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75th Anniversary Edition | 2019

CONNECT

THE MAGAZINE OF THE GLOBAL BBR NETWORK OF EXPERTS

A Global Network of Experts

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The BBR Network is recognized as the leading group of specialized engineering contractors in the field of post-tensioning, stay cable and related construction engineering. The innovation and technical excellence, brought together in 1944 by its three Swiss founders – Antonio Brandestini, Max Birkenmaier and Mirko Robin Ros – continues, more than 75 years later, in that same ethos and enterprising style. From its Technical Headquarters and Business Development Centre in Switzerland, the BBR Network reaches out around the globe and has at its disposal some of the most talented engineers and technicians, as well as the very latest internationally approved technology.

THE GLOBAL BBR NETWORK

Within the Global BBR Network, established traditions and strong local roots are combined with the latest thinking and leading edge technology. BBR grants each local BBR Network Member access to the latest technical knowledge and resources – and facilitates the exchange of information on a broad scale and within international partnering alliances. Such global alliances and co-operations create local competitive advantages in dealing with, for example, efficient tendering, availability of specialists and specialized equipment or transfer of technical know-how.

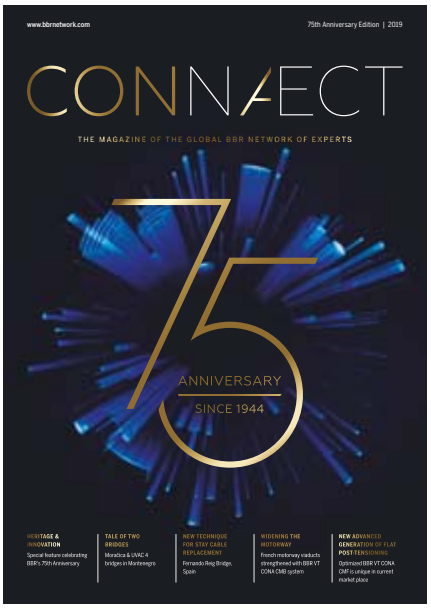
ACTIVITIES OF THE NETWORK

All BBR Network Members are well-respected within their local business communities and have built strong connections in their respective regions. They are all structured differently to suit the local market and offer a variety of construction services, in addition to the traditional core business of post-tensioning.

BBR TECHNOLOGIES & BRANDS

BBR technologies have been applied to a vast array of different structures – such as bridges, buildings, cryogenic LNG tanks, dams, marine structures, nuclear power stations, retaining walls, tanks, silos, towers, tunnels, wastewater treatment plants, water reservoirs and wind farms. The BBR™ brands and trademarks – CONA®, BBRV®, HiAm®, HiEx, DINA®, SWIF®, BBR E-Trace and CONNÆCT® – are recognized worldwide. The BBR Network has a track record of excellence and innovative approaches – with thousands of structures built using BBR technologies. While BBR's history goes back over 75 years, the BBR Network is focused on constructing the future – with professionalism, innovation and the very latest technology.

BBR VT International Ltd is the Technical Headquarters and Business Development Centre of the BBR Network located in Switzerland. The shareholders of BBR VT International Ltd are BBR Holding Ltd (Switzerland), a subsidiary of the Tectus Group (Switzerland) and KB Spennteknikk AS (Norway), a subsidiary of the KB Group (Norway).



Celebrating 75 years of BBR innovation

Welcome to the 75th Anniversary edition of CONNÆCT! To mark this special occasion, you'll notice that we've made some small changes in the design of this issue – it's a BBR habit, always refreshing our approach to fit the times!

You'll also see that we've adopted innovation as the theme for this edition. In the special Heritage & Innovation feature, you will learn about structures that, in some cases, were ahead of their time – but all were made possible with BBR technology. Then in the Portfolio section, you'll find details of more recent projects – you can marvel at the elegance of the Moračica Bridge in Montenegro or at the skill of the BBR team in Malaysia as they provide specialist services for a further metro rail project. There are also many prestigious and practical building projects from all around the globe which demonstrate the expertize and teamwork capability of our PT Specialists.

The drama, as always, belongs to the stay cable bridges achieved with BBR HiAm CONA technology – the Saint Jacques Bridge in Montréal, Pulau Poh Bridge in Malaysia and the 30-year old Fernando Reig Bridge in Spain which, thanks to the talented local BBR team, now has BBR stay cable technology and a new lease of life. The BBR Network also exhibits great stewardship of the natural and the built environment through its many projects to strengthen, repair or improve structures and the landscape. Our sustainable approach ensures that aging infrastructure, precious buildings and green spaces continue to serve both people and the planet.

In the Technology section, we focus on the BBR VT CONA CMF S2 post-tensioning system – a new advanced generation of unbonded and bonded flat post-tensioning. You can also read about two further geotechnical bar systems – the BBR SDX Bar and the BBR WT Bar systems.

The enduring success of BBR technology and techniques is the result of the commitment and dedication of many people. Our thanks go out to all Members of the BBR Network around the globe, as well as to the team at BBR Headquarters too. At the heart of what we do are our customers, these are the people who share our vision for the finest, most flexible and durable construction technology. We thank them too – and look forward to many more opportunities to work together during the next 75 years!

Marcel Poser
Chairman, BBR VT International Ltd

José Manuel Illescas
Vice Chairman, BBR VT International Ltd

Saint Jacques Bridge, Montréal, Québec, Canada
BBR HiAm CONA stay cables for landmark bridge

Signature stay cables

After just five weeks' work, BBR Network Member ETIC has completed the installation of BBR HiAm CONA stay cables for the new Saint Jacques Bridge in Montréal, Canada for main contractor Demathieu et Bard Construction. Cédric Brunner, Site Engineer for ETIC, takes up the story.

Inaugurated in 1967, the Turcot Interchange – an important traffic intersection, carrying around 300,000 vehicles daily – was showing signs of aging and thus Transports Québec embarked upon a major rebuilding program. When completed, the massive $3.7bn Turcot Reconstruction scheme will have seen the replacement of some 128 lane kilometers of elevated highways that are, in some places, stacked three high. Reconstruction of the Saint Jacques Bridge is part of this scheme. ›

General view of the Saint Jacques Bridge – a new gateway to Montréal, Canada.

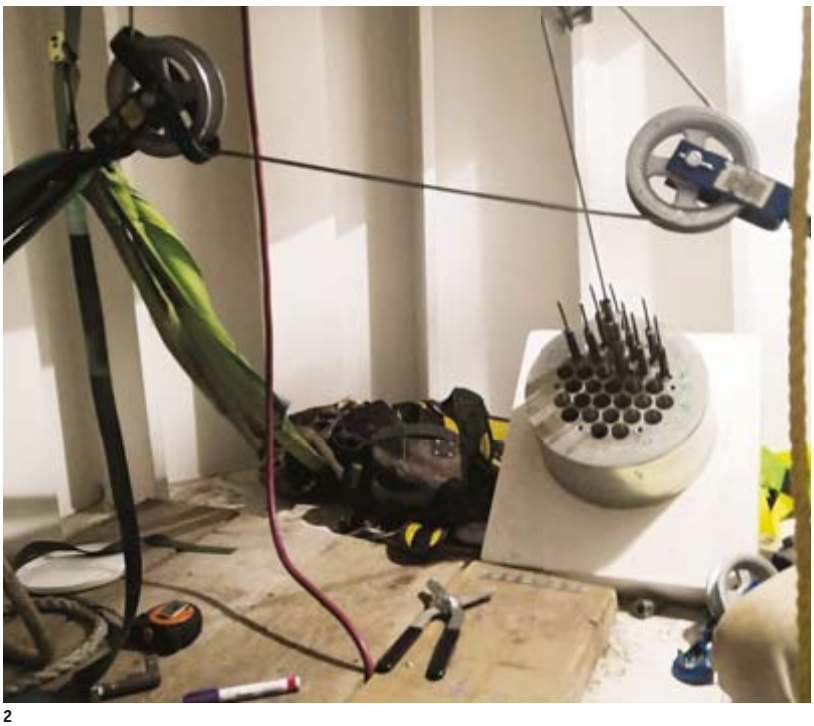
1

Bridge design & structure

The new bridge was designed as a signature overpass, one of three such structures marking entrances to the city. Its form is reminiscent of an aircraft – with the aerodynamically-shaped pylon as the fuselage and the two arrays of stay cables as the wings. Replacing a now dismantled bridge, it allows the continuation of Saint Jacques Street, above the Decarie Expressway, part of the A15 highway which runs through the Turcot Interchange.

The new Saint Jacques Bridge has two spans, 63m and 52m long, plus an elegantly designed central pylon. The new bridge was launched in May 2018 and, subsequently, 30 prefabricated steel plates were installed to form the deck.

Then, during a weekend in August 2018, the three prefabricated steel segments for the pylon – weighing 14, 40 and 50t – were installed with the help of a two cranes, the largest of which weighed 650t.



2

Stay cable installation

The first two weeks of our program were needed for the installation of threading systems, some of which were high on the pylon, the pre-cutting of all the strands and the installation of the 20 BBR HiAm CONA 3106 anchorages on the pylon and on the bridge deck. Access inside the pylon was achieved via a staircase for the first 17m and by a ladder for the following 40m.

The days which followed this preparation phase were taken up with on-site welding of HDPE sleeves. Their installation could begin once the first ducts were made. For a fortnight, two teams of 12 people worked continuously to ensure the welding of all ducts while at the same time carrying out the threading and tensioning of the strands.

The length of the stay cables varies – the shortest was 30m and the longest 70m.

It was with the support of BBR Polska, that the tensioning operation was carried out successfully using the BBR ISOSTRESS method to ensure the equal stress was applied to all of the strands. As soon as favorable feedback was received from the design office, ETIC teams were able to undertake the finishing works.

On Monday, 15th October, the whole of the stay cable work on the Saint Jacques Bridge had been completed. Our work ensured that the bridge opened in time for Christmas 2018!

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1 Preparation and pre-cutting of the stay cable strands – steel bobbins were used to assist with preparing the strands.
2 Stay cable threading system inside the pylon.
3 The new Saint Jacques Bridge, showing off its BBR HiAm CONA stay cables, at sunset.
4 Installation of the HDPE sleeves for the stay cables.

TEAM & TECHNOLOGY

Owner – Transports Québec
Main contractor – Demathieu et Bard Construction
Technology – BBR HiAm CONA stay
BBR Network Member – ETIC SA (France)