

CONSTRUCTION WEEK

AN ITP BUSINESS PUBLICATION

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A SPECIAL REPORT FROM CONSTRUCTION WEEK AND READYMIX ABU DHABI



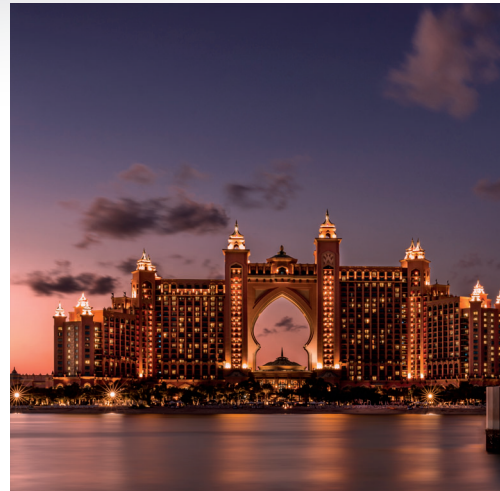
CELEBRATING 40 YEARS

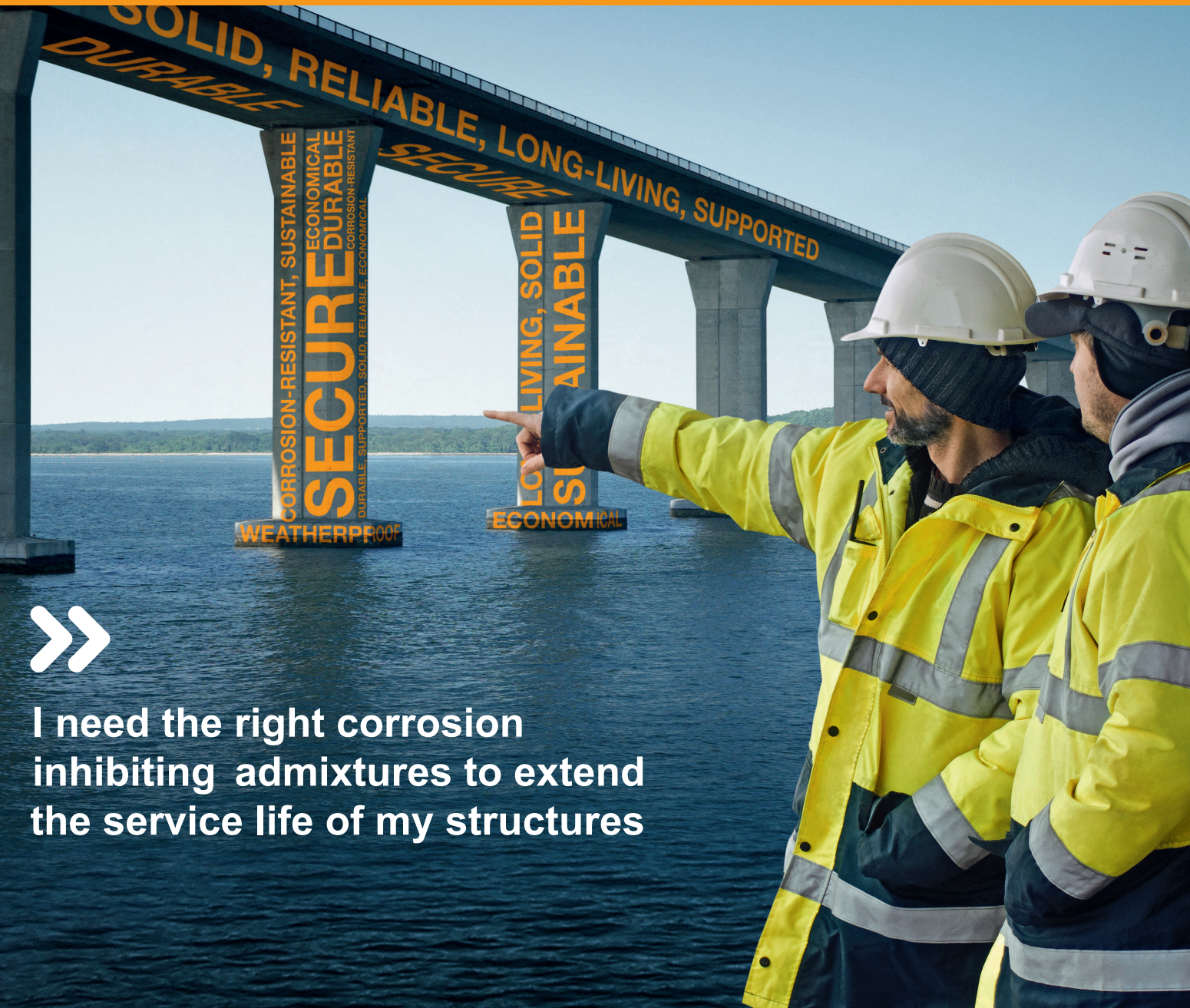
of Excellence

Readymix Abu Dhabi reflects on its historic UAE projects, and looks ahead to the next four decades



Readymix Abu Dhabi





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CONTENTS

READYMIX ABU DHABI • SPECIAL REPORT



06 Hogan's run

ReadyMix Abu Dhabi's GM, Robert G Hogan, shares the heritage and highlights of the company's first 40 years in the Middle East

12 Emirates Palace

ReadyMix Abu Dhabi's role in the construction of this iconic building in the UAE's capital city

14 Heroes and stalwarts

Meet the long-service superstars of ReadyMix Abu Dhabi's team

16 Mix on the beach

The challenges posed by the 11km Raha Beach development

20 Xtreme innovation

The sustainability and performance benefits of EcoCrete-Xtreme

23 Pick of the projects

ReadyMix Abu Dhabi shares the details of its most iconic jobs



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INTRO FROM THE GENERAL MANAGER

Robert G Hogan pays tribute to Readymix Abu Dhabi's customers, staff and suppliers as the company celebrates its 40th anniversary



We at Readymix Abu Dhabi have never really been ones to shout about ourselves and do large marketing campaigns. We have usually preferred to let others judge us on our performance and we have relied heavily on our reputation, which to us is paramount. However, this year we believe should be different and we feel that it is time celebrate this major milestone of our 40th anniversary in business, by promoting our achievements and of course, recognising those who have allowed us to achieve what we have.

The company was formed in Abu Dhabi in 1976 at a time when concrete was generally mixed on site by the contractors and all cement was imported in 50kg bags, with aggregates coming from Al Ain. Abu Dhabi was a small fishing port, just embarking on its path of tremendous growth and we feel that this company was, in many ways, the pioneer of ready-mixed concrete in the Emirate. We have been proud to contribute to the growth of this great city and the amazing transformation of the skyline, which can be seen today.

In the early days, Readymix Abu Dhabi was mainly focused on delivering to infrastructure projects and serving the huge growth that surrounded the oil and gas sector. Many of the first tall buildings built in reinforced concrete were supplied by the company, although back then, a tall building was no more than 10-storeys high!


Today we can say we have delivered to the tallest building in Abu Dhabi, The World Trade Centre, Tower 2 — at over 90 storeys, an example of how times have changed and how advanced technology has become. Readymix Abu Dhabi has been involved in so many iconic projects, certainly too many to list here, although some the most challenging ones will be detailed within this publication.

There are so many people who have contributed to the growth and success of this company during the last 40 years and

unfortunately we cannot name them all. We have numerous customers to thank for their support and loyalty, many of whom have been partners for decades, and we appreciate the opportunities they have given us to prove ourselves. In striving to achieve the best product and service, we rely on quality and commitment from our suppliers and they have certainly helped us in our quest to be the best.

We firmly believe that Readymix Abu Dhabi's staff, both past and present, have put us where we are today. In this highly competitive industry, where we must be ready to serve our customers 24 hours a day, six or sometimes seven days a week, we rely heavily on the commitment of our employees. This is undoubtedly a company that places an emphasis on its people and many staff remain here for a very long time, as can be seen later on in this supplement. We believe this says a lot about who and what we are.

Finally, I am only the fourth general manager of Readymix Abu Dhabi and I hold the position with a great deal of pride. As we enter our fifth decade of business, I will do all I can to ensure we continue to focus on our core values, which have allowed us to succeed and keep us at the forefront of our industry.

Thank you once again to everyone who has supported this company along the way, on our 40-year journey. 

“WE FIRMLY BELIEVE THAT READYMIX ABU DHABI'S STAFF, BOTH PAST AND PRESENT, HAVE PUT US WHERE WE ARE TODAY.”

*Congratulations on your 40th Anniversary,
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THE RIGHT MIX

Robert G Hogan explains why there is no room for complacency at Readymix Abu Dhabi, even after supplying concrete to the Middle East for four decades

WORDS BY James Morgan | **PHOTOGRAPHY BY** Grace Guino

When it comes to the regional supply of concrete, few outfits can match the heritage of Readymix Abu Dhabi. The company entered the market back in 1976 with a clear mission, as general manager Robert G Hogan explains.

"Readymix Abu Dhabi was one of the first – if not the first – to offer commercially produced concrete to the UAE market," he tells *Construction Week*. "At that time, it was common for local contractors to make their own concrete, but as you can imagine, there was little in the way of quality control.

"We were pioneers in this region," Hogan continues. "Readymix concrete had been around for many years in Europe and North America, but it simply wasn't available in the Middle East. Our company's founders wanted to spearhead advancement within the field, and capitalise on opportunities in what was, and still is, a growing nation. This proved to be a wise move; just look how the UAE has developed since."

Indeed, Readymix Abu Dhabi's regional activities have matured in tandem with the Emirates. Four decades on from its establishment, the company boasts a 350-strong

workforce, a multimillion-dollar fleet of concrete batching and placement equipment, and a portfolio of high-profile projects across the UAE and the wider Middle East.

Although Hogan is not old enough to remember the earliest days of Readymix Abu Dhabi first hand, he is certainly no newcomer to the company. Since relocating to the UAE in 2001, he fulfilled the roles of sales manager and operations manager, prior to his current position as GM.

As Hogan points out, the length of his tenure has been sufficient to witness significant change in the



“Our operating system is the best that money can buy. In this game, it’s all about consistency... we cannot afford to make mistakes.”

market. “The main thing I’ve noticed during my time here is an increase in competition,” he notes. “When I came to the UAE just 15 years ago, there were around 10 serious competitors that could support large-scale projects. Today, there are probably 25. This isn’t the case in many other parts of the world; typically, you’d expect to find three to four major readymix outfits in a given territory. The UAE is an extremely tough market.”

So how has Readymix Abu Dhabi managed to thrive in such a competitive environment? Hogan splits his answer into two parts: equipment and employees. “First of all, we use top-quality batching plants and equipment,” he explains. “The main thing when it comes to quality control is the operating system (OS). We use computerised plants, and our OS is the best that money can buy.”

“In this game, it’s all about consistency. Readymix Abu Dhabi produces huge volumes of concrete, so we cannot afford to make mistakes. If we produce a batch for



➤ Readymix Abu Dhabi has invested heavily in the latest plant and equipment.



➤ One of the Readymix Abu Dhabi fleet of 100+ concrete mixers.

a large-scale building and that batch fails, everything else around it fails. For this reason, we have invested heavily in quality-control systems.”

But, as Hogan warns, the best equipment and processes are all but useless without the right personnel. He elaborates: “In order to succeed as a concrete supplier in the Middle East, you need to live your job. We have a number of key people who can cover multiple functions. I think the days of senior employees who only perform one role are gone. It’s vital to have a multi-skilled workforce. It’s also important to retain that workforce.”

“Most of our senior management team – particularly on the technical side – have been with the company for more than 10 years.”

He adds: “I’m very lucky in that most of our senior management team – particularly on the technical side – have been with the company for more than 10 years. Readymix Abu Dhabi invests heavily in its people. We look after our employees, and I think the fact they stay around for so long proves we’re doing something right.”

Unsurprisingly, Readymix Abu Dhabi’s unwillingness to compromise when it comes to quality means the firm is positioned

firmly within the premium segment of the market. “Everything we sell could be bought at a cheaper price somewhere else,” Hogan admits. “With this in mind, we have to deliver the best. Our clients are willing to pay that little bit extra for our quality and expertise.

“In the past, when price has been an issue, some of our customers have used other suppliers.

“I’m pleased to say that the vast majority returned to Readymix Abu Dhabi. That’s what

➤ READYMIX ABU DHABI: CAPABILITIES AND CLIENTS

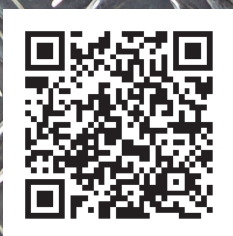
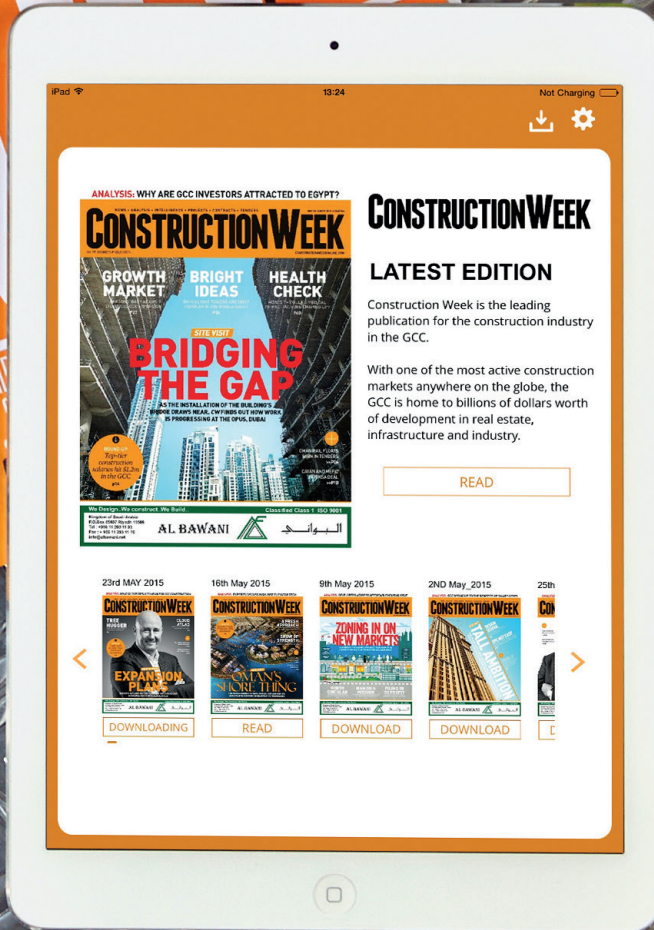
Readymix Abu Dhabi operates European-manufactured batching plants certified by the National Ready Mixed Concrete Association (NRMCA) and calibrated by Bureau VERITAS. Its fleet of equipment includes more

than 100 concrete mixers, with capabilities ranging from 9m³ to 12m³, and 30 concrete pumps, both mobile and static.

In its home Emirate, Readymix Abu Dhabi is an approved concrete supplier for a broad selection of

private and public sector organisations, including Abu Dhabi Municipality, the Union Defence Force, the Department of Transport, Abu Dhabi Water and Electricity Authority (ADWEA), Abu Dhabi National Oil Company (ADNOC), Abu

Dhabi Company for Onshore Petroleum Operations (ADCO), Gasco, Etisalat, and Mubadala. Its major clients in neighbouring Dubai include Dubai Municipality, the Ports, Customs and Free Zone Corporation (Trakhees), and Tecom.



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Readymix Abu Dhabi's Al Ain batching plant - certified by the National Ready Mixed Concrete Association (NRMCA) and calibrated by Bureau VERITAS.

sets us apart: a solid reputation built on quality of delivery," he remarks.

This ethos is reflected in the make-up of Readymix Abu Dhabi's portfolio of projects, both historic and contemporary. In the years following its establishment, the firm supplied much of the concrete used to build Abu Dhabi's infrastructure, with contracts such as the Corniche, and the Airport Road Underpass.

More recently, Hogan and his colleagues have worked to maintain their footprint within the large-scale horizontal domain, with developments such as Raha Beach and Yas Island. However, Readymix Abu Dhabi has also cemented its presence in the vertical segment, catering to a number of the Emirate's high-rise landmarks.

"The most challenging project I've worked on is The Central

Market Development in Abu Dhabi," Hogan says.

"Our scope of works was to deliver concrete, with a strength of 80N, right to the top of Burj Mohammed bin Rashid, which is 382m tall and features 92 floors. For that, we had to invest in some of the most powerful concrete pumps anywhere on the planet.

"We also supplied readymix concrete for the Financial District at Sowwah Square.

This was during the boom when nobody was willing to wait for anything. I know it's a cliché, but we were genuinely working 24 hours a day, seven days a week," he continues.

"Round-

the-clock supply was required and we were pouring the rafts at the weekends."

Despite the valuable experience gained from mammoth jobs such as these, Readymix Abu Dhabi has made efforts to consolidate its operations during the recent years in a bid to secure long-term sustainability options.

Hogan concludes: "The boom was a once-in-a-career phenomenon. It probably won't happen again, and perhaps that's a good thing for the long-term stability of the market.

"Like everybody else, we had to downsize in the post-crisis era; not to do so would have been suicidal. Nevertheless, our employees have worked on megaprojects and learned from them.

Consequently, Readymix Abu Dhabi is stronger than ever," he adds.

"We are ready for the next 40 years." **CW**



CONSTRUCTION WEEK

WOULD LIKE TO EXTEND ITS
CONGRATULATIONS TO EVERYONE AT
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OF ITS 40TH ANNIVERSARY.

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INNOVATIVE NEXT 40 YEARS SHAPING THE
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Readymix Abu Dhabi

EMIRATES PALACE

Readymix Abu Dhabi recalls the challenge and privilege of contributing to the construction of this iconic project

Abu Dhabi has seen many spectacular and iconic projects completed over the years, but none more so than The Emirates Palace Hotel, or Conference Palace Hotel, as it was originally known. The late President, HH Sheikh Zayed bin Sultan Al Nahyan, commissioned the project in 2001 in order that the GCC Conference could be hosted there in future. It has a built-up area of over 270,000m², and is undoubtedly one of the most iconic buildings in the world. The project and its construction process were unique in so many ways and certainly, as far as Readymix Abu Dhabi is concerned, it launched us to new heights as a company, the reasons for which will be explained in this article.

From the beginning, the way in which Turner Construction approached the process was different; tender documents were issued for an on-site batching plant intended to be dedicated entirely to the project. This would ensure a guaranteed supply, and allow the client to ensure delivery and quality was not compromised, a move away from the traditional method of allowing the contractor to appoint a concrete supplier, or suppliers.

After a very thorough pre-qualification phase and bid process, Readymix Abu Dhabi was chosen as the exclusive and dedicated supplier, late in 2001. The design consultant ensured that only the minimum

amount of concrete mixes were specified, and this forward thinking meant that the piling and main structure were executed with only seven design mixes, something rarely seen for such a challenging and voluminous structure. The palace and hotel were split into packages and the main contractors were Interbeton (BAM)/ACC, Six Construct, and Arabtec, each being given specific sections to build. This was one of the first projects in Abu Dhabi to make extensive use of supplementary cementitious materials in order to guarantee high durability and an extended service life to the structure.

Readymix Abu Dhabi's owners and management at the time decided that a different approach was required for such an iconic and challenging structure, to ensure that delivery and quality were of the very best. The first new investment for the project was in a Lintec CC3000D twin-mixer, containerised batching plant. Built in Germany to very high standards and capacity, it was the first plant of its kind sold in the Middle East. The two twin-shaft mixers provided an integral 'back-up' ensuring uninterrupted supplies and with a rated capacity of 240m³ per hour. Concrete cooling for temperature control of the concrete was provided by KTI ice machines, also manufactured in Germany and with local service support. The plant operating system was another change in



Emirates Palace, with a built-up area of over 270,000m²

“This was one of the first projects in Abu Dhabi to make extensive use of supplementary cementitious materials in order to guarantee high durability and an extended service life to the structure.”

direction for the company, with the introduction of the first SIMMA computer system sold in the region. Devised in Austria and used extensively throughout Europe, the system controlled the plant batching to an accuracy of +/-1% with the additional functions of invoicing and dispatch control. The system is still used on all the company's batching plants today.

Once the project moved into full production with all contractors ordering concrete, the daily off-take accelerated and, at peak, over 25,000m³ per month was being delivered to the different contract packages. This involved many logistical challenges for delivery and pumping, and the company appointed concrete coordinators and pump supervisors, to ensure efficient allocation of equipment whilst guaranteeing on-time deliveries for the customers.

By the time Readymix Abu Dhabi finally demobilised the on-site operations late in 2004, over 400,000m³ of concrete had been delivered. The independent on-site laboratory, installed by the client, recorded no failures in quality from the beginning to the end, a testament to the company's insistence on the best equipment, staff, materials, and systems. Monthly reports submitted to the client by the third-party laboratory showed extraordinary control over the concrete quality as measured by statistical methods. The standard deviations achieved by Readymix Abu Dhabi were record setting.

Our employees involved on this project still talk of it today as something unique and a major achievement. It certainly helped to raise the company's profile and reputation, and we received many letters from the project management team and customers, recognising our efforts in assisting them to deliver their packages. Many of the relationships built on the project still exist and we are proud to say that a number of people with whom we worked at 'The Palace' are still customers today. When it was opened in March 2005, it was understood that the Emirates Palace Hotel had cost around \$3bn. It remains one of Abu Dhabi's most impressive and iconic tourist attractions, and it gives us a great sense of pride and achievement to have been a part of it; which remains at the heart of Readymix Abu Dhabi's history. **EW**



CAREERS FOR LIFE

Readymix Abu Dhabi (RMAD) takes great pride in the number of employees who have made 'concrete' their vocation – here are some of the firm's longest-serving team members



NAME: EDDAKKAT 'SANTO'SUDHAKARAN

TENURE: 37 years

JOINED: 1979 (longest-serving employee)

FIRST ROLE: Office boy

CURRENT ROLE: Senior area foreman

REASON FOR STAYING AT RMAD: "RMAD gives me a fixed salary – I want to work for one company only. I will work for RMAD until the company wants me to leave."



NAME: AMIN ALI

TENURE: 36 years

JOINED: 1980

FIRST ROLE: Truck mixer driver

CURRENT ROLE: Senior driver



NAME: GEORGE ANTHONY

TENURE: 32 years

JOINED: 1983

FIRST ROLE: Workshop helper

CURRENT ROLE:

Batcher foreman

REASON FOR STAYING AT

RMAD: "RMAD is more stable than other companies."



NAME: KUMAR GOPU DELEEP

TENURE: 29 years

JOINED: 1987

FIRST ROLE: Plant helper

CURRENT ROLE: Batcher foreman

REASON FOR STAYING AT RMAD: "This is a good company with good management. RMAD helps me to feed my family."



NAME: JOYTHI BOSE

TENURE: 28 years

JOINED: 1989

FIRST ROLE: Pump operator

CURRENT ROLE: Senior site coordinator

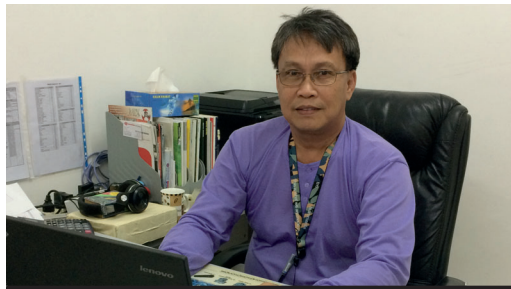
REASON FOR STAYING AT

RMAD: "RMAD is a good company. The people are respectful and hardworking, which benefits us all."



NAME:
NARANYAN SIVADASAN

TENURE: 28 years
JOINED: 1988
FIRST ROLE: Plant helper
CURRENT ROLE:
 Licensed pump operator
**REASON FOR STAYING AT
 RMAD:** "Good management and
 good company."



NAME: SAMSON 'SAMMY' MARTINEZ

TENURE: 27 years
JOINED: 1989
FIRST ROLE: Electrician
CURRENT ROLE:
 Supervisor – plant maintenance/electrical
REASON FOR STAYING AT RMAD: "This is
 a reputable company. My former manager
 encouraged loyalty through recognition of
 potential, and I have been recognised for my
 efforts."



NAME: ZAFAR IQBAL

TENURE: 26 years
JOINED: 1990
FIRST ROLE: General helper
CURRENT ROLE: Senior mechanic



NAME:
MARGARITO 'MIKE' INDIANA

TENURE: 26 years
JOINED: 1990
FIRST ROLE: Senior mechanic
CURRENT ROLE: Workshop foreman
REASON FOR STAYING AT RMAD: "RMAD has
 established a reputation, not only within the market
 but also across its workforce. The company knows how
 to take care of its employees; the management has a
 heart for the people."



NAME: RANGA RAJAN

TENURE: 26 YEARS
JOINED: 1990
FIRST ROLE: Plant fitter
CURRENT ROLE: Supervisor –
 plant maintenance/mechanical
**REASON FOR STAYING AT
 RMAD:** "Good management and
 a better working atmosphere."



NAME: VASUDEVAN BABU

TENURE: 25 years
JOINED: 1991
FIRST ROLE: Driver
CURRENT ROLE: Driver
**REASON FOR STAYING AT
 RMAD:** "The company is good.
 It helps me to support any
 problems in my family."

AL RAHA BEACH DEVELOPMENT

By Fouad H Yazbeck, chief technical officer, Readymix Abu Dhabi

The scope of this project is the development of 11km of waterfront property as the new gateway to Abu Dhabi. It is a mixed-use master development making the most of this location.

Eleven precincts each have their own style. Some feature villas while others are more vibrant, with apartments in lively districts offering retail outlets, along with galleries, restaurants and cafés, a central business district with iconic office towers and residences set around a circular marina. Several hotels are also part of this development.

The project is being built in phases. Phase 1 (half of the project, currently under construction) will consume an estimated 7 million m³ of concrete.

PROJECT CHALLENGES

The sheer scale of the project brought its own set of challenges. The complexity of supplies:

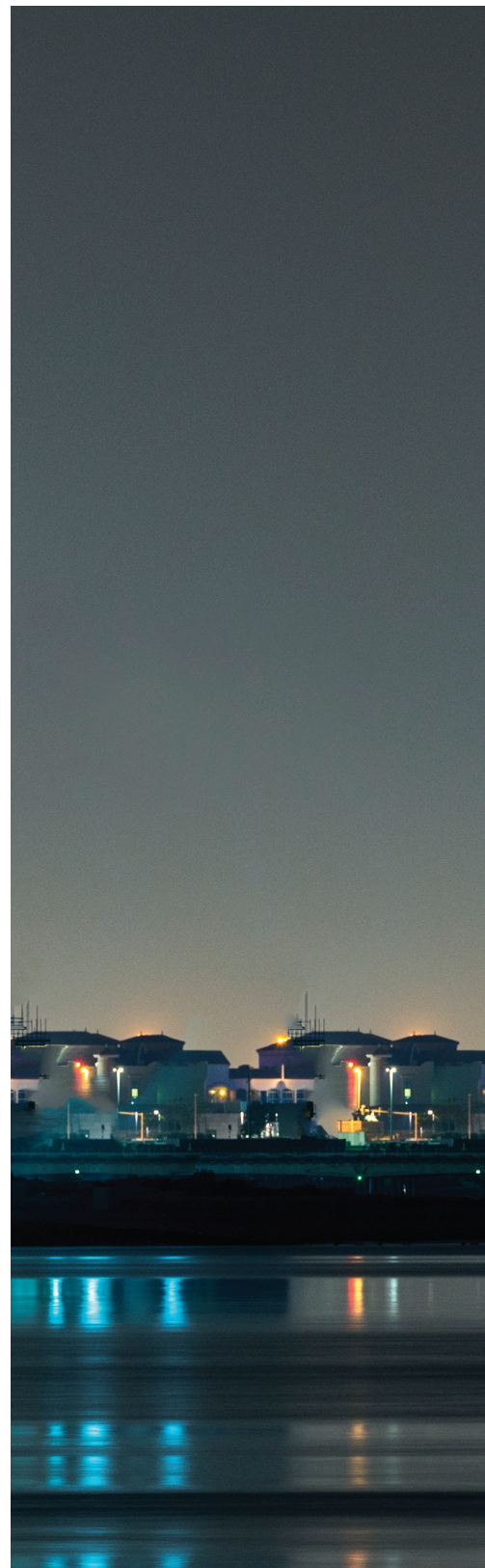
~20 concurrent jobsites in a limited area, very high demand for concrete, high performance concrete, specialised concrete requirements etc. Streamlining and waste limitation were also of prime importance in order to reduce the project's environmental footprint.

A team was formed in order to deal with the complexity of supplies. It was composed of key players on the project: client representative, the project management company, along with four representatives of international consultants active on the site, the third-party testing lab and Readymix Abu Dhabi. Also represented was an international consultant hired to write a comprehensive site-wide concrete specification.

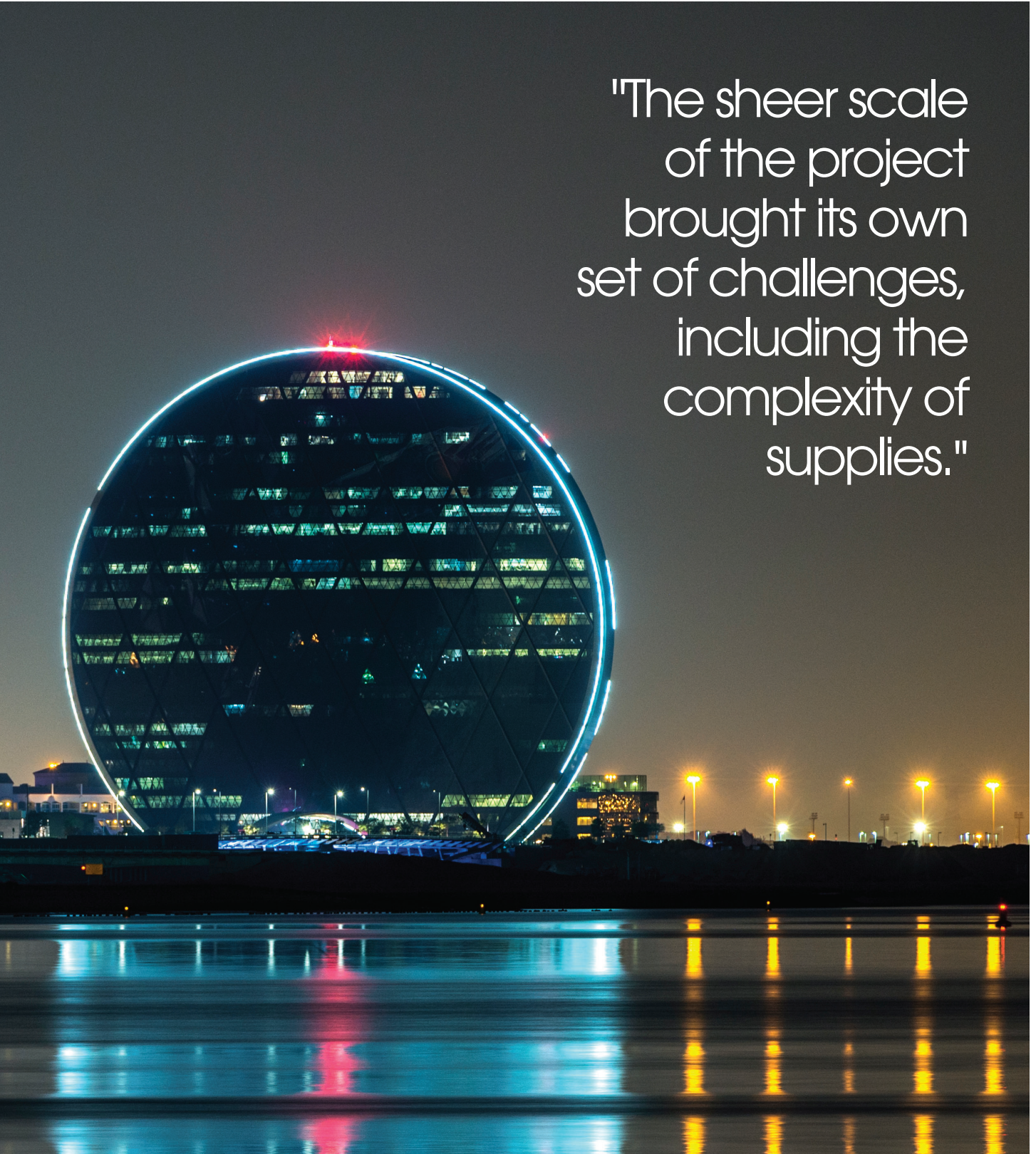
Initially, a traditional approach was used in order to write a mix of prescriptive and performance concrete specification which was heavily slanted towards prescriptive requirements. During discussions, it was widely accepted that this type of specification




☉ The project features villas, apartments, retail outlets, galleries, restaurants and cafés.



"The sheer scale of the project brought its own set of challenges, including the complexity of supplies."



Phase 1 of the project will consume an estimated 7 million m³ of concrete. 

CASE STUDY

would lead to waste caused by over-design. A novel approach was presented by Readymix Abu Dhabi and adopted by the committee.

This approach was centred on pure performance of the concrete with properties that were fed back into the structural design process. All concrete was split into four categories based on in-situ exposure to aggressive elements.

A list of approved concrete mixes was set up and all parties agreed to use only concrete from the approved list for all running projects.

This helped to minimize concrete waste by making concrete re-direction easy in case of over-ordering or site breakdowns, it also streamlined supplies as all batching plants on site would supply exactly the same mixes using the same raw materials.

Ordering was centralised at the project management level. All sites would submit their concrete orders to the central concrete office which would prioritise them and pass them on to the concrete supplier. A system was put in place to track and reward sites



There were foundation pours of over 3,000m³.

FIGURE 1: PRESCRIPTIVE/PERFORMANCE REQUIREMENTS

MIX DETAILS				Cover required (mm) to achieve 50 years service life based on time to initiation of corrosion.		
CONCRETE TYPE	CONCRETE TYPE AND REPLACEMENT	CONCRETE STRENGTH CLASS	APPARENT CHLORIDE DIFFUSION COEFFICIENT AT 35 DAYS (20 DEG C) ($\times 10^{-12} \text{M}^2/\text{S}$)	SUBMERGED ZONE	ATMOSPHERIC ZONE	SPLASH/TIDAL ZONE (cyclic wet/dry)
Substructure Mix	PC+70% GGBS	60	6.3	55	50	65
Superstructure Mix #1	PC+60% GGBS or 30% PFA	50	7.4	60	50	70
Superstructure Mix #2	PC+60% GGBS or 30% PFA	40	8.7	65	55	75
Post-Tensioned Mix	PC+30% GGBS	60	9.4	60	50	70
High Strength Mix	PC+30% GGBS +10%MS	80	2.8	45	40	55
Portland Cement Mix	PC only	60	3.0	110	110	130

FIGURE 2: WEEKLY CONCRETE RELIABILITY INDEX

PROJECT	DATE	QUANTITY ORDERED M ³	QUANTITY PLACED M ³	DIFFERENCE M ³	COMMENTS	difference ALOR M ³	difference ARM M ³
Infrastructure	20/05/2008	308	196	-112	Cancelled by Infra	-112	0
Infrastructure	21/05/2008	558	407	-151	Cancelled by Infra	-151	0
Infrastructure	22/05/2008	641	294	-347	Cancelled by Infra	-347	0
Infrastructure	24/05/2008	539	467	-72	Cancelled by Infra	-72	0
Infrastructure	25/05/2008	363	195	-168	Cancelled by Infra	-168	0
Infrastructure	26/05/2008	492	287	-205	Cancelled by Infra	-205	0
Infrastructure	27/05/2008	616	437	-179	Cancelled by Infra	-179	0
TOTAL M³		3517	2283	-1234		-1234	0

FIGURE 3: PERFORMANCE MATRIX

80 N/mm ²	V	A	M	N	PERFORMANCE CRITERIA				
	2B/3B ✓	←	←	←	EXPOSURES	DESCRIPTION	RCP coul.	WA %	WP mm
70 N/mm ²	2B/3B ✓	←	←	←	V	Very aggressive exposure	1200	1.50	10
60 N/mm ²	3B ✓	←	2B ✓	←	A	Aggressive exposure	1500	1.80	20
50 N/mm ²	3B	2B ✓	2B ✓	1B ✓	M	Moderate exposure	2500	2.00	25
45 N/mm ²	↑	↑	↑	1B ✓	N	Normal exposure			
40 N/mm ²	↑	2B ✓	2B ✓	1B ✓					
30 N/mm ²	×	×	×	1B ✓					
20 N/mm ²	×	×	×	1B ✓					



➤ The project's 'footprint' was minimised.



CASE STUDY

➤ An estimated 6,000t of CO₂ emissions were saved due to concrete waste reduction.

that were best at ordering exact quantities at the correct timing. Sites that had the best weekly reliability index would be given priority for the following week's concrete orders. Testing was also streamlined as the third party lab would test based on mix consumption and not on sites.

Testing frequencies were applied to the mix regardless of which site it was headed to, central testing points were set up in various locations on site. Trucks would drive to the central testing points, get sampled and tested, then be directed to site.

This system proved to be quite successful and was deemed to have achieved its main objectives of streamlining supplies and reducing waste on site.

Over 1,500,000m³ of concrete were supplied to the project from dedicated plants using this system. This included numerous foundation pours of over 3,000m³ each on the "Big Dig", Al Muneera, Al Zeina and Infrastructure sites. An estimated 6,000t of CO₂ emissions were saved due to the concrete waste reduction helping reduce the overall environmental load of the project. [CIV](#)

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ECOCRETE-XTREME:

AN HOLISTIC SOLUTION FOR CONCRETE SUSTAINABILITY

By Wassim Mansour, technical manager, Readymix Abu Dhabi; Fouad H Yazbeck, chief technical officer, Readymix Abu Dhabi; and Dr Olafur Wallevik, Reykjavik University, Innovation Center Iceland

Construction projects involve large volumes of concrete. And concrete production and transportation are estimated to generate ~10% of the total man-made CO₂, out of which about 7% is attributed to cement.

Since the production of 1t of cement is reported to produce ~0.927t of CO₂, it is believed that about 20 million tonnes of CO₂ were emitted in 2008 as a result of the production of 21.7 million tonnes of cement produced for the UAE market during that year.

Believing that a balance between the environmental, social and economic aspects of sustainability is required to achieve a sustainable concrete product, EcoCrete-Xtreme was developed by Readymix Abu Dhabi and Innovation Center Iceland as a unique solution for concrete sustainability in terms of

offering a tangible balance between the pillars of sustainability.

EcoCrete-Xtreme is designed based on the synergy between its constituent materials. It follows the advances of concrete technology in the fields of rheology, cement hydration, admixture formulation, service life and sustainability.

MARKET AND INDUSTRY ANALYSIS

There are three broad categories for concrete products in the UAE construction market. In the opinion of the authors, none of these products

meet all sustainability requirements. These products are briefed below and illustrated in figure 1 that shows the pillars of sustainability:

- Conventional concrete (denoted as CVC): this concrete consists of plain Portland cement in the range of 250kg to 450kg per cubic metre of concrete. This makes this concrete environmentally unfriendly as it encompasses a relatively high carbon footprint. Compared to other concrete types, CVC is usually the least expensive, but it has no special environmental benefit for society.

“Conventional concrete (CVC) is environmentally unfriendly as it encompasses a relatively high carbon footprint, but accounts for about 65% of the UAE market.”



Technical description of EcoCrete-Xtreme

EcoCrete-Xtreme is a robust 40MPa SCC designed with an extremely low binder content (less than 220kg), out of which less than 80kg is Portland cement, where the rest is mainly post-industrial materials. Despite the use of extremely low binder content, EcoCrete-Xtreme has superior rheological properties.

In the presence of the president of Iceland, H.E. Ólafur Ragnar Grímsson, as well as key individuals involved in the construction

field in the UAE, a live demonstration was carried out by Readymix Abu Dhabi, where the ease of casting of EcoCrete-Xtreme was showcased.

Using a 3.8m x 1.5m acrylic form of the shape of "U, A and E" letters connected only from the bottom, EcoCrete-Xtreme was cast from the top of the "U" and successfully flowed throughout the form to reach the top end of the "E" just in 130 seconds (see figure 2).

↓ FIGURE 1: THE THREE PILLARS OF SUSTAINABILITY

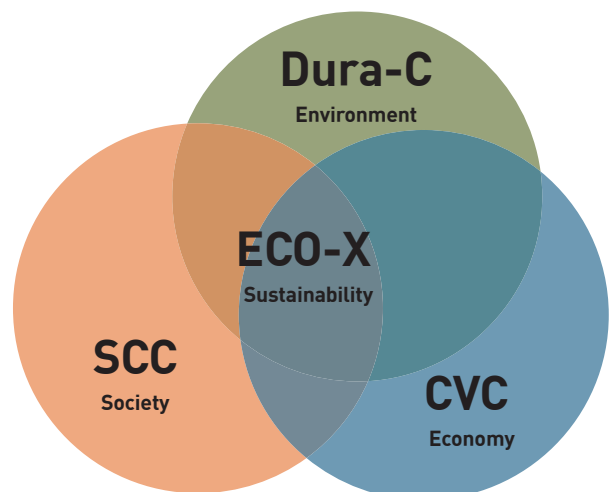
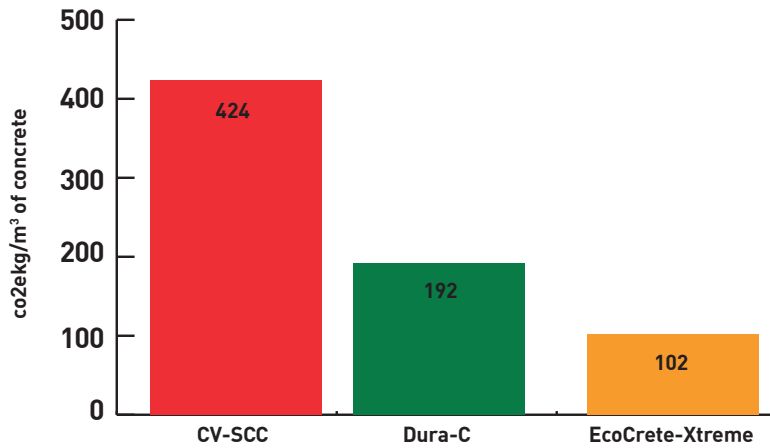


FIGURE 2: ECOCRETE-XTREME DEMONSTRATION

As a result of the use of substantially low binder content, EcoCrete-Xtreme has an extremely low carbon footprint. The embodied CO₂e of EcoCrete-Xtreme is ~75% to ~45% lower than that of conventional and durable SCC mixes respectively.



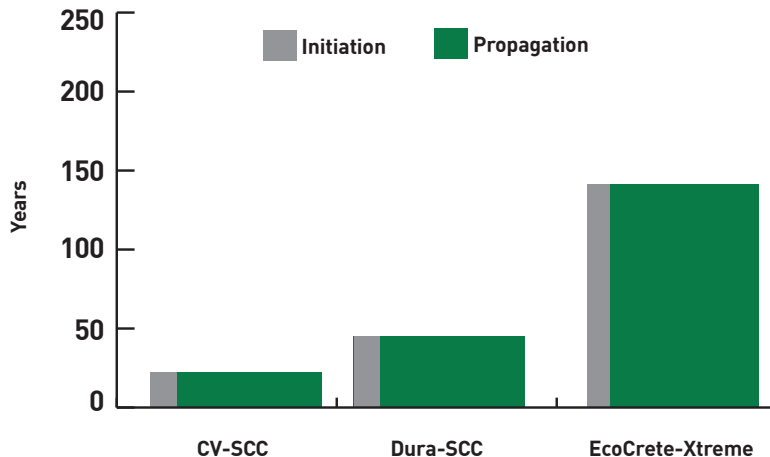
EcoCrete-Xtreme has a predicted service life of 150+ years.



EcoCrete-Xtreme has an extremely low carbon footprint.

FIGURE 3: CARBON FOOTPRINT OF ECOCRETE-XTREME VERSUS CV-SCC AND DURA-SCC (60% GGBS)

Despite the use of an extremely low binder content, EcoCrete-Xtreme is highly durable as its service life is predicted to be more than 150 years for structures exposed to a marine environment compared to 15.3 years and 46.8 years for CV-SCC and Dura-SCC, respectively.



According to ReadyMix Abu Dhabi's figures, CVC accounts for about 65% of the concrete currently used in the UAE market.

- Durable Concrete (Dura-C): This concrete is based on partial replacement of the cement with post-industrial cementitious materials that mainly improve the durability of concrete and reduce its carbon footprint. However, it is generally more expensive than CVC and has limited added value to society. Since Estidama requirements were put in place, the market share for this concrete is stagnating at 35%.
- Self-Consolidating Concrete (SCC): This concrete is generally highly flowable and requires limited workforce during casting (meaning a safer working environment). It is typically designed with a high cement content (>450kg) in order to obtain the target deformability and stability. Hence, this concrete is generally not environmentally friendly and is usually more expensive than other types of concrete. **enr**

READYMIX'S GREATEST HITS

A selection of the many high-profile UAE construction projects to which Readymix Abu Dhabi has contributed its expertise and high-performance concrete products

PROJECT NAME: Abu Dhabi Financial City



LOCATION: Al Sowah Island, Abu Dhabi

START DATE: April 2009

END DATE: TBC

STATUS: Completed

CLIENT: Mubadala Development
Company

CONSULTANT: Fluor Daniel

CONTRACTOR: Oger Abu Dhabi

CONCRETE VOLUME: 287,000m³

CONCRETE VALUE: AED110m

DETAILS: Readymix Abu Dhabi has supplied numerous grades of high-performance concrete, including structural and lightweight variants.



PROJECT NAME: Central Market
Redevelopment Project

LOCATION: Old Abu Dhabi Souk,
Abu Dhabi

START DATE: June 2006

END DATE: TBC

STATUS: Completed

CLIENT: Aldar Properties

PROJECT MANAGEMENT

COMPANY: EC Harris

CONSULTANT: Halvorson &
Partners

CONTRACTORS: Mushrif National
Contracting (piling, shoring, raft
foundations, and car park); and
Arabian Construction Company
(souk, and towers)

CONCRETE VOLUME: 500,000m³

DETAILS: Readymix Abu Dhabi has
supplied concrete, and assisted
in value engineering to enhance
the quality of the concrete while
minimising costs. Using a single-
stage pumping method, concrete
has been pumped up to heights of 88
floors over and above the podium.

PROJECT NAME:
Hazza Bin Zayed
Stadium

LOCATION: Al Ain, Abu Dhabi

START DATE: June 2012

END DATE: December 2014

STATUS: Completed

CONTRACTOR: BAM International

CONCRETE VOLUME: 49,500m³

CONCRETE VALUE: AED14m

DETAILS: Readymix Abu Dhabi
supplied concrete for the project
from its Al Ain plant.



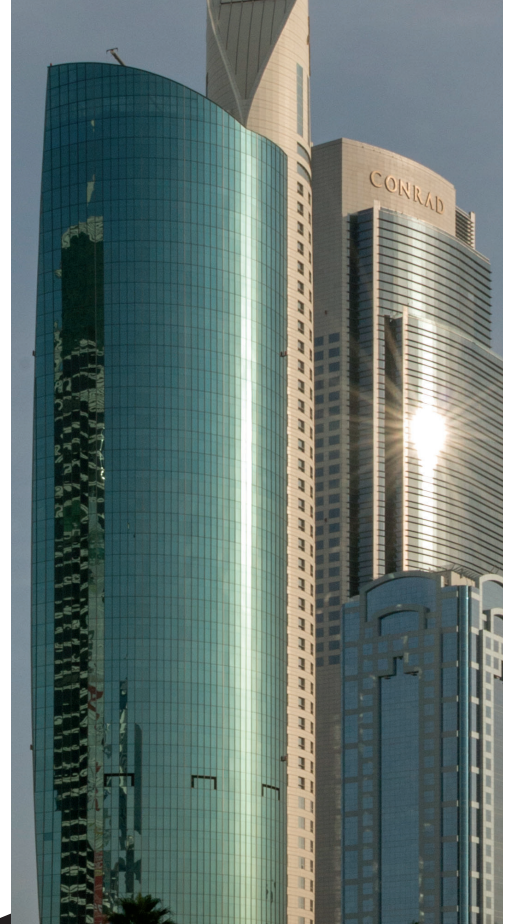
PROJECT NAME: Al Mafraq Hospital



LOCATION: Al Mafraq, Abu Dhabi
START DATE: April 2011
END DATE: TBC
STATUS: Ongoing
CLIENT: Abu Dhabi Health Service Authority (SEHA)
PROJECT MANAGEMENT COMPANY: Allen and Shariff
CONSULTANT: Burt Hill
CONTRACTOR: Habtoor Leighton

Group-Murray & Roberts joint venture
CONCRETE VOLUME: 168,000m³
CONCRETE VALUE: AED49m
DETAILS: Readymix Abu Dhabi has supplied concrete for the construction of this 745-bed general hospital, which consists of an outpatient clinical unit, and two inpatient towers.

PROJECT NAME: Park Place



LOCATION: Sheikh Zayed Road, Dubai
START DATE: December 2004
END DATE: December 2005
STATUS: Completed
CLIENT: Asteco
PROJECT MANAGEMENT COMPANY: Clifton Coney Sevens
CONSULTANT: CCD Australia
CONTRACTOR: Higgs & Hill-ACC joint venture
CONCRETE VOLUME: 61,450m³
CONCRETE VALUE: AED20m
DETAILS: Readymix Abu Dhabi supplied numerous concrete variants for the construction of this project, which includes a 61-floor residential tower, and a multi-storey car park connected by a 46m bridge.

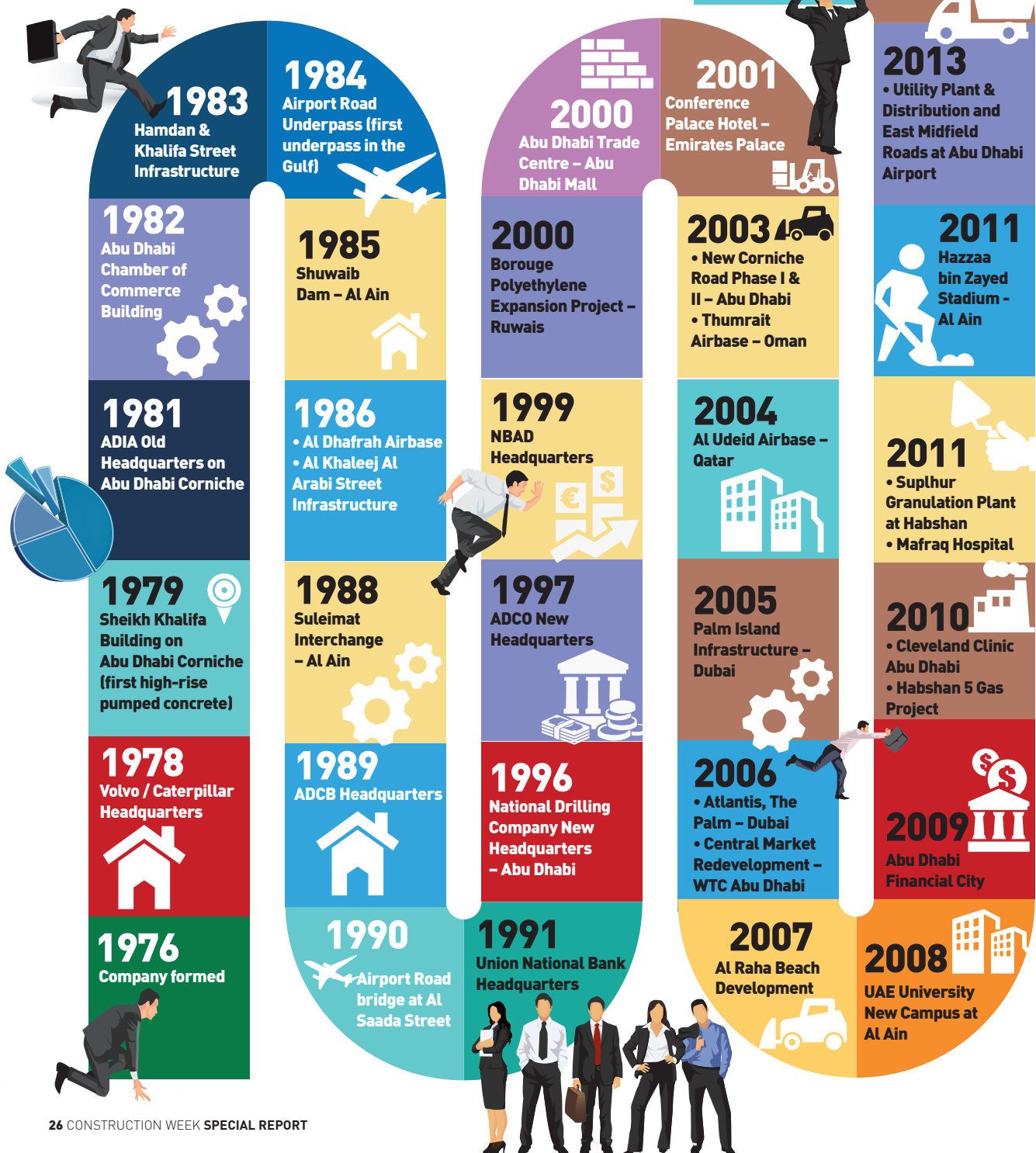
PROJECT NAME: Atlantis, The Palm



LOCATION: Palm Jumeirah, Dubai
START DATE: May 2006
END DATE: September 2008
STATUS: Completed
CLIENT: Al Naboodah
PROJECT MANAGEMENT COMPANY: Kerzner International
CONSULTANT: NORR
CONTRACTOR: Al Naboodah-Laing O'Rourke

CONCRETE VOLUME: 270,000m³
DETAILS: Readymix Abu Dhabi supplied concrete for this huge project from its onsite plant, which was configured to produce 240m³ per hour. The concrete supplied for the project included various structural mixes and screeds, as well as coloured concrete.

THE READYMIX JOURNEY



GCS

Global Crushing Solutions

GLOBAL CRUSHING SOLUTIONS

"GLOBAL CRUSHING SOLUTIONS IS OWNED AND OPERATED BY PROFESSIONAL MINING ENGINEERS WITH A COMBINED EXPERIENCE OF 65 YEARS IN THE MATERIAL EXTRACTIVE INDUSTRY. GCS HAS OPERATIONS IN IRELAND, AFRICA AND THE UNITED ARAB EMIRATES"

"GCS Fujairah - Ministry of Environment and Water awarded the Fujairah Quarry with an 'A' Rating for their environmental monitoring and strict controls of all emissions"

GCS Fujairah - All mobile equipment required to operate the site is new Volvo fleet which enables us to operate 24hrs per day with breakdown or disruption'

"GCS Fujairah operates out of a limestone quarry in Al Tawayeen, the high grade limestone deposit was the main source of aggregates for the construction of the Iconic Burj Khalifa"



PRODUCTS

1. Concrete Aggregates - 3/16, 3/4 & 3/8
2. Block and Interlock Aggregates - 0-2mm & 3-5mm
3. Roadbase - all sizes
4. High grade limestone for cement production
5. Silica stone (Red Shale) for cement production.
6. Amour Rock - all sizes
7. Rail Ballast - all sizes.



TESTIMONIALS

GCS is our main supplier of high quality aggregates, the customer service, technical support, quick truck turn around times and professional business approach makes GCS one of our preferred suppliers.

ROBERT HOGAN,
GM ReadyMix Abu Dhabi.

GCS is our main supplier of amour rock. Quality of material is perfect and the management teams attention to specifications and detail is excellent.

SATHISH MENON
GM BILAL.



ENQUIRIES >>>

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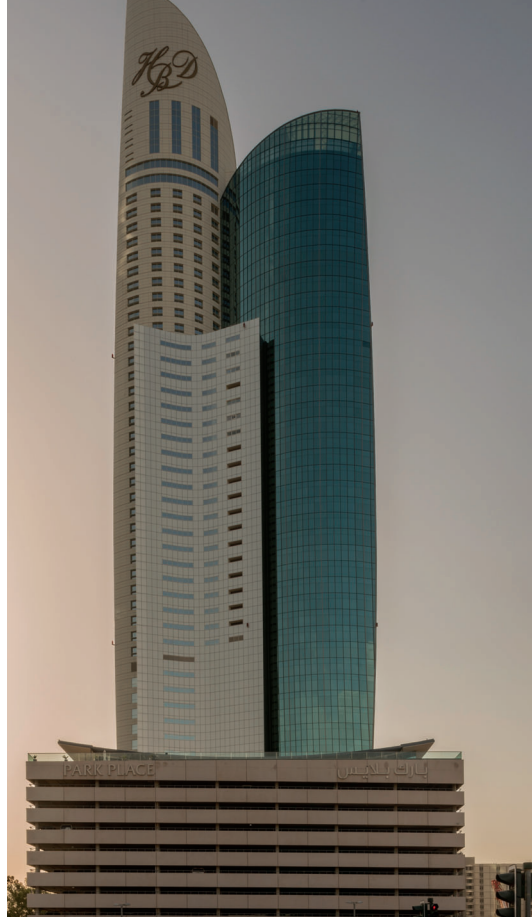
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40
YEARS

Readymix Abu Dhabi

A stylized logo for Readymix Abu Dhabi celebrating 40 years. It features a concrete mixer truck with a green tank and a white body. The number '40' is prominently displayed on the side of the truck, with 'YEARS' written below it. The company name 'Readymix Abu Dhabi' is written in green text below the truck.