, demonstrated the multiplicity and flexibility of Radcon #7 applications within a single building structure. In turn, this highlights the shortcomings of tedious specialised approaches and materials for different applications - when the use of Radcon #7 achieves cost-effective lifetime waterproofing on every occasion.

RADCON #7 WINS AT NEW 'AUSSIE' SPORTS STADIUM

Builder	**Abigroup Contractors**
Architects	**Scott Carver**
Project Manager	**Incoll Management**
Applicator	**Kratrim Pty Ltd**
Area	**1,300 Sqm**

Located in the north of the greater metropolitan area, this new sports stadium complex is some 80 kilometres from Sydney's CBD at Gosford on the Central Coast.

This type of structure is ideal for pre-cast panel construction and will perform faultlessly provided no structural volatility is present under full loading. Radcon #7 waterproofing was applied to a structural topping slab that was emplaced over pre-cast panels.

The completed Grahame Park Stadium now provides the local community with an excellent venue for sports events and spectators alike.

GRAHAME PARK STADIUM, GOSFORD, AUSTRALIA

7 Years of Success using Radcon

SITE DETAILS

COUNTRY:	Romania
SITE:	IDU Tennis Centre
ARCHITECT:	Isacov & Associates
APPLICATOR:	Express Integrator
YEAR:	2004

Figure 1: Aerial view of IDU Tennis Centre

It has now been 7 years since the application of Radcon to the stands on this tennis centre in Romania.

We were recently in contact with the architect who specified Radcon on this project and he is still very happy with his decision to specify Radcon. Seven years after completion the site remains 100% watertight. He wrote us the following email in relation to the project:

"Regarding the choosing of Radcon, which was made with the client's approval: we were looking for a solution to realize the perfect waterproofing of the concrete stands of the SEN (now IDU) Tennis Arena in Constanta, Mamaia - resort on the Black Sea coast (not in Bucharest) which have a series of rooms underneath. Amongst other several solutions we have studied the Radcon Formula # 7 which seemed revolutionary and suited to our needs. We got in touch with Mr. Afteni and he presented this solution and some other works where this solution was successfully used and he had convinced us to choose Radcon Formula # 7.
After 7 years from the construction completion, there were no problems and we are happy with this solution.

Kind regards,
arh. Mihai ISACOV"

ASTON MANSION, SINGAPORE

Developer:	**Far East Organisation**
Architect:	**RDC Architects**
Engineer:	**Tan EE Ping**
Approved Applicator:	**Reverton Engineering**
Areas treated:	**rooftops, wet areas, entrance podium, planters, swimming pool**
Size:	**20,000 square metres**

Radcon #7 waterproofs another large project for Far East Organisation in Singapore. Aston Mansions is an upmarket twin residential block with full security and recreational facilities.

The waterproofing contract provided many challenges with various areas such as rooftops, wet areas, entrance podium/roadway, planters and a swimming pool. On this site Reverton Engineering have utilised Radcon #7 as the core product to waterproof all of these areas totaling some 20,000 square metres.

On a site such as this a lot comes down to project management of the waterproofing contract. Each area must be carefully prepared, waterproofed and supervised to ensure there is no leakage today or in the guarantee period. Whilst this is the case with every large sub-contract it is particularly important in waterproofing due to the potential consequential damaged associated with water leakage.

FIGURE 35 - INSULATION AND TOPPING OVER RADCON #7

A key to achieving consistent performance in waterproofing is maintaining limited supply and controlled installation which for Radcon #7 is managed by one company in each country. These companies are always detailed on the back of our Newsletters. This quality focussed strategy does not generally deliver quick sales but it does provides a reliable and guaranteed result to build upon.

FIGURE 36 - ASTON MANSION, SINGAPORE

FIGURE 37 - RADCON #7 WATERPROOFS ENTIRE PODIUM LEVEL INCLUDING POOL, DECK, CLUB HOUSE AND TENNIS COURT

TRINTY GRAMMER SCHOOL, SYDNEY

After successfully using Radcon #7 to waterproof a 6,500 square metre Sportsfield at MLC School back in 1995, Woolacott Consulting Engineers specified the product again for this suspended Sports Field at Trinity Grammar.

Builders, Kell & Rigby won the job to construct the post-tensioned slabs which are suspended over a car park. Figure 39 shows the site under construction after it has been cleaned for the application of Radcon #7. The Sportsfield is mainly used for outdoor basket ball courts. The site has now been backfilled which has resulted in part of structure being covered with soil and turf.

The two important factors for successful waterproofing of this project were: Radcon #7 will maintain a watertight result beneath landscaping. And secondly, sports field finishings such as artificial turf and other coatings can still be fully bonded to Radcon #7 treated concrete.

FIGURE 38 - RADCON #7 APPLICATION

FIGURE 39 - SPORTSFIELD UNDER CONSTRUCTION

Kratrim, one of our Approved Applicators can be seen here in Figure 38 applying the product using a low pressure motorised spray unit. The application is being overseen by a Radcrete Technical Representative and the total area treated was 3,000 square metres.

The architects were Collard Clarke & Jackson.

SCEGGS GIRLS SCHOOL, DARLINGHURST

Architect:	Devine Erby Mazlin
Engineer:	Tierney & Partners
Contractor:	Gledhill Constructions
Area Treated:	Sportsfield above gym 1,600 sqm
Date completed:	October 1995

Devine Erby Mazlin recently specified Radcon #7 for the waterproofing of this 1,600 square metre sportsfield suspended over the school gymnasium.

Importantly, the treatment of Radcon #7 will still allow the full adhesion of the artificial turf and rubber padding that are being applied over the treatment shown in Figure 32.

To ensure no adhesion is lost, it is important to ensure their is no excess product on the surface of the concrete. The breakdown of excess product can be increased by using a stiff broom during the watering process. Alternatively, excess product exposed on the surface will naturally breakdown over a period of 2 weeks weathering.

This is the second such sports fields waterproofed exclusively with Radcon #7 in the Sydney area, with the other located at Burwood School - 6,500 square metres.

The extensions were built by Gledhill Constructions with Tierney & Partners as the engineers.

FIGURE 32 - ARTIFICIAL TURF LAID OVER RADCON #7

FIGURE 33 - SCEGGS DARLINGHURST, SYDNEY

TAK-101, YOKOHAMA

Radcon Japan recently waterproofed 8,000 square metres of multi-level car park located on the upper levels of this building shown here in Figure 34. Radcon Formula #7 was specified by M Planning Co. Ltd. and the main contractor was Nishimatsu Construction.

Tak-101 is now being used for retailing and commercial offices. Construction involved a combination of concrete core and steel framing, designed with retail and commercial offices on the lower floors and 4 levels of 2,000 square metre car park on the roof.

FIGURE 34 - TAK 101 BUILDING

With the upper levels designed mostly of steel framing, weight was very important. By using Radcon #7 in this situation, we eliminate the need for any protective screeds or toppings significantly reducing the structures' weight.

FIGURE 35 - RADCON #7 APPLICATION

Radcon #7 is spray applied, in this case (Figure 35), with a low pressure motorised spray unit which will allow for an application rate of up to 800 square metres per hour.

Radcon #7 is ideal for use on car parks whether they are multi-storey or directly over habitable areas. By waterproofing the concrete cost effectively, not only does this increase the durability of the concrete, but in doing so also prevents calcium leaching onto parked cars. This calcium is high in alkalinity and will damage paintwork on cars which can lead to expensive insurance claims.

RADCON #7 FOR SUSPENDED SPORTS FIELD

Site:	MLC Sports Field, Burwood
Engineers:	Woolacotts Consulting Engineers
Architects:	Bowden Design Partnership
	Robert Lee Architects
Builder:	Austruc Pty Ltd
Applicator:	Kratrim Pty Ltd
Size:	6,500 square metres

Radcon Formula #7 was recently used to waterproof this fully suspended sports field built for MLC School in Burwood. Kratrim, one of our approved applicators, applied Radcon #7 to approximately 6,500 square metres of structural concrete.

From Photo 3, Radcon #7 can be seen being spray applied to the clean, dry concrete surface. On a slab this size, Kratrim are using a motorised spray unit that enables the product to be applied at a rate of up to 1,000 square metres per hour.

PHOTO 3 – RADCON #7 APPLICATION

In a matter of hours after the application, the treated slab can be exposed to traffic (tradesmen etc). This is due to the nature of Radcon #7 penetrating into the concrete, rather than being a vulnerable surface coating. This trafficability enabled Austruc, the builders, to continue working over the finished treatment, adding to their site time efficiency.

The architects and engineer evaluated many waterproofing systems, from admixtures to membranes and it was decided that Radcon #7 would offer the best solution for this particular application. Some of the key performance benefits that led to this conclusion were: tanking ability, complete trafficability, no bond loss to artificial turf & researched performance on large suspended slabs exposed to maximum thermal movement.

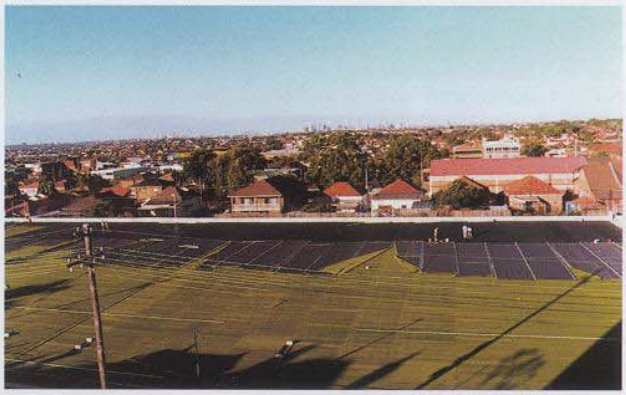

PHOTO 4 – SLAB BEING COVERED WITH ARTIFICIAL TURF

PHOTO 5 – SUSPENDED SLAB DURING CONSTRUCTION

The MLC Sports Field, being completely suspended, is the only one of its kind in Australia and can be seen before and after the artificial turf has been laid in the above photos. A number of different sports will be played, primarily hockey, but also tennis, netball and soccer.

When the treatment was completed the site was pond tested to confirm a seal was achieved.

3RD LARGEST TELECOMMUNICATIONS TOWER IN THE WORLD

With the waterproofing for the Telecommunications Tower in Kuala Lumpur now complete, following are some finished photographs that show the Radcon #7 waterproofing in more detail. Green East Enterprise, completed the application to some 750 square metres of these exposed levels shown in far Photo 7.

Radcon #7 was chosen for this site, due to its absolute resistance against UV exposure and the increase in concrete durability from airborne pollutants. The accurate, metal-like finish of the concrete was achieved using metal formwork.

PHOTO 6 – MENARA KUALA LUMPUR, 421M IN HEIGHT

PHOTO 7 – LEVELS 9 & 10 OF THE TOWER HEAD

RADGUARD - READY FOR VISITORS TO THE 2000 OLYMPICS

Client:	**Royal Agricultural Society**
Engineer:	**Hyder Consulting**
Contractor:	**A W Edwards**
Project Manager:	**John Hollands Construction & Engineering Pty Ltd**
Approved Applicator:	**Multitech Sealants & Waterproofing Pty Ltd**
Area Treated:	**6,000 square metres pre-cast concrete seating 'Platts'**

The structural integrity of the pre-cast concrete seating platts came under scrutiny by Hyder Consulting when cracks in the sections were evident upon arrival at Homebush Bay; having been transported by truck some 160km from the manufacturing site in Newcastle located north of Sydney.

These cracks, occurring at the end of the platts, were some 600mm in length and up to 0.3mm in width.

To prevent water leakage into the steel reinforcement, Radcon #7 waterproofing was applied to the ends to protect the structures from such occurrences in the future.

Given the rest of the platt structures were in excellent condition all that was specified was a water repelling material to facilitate the cleaning up of food and beverage spills. Radguard (Potassium Silicate Siloxane) was the preferred choice.

At the so-called 'Green Games", where environmental considerations are the priority, Radguard provided a perfect solution as it is water-based with a zero 'VOG' factor.

In a market where there are many generic sealers, such as Silicones, Silanes, Siloxanes and Methyl Methacrylates, Radguard offers a two way sealing action.

- Firstly, Radguard penetrates the surface of the concrete creating a chemical binding by the silicates action.
- Secondly, the siloxane provides the surface repellency (as found with all generic sealer materials).

Not a claim made lightly, you can use the world's best product in the form of Radguard to deliver the latest in silicate alkali binding as well as a siloxane-base repellent.

Radcrete Pacific is proud to have developed and now supply two of the 'world's best' products - Radcon #7 Waterproofing and Radguard Sealer/Repellant.

RADGUARD

KEY FEATURES & BENEFITS

- *Clear finish*
- *Non-toxic*
- *Prevents freeze/thaw damage*
- *Allows outgassing*
- *Prevents ingress of water, chloride ions and airborne pollutants*
- *Water based (No VOG)*
- *No mildew or algal growth (5 year guarantee)*
- *No UV degradation*
- *One pack (pre-catalysed)*
- *Two coat system*
- *Suits CONCRETE, MASONARY SURFACES, BLOCKWORK and BRICKWORK*

R.A.S. SHOWRING, SYDNEY, AUSTRALIA

RADGUARD APPLICATION