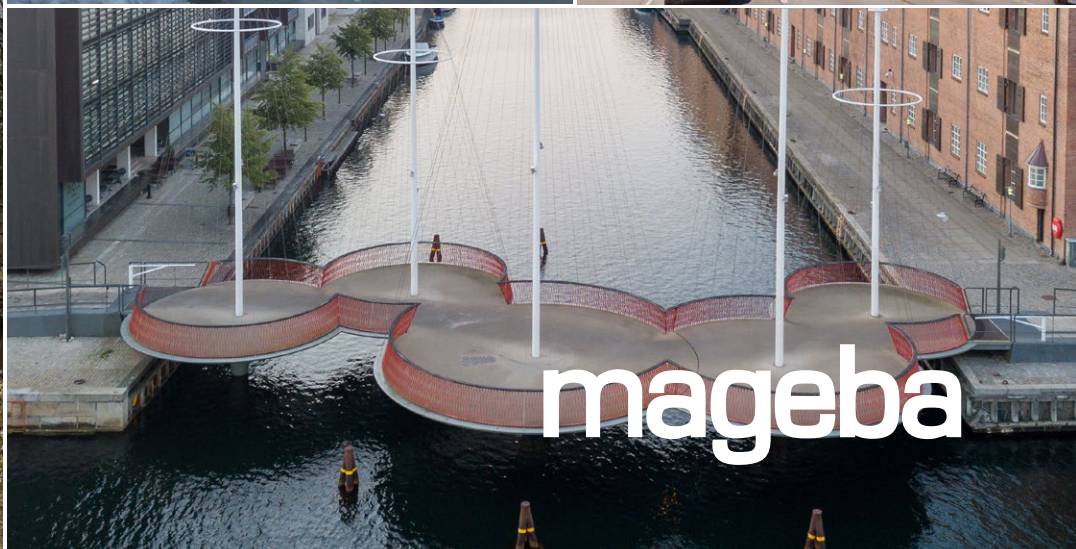
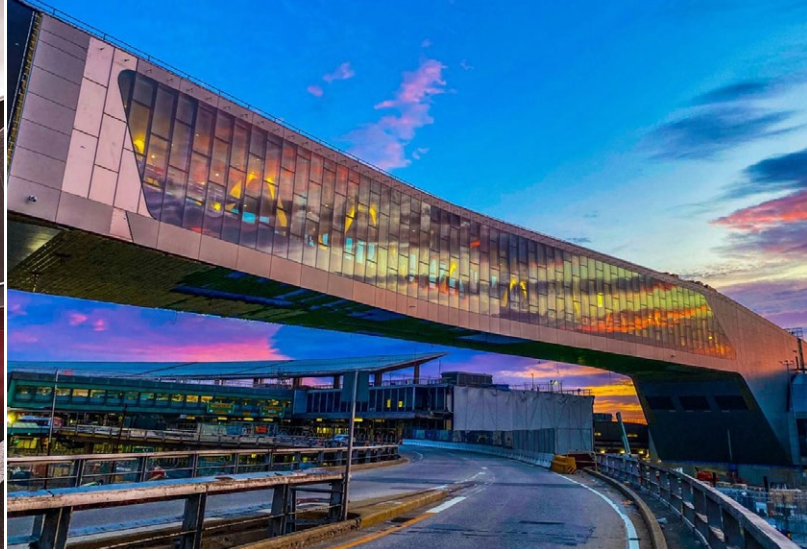




Project References

Project References – Pedestrian Bridges



mageba



Index

Project	Country	Installed	Products delivered	Page
Revere Beach Footbridge	USA	2012	LASTO®BLOCK elastomeric bearings, RESTON®SPHERICAL bearings	3
LaGuardia Pedestrian Bridge	USA	2018	RESTON®DISC bearings	4
Leaf Pedestrian Bridge	USA	2018	RESTON®SPHERICAL bearings	5
Northgate Bridge	USA	2020	RESTON®DISC bearings, RESTON®DISC UPLIFT bearings	6
St Patrick's Footbridge	Canada	2013	Rocker bearings	7
707 – Fifty Calgary	Canada	2017	RESTON®POT HP bearings	8
Oceania Business Plaza	Panama	2011	RESTON®SPHERICAL bearings	9
Gleisbogen Bridge	Switzerland	2011	ROBO®CONTROL "Portable" monitoring system, RESTON®POT bearings, RESTON®SDD Spring Disc Dampers	10
Obermatt Bridge	Switzerland	2008	ROBO®CONTROL "Permanent" monitoring system	12
Argen Bridge	Germany	2010	LASTO®BLOCK elastomeric bearings, RESTON®SPHERICAL bearings, RESTON®SA dampers, TENZA®GRIP expansion joints	13
Cirkelbroen	Denmark	2021	RESTON®SPHERICAL bearings	14
Kaposvár Intermodal Transport Centre	Hungary	2020	Tuned Mass Dampers (TMD), RESTON®SPHERICAL bearings	16
Doha Pedestrian Bridge	Qatar	2015	RESTON®SPHERICAL bearings	17
Abu Dhabi Financial Centre	United Arab Emirates	2009–2010	RESTON®SPHERICAL bearings	18
Geumgang Pedestrian Bridge	South Korea	2021	TENZA®MODULAR LR3 expansion joints	19
Macau LRT – Ocean Station Footbridge	China	2016	RESTON®POT bearings	20
Lam Tin Tunnel Footbridge	China	2020	RESTON®POT bearings, TENZA®GRIP RS-B expansion joints	21
Kai Tak Sports Park – Link Bridges	China	2020–2021	LASTO®BLOCK elastomeric bearings, RESTON®POT bearings, RESTON®POT HP bearings	22
Marina One – Skybridge	Singapore	2015	RESTON®SPHERICAL bearings	23
Deya Sky Bridge	India	2015	ERADIQUAKE® seismic isolators	24
ITC One Colombo	Sri Lanka	2019	RESTON®SWIVEL bearings	25
Swan River Pedestrian Bridge	Australia	2018	RESTON®POT bearings	26
Kids Bridge	Australia	2021	RESTON® POT HP bearings	27

Revere Beach Footbridge (USA)



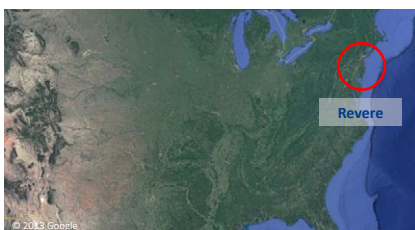
Project description

The Boston, and its beach is recognized as having been the first public beach in the United States.

Desiring to enhance the beach environment and improve access to it, the city authorities embarked on a development project, which includes a new 1,465-car multi-storey car park at the Massachusetts Bay Transportation Authority (MBTA) Wonderland subway station.

Having parked their cars, visitors can exit the building onto a new public plaza at the 3rd storey level, from where they must cross a busy road to reach Revere Beach. From late 2012, a new signature pedestrian bridge will make this access to the beach easy and pleasant.

The bridge is located in the city of Revere in Massachusetts



mageba scope

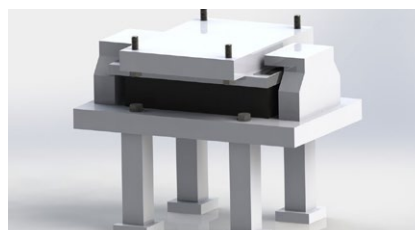
The bridge requires two bearings at each end. At one end, which is designated the fixed end, the loads are resisted, and the deck is held in place, by spherical bearings of type KF2.5, featuring ROBO®SLIDE high-grade sliding material (as a higher strength, higher durability alternative to PTFE).

At the other end, which must be able to move, the bearings are based on a sliding elastomeric bearing pad and a stainless steel sliding partner.

These bearings are designed with uplift clamps to resist the significant 84 kN uplift force arising, and one of the bearings is equipped with steel lugs which prevent sliding in the transverse direction (making it a bearing of type KGe).

The other bearing, allowing sliding in every direction, has no such lugs and is thus of type KGa.

3D view of a LASTO®BLOCK elastomeric bearing with uplift resistance



Highlights & Facts

mageba Products:

Type: LASTO®BLOCK and RESTON®SPHERICAL bearings

Installation: 2012

Structure:

City: Revere, MA

Country: United States

Type: Cable stayed footbridge

Cut view of a RESTON®SPHERICAL bearing featuring ROBO®SLIDE high-grade sliding material





LaGuardia Pedestrian Bridge (USA)



Project description

LaGuardia is a large industrious airport located in the northernmost section of East Elmhurst, Queens in New York City. Open to the public in 1939, LaGuardia Airport is one of the busiest airports in the United States of America.

For the next few years, LaGuardia will be subject to an entire reconstruction. The project will include reorganizing the space and building a new facility 183 m (600 ft) closer to the Grand Central Parkway.

The facility will link the four terminals pushing the airport towards the highway and improving aircraft movements. The new airport will span 2.7 million square feet, with six new concourses and 72 gates. The project's estimated cost is approximately \$8 billion, and it is expected that the facility will reach completion by 2022.

mageba scope

mageba RESTON®DISC bearings are uniquely defined by their Polyether-Urethane (PU) rotational elements.

The element's rotational elasticity enables tilting movements around any horizontal axis.

In this project, mageba designed and delivered 4 RESTON®DISC disc bearings for Pedestrian Bridge A of the LaGuardia Airport.

The bearings, equipped with mageba's high grade sliding material ROBO®SLIDE, are of fixed and guided (unidirectional) types, and are capable of withstanding 2,500 kips of vertical load.

The bearings are also designed to accommodate longitudinal movements during the construction period which are then locked (fixed type) with the completion of the construction.

Highlights & Facts

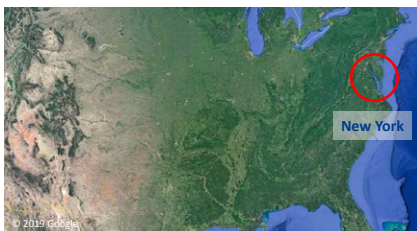
mageba Products:

- Type: RESTON®DISC disc bearings
- Feature: ROBO®SLIDE sliding material
- Installation: 2018

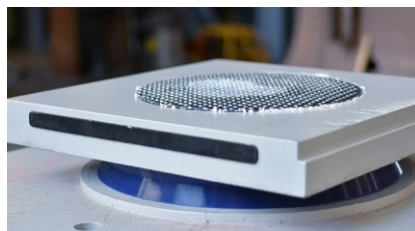
Structure:

- City: New York, NY
- Country: United States
- Type: Airport
- Completion: 2022
- Owner: The Port Authority of New York & New Jersey
- Contractor: Skanska/Walsh Design-Build JV
- Architect: Parsons Brinckerhoff/HOK Design JV

The airport is situated in the New York City borough of Queens



RESTON®DISC bearing fitted with ROBO®SLIDE high grade sliding material



One of the project's RESTON®DISC bearing being load tested per AASHTO LRFD, after fabrication



Leaf Pedestrian Bridge (USA)



Project description

The Leaf Pedestrian Bridge, in the City of Lone Tree, was built to reduce vehicle congestion on Lincoln Avenue by alleviating signal progression disruption and also provide a safer connection between popular destinations on both the north and south side of Lincoln Avenue for pedestrians and cyclists.

As the city continues to grow, it is increasingly important to provide alternative transportation routes for pedestrians who may live or work on one side, but want to take advantage of amenities that require them to cross Lincoln Ave.

The 170-foot-long bridge has a cable-stayed design and feature a 78-foot-tall leaf-shaped mast on its south end.

mageba scope

Considering all design requirements, and the benefit of making the bearings as small and unobtrusive as possible for aesthetic reasons, bearings of the RESTON® SPHERICAL type were selected for use.

The bearings at one end of the structure had to be designed to resist uplift forces in some circumstances, and all bearings are subject to substantial rotations.

The installed bearings are made almost entirely of steel, except for their sliding interfaces, which consist of stainless steel and ROBO®SLIDE, mageba's far superior alternative to PTFE.

Since ROBO®SLIDE is not only many times more resistant to wear and abrasion than PTFE, but also able to resist much higher pressures, the RESTON®SPHERICAL bearing can resist very high pressures when loaded, resulting in a smaller bearing size than would arise with other bearing types.

Highlights & Facts

mageba Products:

Type:	RESTON®SPHERICAL bearings
Feature:	ROBO®SLIDE sliding material
Installation:	2018

Structure:

City:	Lone Tree, CO
Country:	USA
Type:	Pedestrian bridge
Length:	170 feet (52 m)
Owner:	City of Lone Tree
Contractor:	Hamon Infrastructure
Architect:	Fentress Architects
Designer:	Thornton Tomasetti

The bridge is located in the City of Lone Tree in Colorado



Installation of a spherical bearing at Location B2



A guided sliding uplift type of spherical bearing at Location B1





Northgate Bridge (USA)



Project description

The Northgate neighbourhood in Seattle has been witnessing a rapid urban development.

With new and planned mixed use infill development and a new light rail station currently under construction, upgraded pedestrian and bicycle improvements were needed to better connect the surrounding neighbourhoods.

The new bridge relinks the western neighbourhoods and North Seattle College across Interstate 5 to the future rail station, transit centre, bicycle pathways, and commercial core of the area.

The bridge's tubular structural integrates the twenty-foot wide walking surface, guardrails, throw barriers, handrails, lighting, and drainage systems into a singular unit.

mageba scope

To support the bridge's unique structure mageba supplied 4 RESTON®DISC bearings (fixed and guided) with 360 kips (1,600 kN) of vertical load capacity and 4 RESTON®DISC UPLIFT bearings (fixed and guided) with 150 kips (670 kN) vertical load capacity.

The four bearings that required uplift protection, to prevent uplift when large upward forces act, were accommodated with an internal uplift pin connection and an additional uplift claw at the sliding interface of the guided bearings.

All products were designed to resist large horizontal forces, up to 45% of the vertical load, and connected with bolts to the superstructure and the substructure in order to facilitate easy replacement in the future.

Highlights & Facts

mageba products:

Type: RESTON®DISC and RESTON®DISC UPLIFT bearings

Installation: 2020

Structure:

City: Seattle (WA)

Country: USA

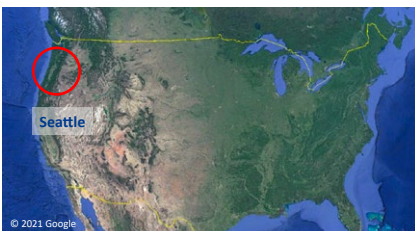
Type: Pedestrian bridge

Span: 628 m (2,060 ft.)

Owner: City of Seattle

Contractor: Kraemer North America LLC

Northgate Bridge is situated in downtown Seattle



Disc bearing during assembly



A RESTON®DISC bearing ready for shipping



St. Patrick's Footbridge (Canada)



Project description

The old St. Patrick's Bridge has connected Calgary's East Village to the west end of St. Patrick's Island in the Bow River since 1965, but did not continue across the river to the other side.

To rectify this shortcoming, the bridge has been replaced with a new St. Patrick's Bridge, constructed between 2012 and 2014.

The design of the bridge, reminiscent of the trajectory of a stone skipping across the river, and its elegant inclined arches, make it a most attractive structure.

mageba scope

The new structure is supported by mageba linear rocker bearings and elastomeric bearings with movement restraints.

The rocker bearings are designed to resist longitudinal and transverse loads and to facilitate significant rotations about every axis, and are made of 100 % stainless steel to ensure maximum durability and resistance to corrosion.

The elastomeric bearings are designed to allow movements in all directions (free deforming) at some locations, and to allow only longitudinal movements (guided deforming) at others.

Highlights & Facts

mageba products:

Type: Rocker bearings
 Features: 100% stainless steel
 Installation: 2013

Structure:

City: Calgary
 Country: Canada
 Construction: Footbridge
 Type: Arch bridge
 Built: 2012–2014
 Builder: Graham Construction and Engineering JV

The bridge crosses the Bow River in Calgary city center, providing access to St. Patrick's Island



Stainless steel linear rocker bearings permit significant rotations but prevent movements



Elastomeric bearings allow rotations and horizontal movements





707 Fifth – Calgary (Canada)



Project description

Developed by Manulife Real Estate, 707 Fifth will be an elegant and iconic landmark in Calgary’s evolving skyline and a new connection between urban communities. The building will soar 27 stories up in the Calgary skyline and will feature: indoor gardens with 30 feet ceilings, retail stores, fitness centers, 15 pedestrian walkway accesses and more.

SOM Architects were involved in the project to help create an icon with a simple and compelling design which integrates the skyscraper into the structure of the neighbourhood and enhances everything around it.

mageba scope

mageba supplied nine RESTON®POT HP bearings for the pedestrian over-pass of this project. RESTON®POT HP bearings are the new “High Performance” version of the well-proven RESTON®POT bearing. A modern high-grade polyethylene sliding material, ROBO®SLIDE, offers an alternative to PTFE in sliding bearings, with enhanced characteristics including far higher durability than PTFE.

Thanks to the use of improved materials, the increased strength enabled the bearings to be made small enough to suit the main structure’s design.

Highlights & Facts

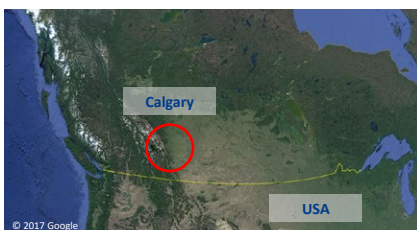
mageba products:

Type:	RESTON®POT HP bearings
Installation:	2017

Structure:

City:	Calgary
Country:	Canada
Type:	Skyscraper
Completed:	2017
Height:	27 stories
Builder:	SuperMetal Inc.
Developed by:	Manulife Real Estate
Architect:	SOM

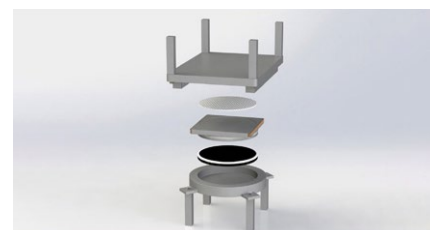
The building is located in Calgary, a city in the Canadian province of Alberta



View of the 707 Fifth looking north west



Prototype testing of a RESTON®POT HP bearing



Oceania Business Plaza (Panama)



Project description

Oceania Business Plaza is a perfect example of Ultra-Contemporary architectural design. A great tower with all the modern comfort and luxury located in downtown of Panama City. Belonging to one of the highest skyscrapers of the city, the Oceania Business Plaza constitutes an innovative structure within a group of buildings which have been erected on the latest economical boom. The complex Oceania Business Plaza is conformed by two towers which are connected by a 2-levels bridge at store 30. The highest skyscraper is 204 meters tall and 53 stories high. mageba's scope was the supply of bearings for supporting the bridge and allowing both structures move independently. Bringing into service is planned for end of 2011.

mageba scope

For this project mageba supplied 15 RESTON®SPHERICAL bearings types KA, KE and KF. Bearings were produced at mageba's 100% mageba-owned subsidiary mageba-Shanghai.

Design requirements demanded bearings which should be able to take max. vertical loads up to approx. 850 kN, min. vertical loads of 0 kN, horizontal loads of 1'332 kN and movements of 410 mm. The structure is supported by 15 bearings. The Bridge structure is fixed to one of the buildings through one fixed spherical bearing at each level. On all other positions, support is provided with respectively two KA and two KE bearings, allowing bridge's dilatation and buildings' movements due to wind and other external forces.

Highlights & Facts

mageba products:

Type: RESTON®SPHERICAL bearings
Installed: 2011

Structure:

City: Panama City
Country: Panama
Built: 2011
Structure: Building
Type: Skyscraper
Height: 207 m

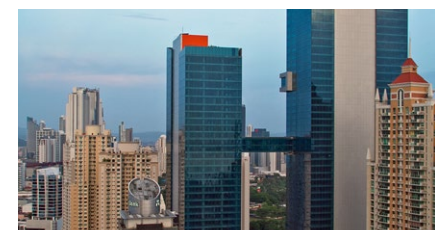
The Oceania Business Plaza located in downtown Panama City



Construction of the Plaza



The Oceania Business Plaza





Gleisbogen Bridge (Switzerland)



Project description

This elegant foot and cycle bridge was erected to connect pedestrian zones either side of a busy traffic artery, and consists primarily of an arch-supported deck with 42 m span. Intensive construction activity is planned to take place in this area in the coming decade, including several high rise buildings. This will lead to uncontrollable ground settlements in the whole area, including in the immediate vicinity of this newly built structure.

mageba scope

A number of specialised components and services were required to ensure the correct construction of the bridge, with even load distribution, especially among its hanger cables, and to allow for adaptation in the future should ground settlements occur. Injectable lifting pot bearings were installed under the structure, to allow any future ground settlements to be countered. An automated monitoring system helped to ensure the even distribution of loading among the bridge's hanger cables. And spring disc dampers were installed at the bottom of each hanger cable to prevent vibrations of the deck.

Highlights & facts

mageba products:

Types: ROBO®CONTROL
"Portable" monitoring system
RESTON®POT Lift bearings
RESTON®SDD Spring Disc Dampers

Notable: Support in achieving and confirming optimal construction for maximum durability of the structure

Installation: 2011

Structure:

City: Zurich
Country: Switzerland
Type: Arch bridge
Length: 230 m

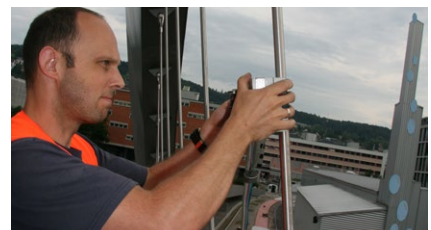
The bridge is located close to Zurich city centre



An inclined lifting pot bearing at one end of the bridge



Acceleration sensors - used to determine the load distribution in the steel structure







Obermatt Bridge (Switzerland)



Project description

A timber bridge in Obermatt, Switzerland collapsed in 2005 during a flood period, and the cause of collapse could not be precisely determined. When it was rebuilt in 2007, it had a new safety feature: in the case of severe flooding, it can be raised by up to 70 cm to prevent damage from floating debris in the swollen river.

The main theory combined the impact of flood loading with poor timber strength resulting from high dampness. To mitigate the impact on the timber bridge industry, the University of Berne started a research project to demonstrate the durability of timber bridges if properly designed and maintained.

mageba scope

A ROBO®CONTROL automated monitoring system was installed in 2008, to measure the dampness of the bridge's most critical elements over a period of several years. The system was equipped with an alarm feature, offering immediate notification by email and SMS if a threshold value (25%) of timber humidity was exceeded.

The measurements showed that the moisture content of the bridge's timber was within an acceptable range, and enabled the client to understand the bridge's performance and to recognise any changes as they occurred. The project also provided evidence of the durability of properly designed and maintained timber bridges.

Highlights & facts

mageba products:

Type: ROBO®CONTROL "Permanent" monitoring system
Measuring: Moisture content
Features: Alarm notification in case of exceeding of threshold value
Installation: 2008

Structure:

City: Obermatt
Country: Switzerland
Type: Timber road bridge
Length: 32 m
Collapsed: 2005
Rebuilt: 2007

The bridge crosses a river near Berne, Switzerland's capital city



Sensors on the bridge's timber deck measure moisture content



Installation of the ROBO®CONTROL automated monitoring system



Argen Bridge (Germany)



Project description

The Argen Bridge, with its span of 68.4 m, was erected in 1897, making it the second oldest suspension bridge in Germany. The historic footbridge was renovated in 2010, with particular focus on the upgrading of its key mechanical components and the retrofitting of seismic protection.

The renovation work included the replacement or addition of bearings, expansion joints and seismic dampers. It also included extensive concrete reconstruction at each abutment, with access chambers and shafts provided as required for inspection and maintenance purposes and for installation of the seismic dampers.

mageba scope

The renovation of this wonderful structure required careful selection of materials and components to avoid unnecessary impacts on the structure's heritage value. To support the deck's side girders, free-sliding RESTON®SPHERICAL bearings were chosen for their high strength / small size. To support the central girder, LASTO®BLOCK Type NBe bearings were used to prevent transverse movements and provide longitudinal re-centring.

RESTON®SA dampers were connected to the ends of the central girder to dampen excessive longitudinal forces (e.g. seismic), and TENSA®GRIP expansion joints were installed at both ends of the deck.

Highlights & facts

mageba products:

Type: LASTO®BLOCK Type NBe
RESTON®SPHERICAL bearings,
RESTON®SA dampers,
TENSA®GRIP joints

Installation: 2010

Structure:

City: Langenargen
Country: Germany
Type: Suspension bridge
Completed: 1897
Renovated: 2010
Length: 68.4 m

The bridge is located in southern Germany, close to Lake Constance



Abutment with bearings and tie-down anchors, showing girder passing through wall to damper



Seismic damper in access shaft, from above (connecting though wall on right to deck girder)





Cirkelbroen (Denmark)



Project description

Cirkelbroen is an architecturally significant pedestrian bridge in the heart of Copenhagen city centre, opened in summer 2015.

The bridge spans approximately 40 meters over the Christianshavn Canal to connect the Applebys Plads and Christiansbro District of the city, also assisting in creating a continuous walkway along the Copenhagen Harbour.

Cirkelbroen is a steel pedestrian bridge formed of five circular platforms that span the canal. The bridge is able to rotate approximately 90 degrees around the central platform, in order to grant boats access to the Christianshavn Canal. The rotating length of the bridge is approximately 25 m long.

Beneath the central platform, the existing bearing had become damaged due to the opening and closing of the bridge – mageba was contacted to develop a solution for replacement.

The Cirkelbroen is a pedestrian bridge in the heart of Copenhagen City Centre



mageba scope

mageba was commissioned to develop a bespoke solution for replacement of the bearing beneath the central platform, at the pivot point.

Damage to the existing bearing appeared to be due to steel-on-steel contact at the interface of rotation.

This new RESTON®SPHERICAL type KF1.8 bearing would require a vertical sliding surface, around which the bridge could rotate.

mageba was able to develop a bespoke solution, incorporating a vertical ROBO®SLIDE ring, and re-produce the outer dimensions of the original bearing one-to-one in order that exchange could be made using the existing hole pattern.

New mageba RESTON®SPHERICAL bearing after installation, alongside the bridge hydraulics



Highlights & facts

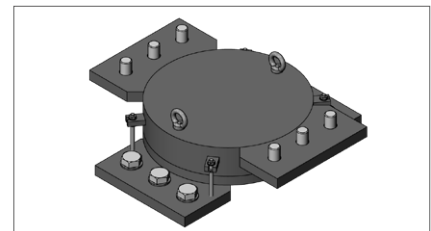
mageba products:

Type:	RESTON®SPHERICAL type KF 1.8 bearing
Feature:	ROBO®SLIDE sliding material
Installation:	2021

Structure:

Country:	Copenhagen
City:	Denmark
Type:	Steel pedestrian bridge
Length:	40 m
Completion:	2015
Owner:	City of Copenhagen
Contractor:	SH Group A/S
Architect:	Olafur Eliasson

Rotation caused during bridge opening is facilitated by the RESTON®SPHERICAL bearing







Kaposvár Intermodal Transport Centre (HU)



Project description

The town of Kaposvár is a provincial centre that is situated in the southwest region of Hungary just 40 km south of Lake Balaton.

The construction of the intermodal transport centre that started in 2018 has been funded by the “Modern Cities Program” of the Hungarian Government and it aims to create a transport hub including the renovation and modernization of the complete infrastructure of the local railway station, a new bus station and a P+R carpark.

The most spectacular element of the project is the new cable-stayed pedestrian/bicycle flyover, which provides a better connectivity for the town that has been divided by the railway since 1897.

On the 8-meter wide flyover cyclists and pedestrians have separated lanes and at the north abutment of the structure an area for new shops was also established.

mageba scope

Due to the long span of the flyover and its low structural damping, engineers calculated with a significant vibration that had to be reduced in order to protect the structure. mageba addressed this problem by supplying 2 Tuned Mass Dampers (TMDs) which protect the bridge from the adverse impact of vibrations.

TMDs feature a modular design and each consists of a mass, springs and individual dampers. The mass – in the form of layered steel plates – is mounted on the springs and equipped with viscous dampers. The tuned mass values of the dampers are 2,800 kg and 3,800 kg respectively.

In addition to the dampers, mageba also supplied 10 RESTON®SPHERICAL bearings to support the bridge deck.

Highlights & Facts

mageba Products:

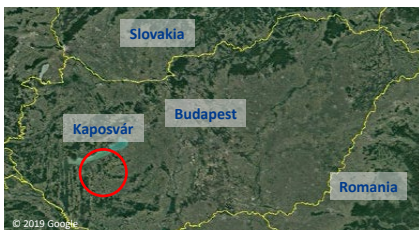
Type: Tuned Mass Dampers
RESTON®SPHERICAL bearings

Installation: 2020

Structure:

City: Kaposvár
Country: Hungary
Type: Cable-stayed bridge
Built: 2019-2020
Length: 200 m
Owner: Nemzeti Közútkezelő Zrt.
Contractor: Swietelsky Építő Kft.

The project is located in the downtown of Kaposvár, south of Lake Balaton in Hungary



One of the installed tuned mass dampers on the flyover



The structure is supported by RESTON®SPHERICAL bearings



Doha Pedestrian Bridge (Qatar)



Project description

Doha, the capital city of Qatar, is the economic centre of the country. As a result of the increasing corporate and commercial activity, a variety of construction projects are scheduled and are gradually changing the city's skyline.

One such project is the new pedestrian bridge over the East Industrial Area road.

Since this iconic bridge is an overall aluminium structure, standard bearings made up of construction steel may lead to failure of the but straps of the aluminium connection. In close cooperation with the bridge's engineer it was decided to add a stainless steel adapter.

However, this material choice panders to galvanic ionization but mageba supplied the bearings with a fiberglass galvanic isolation between construction steel and stainless steel, a fiberglass isolation plate was added hence assuring corrosion protection.

Doha is the capital city of Qatar and is located on the coast of the Persian Gulf



mageba scope

mageba supplied eight spherical bearings in accordance with IAN006 (New Qatari Specifications for bridge bearings).

Four bearings of type KE ("guided sliding") that allow sliding movements along one horizontal axis, and resist forces in a perpendicular direction were used as well as four bearings of type KF ("fixed") that resist horizontal forces in every direction, allowing no sliding movements.

Moreover, the bearings feature ROBO®SLIDE high-grade sliding material instead of standard PTFE, ensuring far better durability and enabling the size of the bearings to be minimised.

The bridge over the intersection of East Industrial Road & Street 1 in the industrial area of Doha



Highlights & Facts

mageba Products:

Type: RESTON®SPHERICAL bearings, 4 of type KE and 4 of type KF
 Features: Use of high-grade sliding material ROBO®SLIDE
 Both types are guided and fixed bearings
 Installation: 2015

Structure:

Location: Doha
 Completed: 2015
 Type: Pedestrian bridge
 Construction: Aluminium
 Length: 80 m
 Builder: SKS

Exploded view of a RESTON®SPHERICAL bearing — guided sliding type, for uniaxial movements





Abu Dhabi Financial Centre (UAE)



Project description

This impressive building at the Abu Dhabi International Financial Centre (DIFC), developed by Daman Real Estate Capital Partners Ltd, has two intersecting towers.

The first is a 20-storey structure housing office space and hotel amenities. The second tower, partially overlapping the first, is a 60-storey structure composed of two parts connected by bridging elements at various levels. This tower primarily contains apartments and an 18-storey hotel.

The two buildings stand over a nine-level podium area with car parks, retail space, swimming pools, cafes and green areas.

mageba scope

mageba supplied RESTON®SPHERICAL bearings to support the bridging elements that connect the two parts of the 60-storey tower at various levels.

The bearings are designed to resist vertical loads of up to 10,000 kN. Some are of the fixed type (type KF), resisting forces and movements in all directions, while others are of the guided sliding type (type KE), allowing 100 mm sliding movements in one direction only.

The bearings feature ROBO®SLIDE high-grade sliding material instead of standard PTFE, ensuring far better durability and enabling the size of the bearings to be minimised.

Highlights & facts

mageba Products:

Type: RESTON®SPHERICAL bearings
Features: ROBO®SLIDE high-grade sliding material
Installation: 2009–2010

Structure:

City: Abu Dhabi
Country: UAE
Completed: 2013
Type: Office / hotel building
Developer: Daman Real Estate Capital Partners Ltd.

The building is located in the Abu Dhabi International Financial Centre (DIFC), Abu Dhabi, UAE



Exploded view of a RESTON®SPHERICAL bearing – guided sliding type, for uniaxial movements



Application of silicone grease to ROBO®SLIDE disc of a RESTON®SPHERICAL bearing



Geumgang Pedestrian Bridge (South Korea)



Project description

The Geumgang Pedestrian Bridge, located in the administrative capital of South Korea in Sejong City, is a steel pipe truss bridge with a total length of 1,650 m and widths varying between 12-30 m, and was modelled after the city's circular structure. The total cost of the project was 97 million USD.

The bridge connects the central green space on the north side of the Guam River and the southern waterfront park that has three "living circles" or sub-centres dedicated to culture, municipal administration and education.

The bridge also acts as an architectural symbol for South Korea's history and culture. It was completed in 2021, and now to date, it is the longest pedestrian bridge in South Korea.

mageba scope

In order to meet the requirements of the client, it was decided to use mageba's modular expansion joints.

Due to the unique shape of the pedestrian bridge, the structure has various installation environments, that had to be considered during the planning stage of the joints too.

In total 120.3 m of TENSA®MODULAR expansion joints of type LR3 were installed in the pedestrian bridge, that are able to facilitate horizontal movements of up to 240 mm.

Beyond supplying the products, mageba's local experts in South Korea also provided installation supervision during the construction.

Highlights & Facts

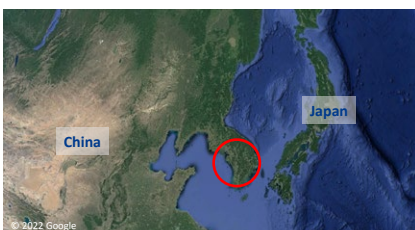
mageba products:

Type: TENSA®MODULAR LR3 expansion joints
Installation: 2021

Structure:

City: Sejong City
Country: South Korea
Type: Pedestrian bridge
Completion: 2021
Length: 1,650 m
Owner: Korea Land & Housing Corporation
Contractor: Lotte Engineering & Construction
Engineer: Dasan Consultants Co., Ltd.

The project is located in Sejong City in South Korea



One of the modular joints during assembly in mageba's Chinese production facility



Lifting of a TENSA®MODULAR LR3 expansion joint on site





Macau LRT – Ocean Station Footbridge (CN)



Project description

The Macau LRT (Light Rapid Transit) is the first of its kind in Macau. Its first 9.3-kilometre section called the Taipa Line runs from Ocean Station to Taipa Ferry Station, and along the route 11 stations have been built.

Once the whole project is completed, the Macau LRT is expected to serve the Macau Peninsula, Taipa and Cotai, connecting major border checkpoints such as Border Gate, the Outer Harbour Ferry Terminal, Lotus Bridge Border and the Macau International Airport.

The footbridge at Ocean Station has two passageways leading to Ocean Park, where travellers can leave the station.

mageba scope

In 2016, mageba was selected to provide 6 RESTON®POT bearings for the structure.

Before the installation all bearings underwent thorough vertical-, horizontal, and friction tests according to British Standard of BS5400.

In order to make the bearings easily replaceable in the future, they were designed with top and bottom upper anchor plates.

The deflection of the bearings, which have a specified zero horizontal movement in a particular direction does not exceed 1 mm in that direction under maximum horizontal loading.

Highlights & Facts

mageba Products:

Type: RESTON®POT bearings
Installation: 2016

Structure:

City: Macau
Country: China
Type: Footbridge
Built: 2019
Length: 20 m
Owner: Macau Construction Development
Contractor: CRCC
Engineer: IVIL Engineering Consultants Co., Limited

The project is located in Macau, China



A RESTON®POT bearing prepared for delivery



An installed RESTON®POT bearing



Lam Tin Tunnel Footbridge (China)



Project description

The Tseung Kwan O – Lam Tin Tunnel (TKOLTT) is approximately 4.2 km long, and connects Tseung Kwan O with East Kowloon.

The whole project included the construction of a section of Road P2 in TKO Town Centre, the modification of the existing road junction of the Po Yap, Po Shun and Chui Ling roads into a signal-controlled junction, and finally the construction of the Southern Footbridge which also carries a cycle lane.

In addition, elevators for the bridge were also built for an easier access, and the Po Yap Road / Tong Yin Street junction has been upgraded as well.

One of the main challenges during the construction of the bridge was to maintain a clear road access to the entrance of the tunnel.

mageba scope

For the footbridge mageba provided 16.2 m of TENSA®GRIP RS-B 200 expansion joints in total, and 8 RESTON®POT bearings with a maximum vertical load capacity of 10,785 kN and a maximum horizontal load capacity of 1,819 kN.

The bearings were specially designed with stainless steel dowels and fixing bolts according to the client's requirement.

In order to reduce the risk of bridge crumbling, the bearings were fitted with a special tension anchor system to constraint the overturning force arising from the structure.

Since the footbridge is located near the sea, special coating has been applied on the products that provides suitable corrosion protection in this marine climate.

Highlights & Facts

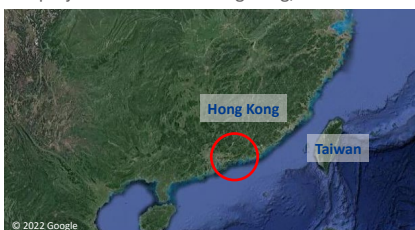
mageba Products:

Type: RESTON®POT bearings, TENSA®GRIP RS-B joints
Installation: 2020

Structure:

City: Hong Kong
Country: China
Type: Footbridge
Built: 2021
Length: 200 m
Owner: Hong Kong Civil Engineering and Development Department
Contractor: Zhen Hua Engineering Co., Ltd
Engineer: Meinhardt

The project is located in Hong Kong, China



A RESTON®POT bearing ready to be shipped to site



A RESTON®POT bearing during testing





Kai Tak Sports Park – Link Bridges (China)



Project description

The Kai Tak Sports Park, currently under construction in Hong Kong's suburb of Kowloon, is a multi-purpose sport hall.

Upon completion, it will become the largest sport venue in Hong Kong, and will provide high-quality facilities, not only for large events but also for the daily enjoyment of the local community.

The new sport complex will also have two link bridges. The one that will connect the main stadium with the indoor sport centre will not only act as a link bridge, but also as a leisure facility.

The other one is planned to connect the indoor sport centre with the public sports ground.

mageba scope

To support the bridges, mageba supplied LASTO®BLOCK elastomeric- and RESTON®POT pot bearings.

For the link bridge that connects the main stadium with the indoor sports centre, mageba supplied 88 LASTO®BLOCK elastomeric bearings, all designed for loads of up to 25,600 kN.

While the other bridge between the indoor sport centre and the public sports ground were fitted with 4 RESTON®POT HP and 4 RESTON®POT bearings.

Beyond the bearings supplied for the link bridges, a further 44 pot bearings were installed in different locations of the park.

The high-strength rubber pads that are used for the RESTON®POT HP bearings are able to take much higher compressive stress than normal rubber pads, which helps to reduce the size of the bearings to a great extent, and therefore makes them more economical.

Highlights & Facts

mageba products:

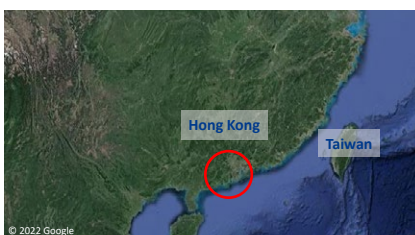
Type: LASTO®BLOCK elastomeric bearings
RESTON®POT and RESTON®POT HP bearings

Installation: 2020 – 2021

Structure:

City: Hong Kong
Country: China
Type: Footbridge
Completion: 2023
Length: 120 m and 48.4 m
Owner: Hong Kong Home Affairs Bureau
Contractor: HIP HING ENGINEERING
Engineer: AURP

The project is located in Hong Kong, China



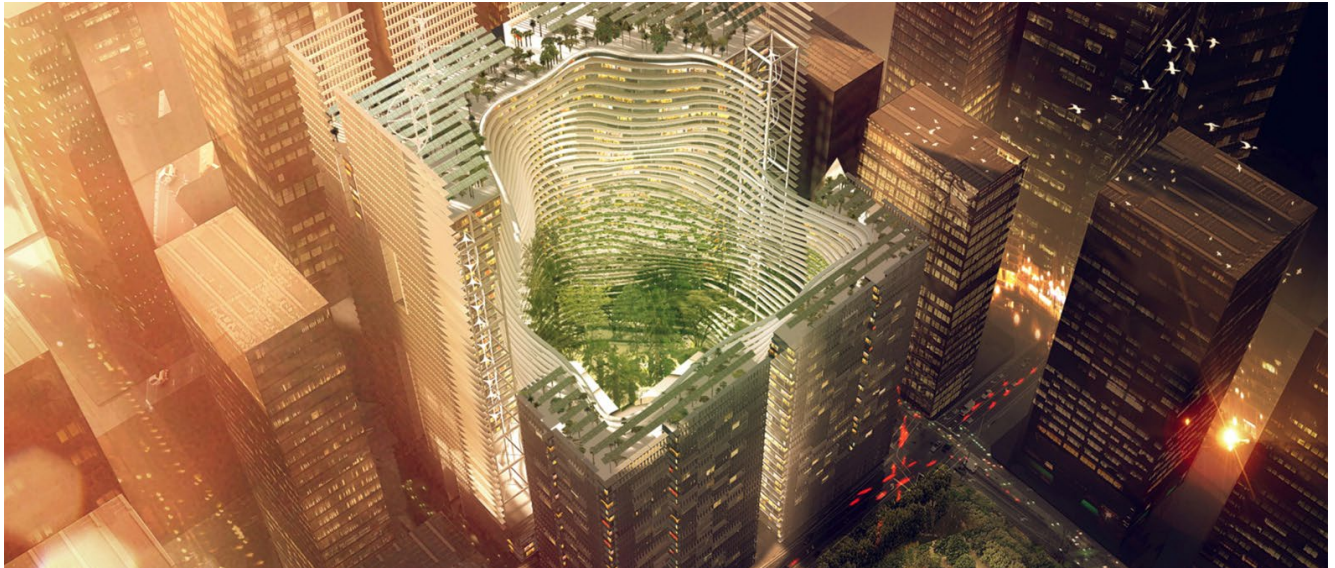
A RESTON®POT bearing during testing



LASTO®BLOCK elastomeric bearings are on site ready to be installed



Marina One – Skybridge (SG)



Project description

The Marina One Residential Building is designed to be the tallest building in the City State. The project is a real estate development promoted by the Governments of Singapore and Malaysia in partnership.

Designed by Christian Ingenhoven (Ingenhoven Architects), it comprises four towers of residential, office and retail areas surrounding a courtyard, with the top levels of two towers connected by a skybridge featuring a surface area of 3.67 million square feet (about 341,000 square meters).

Project completion is scheduled for 2017.

mageba scope

mageba was chosen as the supplier for the structural support of the skybridge, and supplied the following bearings:

Forty-eight RESTON®SPHERICAL bearings providing vertical support and allowing all the longitudinal displacements required by both buildings swaying at such great heights.

The bearings feature ROBO®SLIDE high grade sliding material instead of the PTFE normally used in sliding bearings. ROBO®SLIDE offers much higher resistance to wear and abrasion than PTFE, and twice the strength so it can be designed to be much smaller than one with PTFE. Also, ROBO®SLIDE has a tested service life of over 50,000 m accumulated sliding distance against the 20,000 m of PTFE.

Highlights & facts

mageba Products:

Type: RESTON® SPHERICAL of types KE and KA
Installation: 2015

Structure:

City: Singapore
Country: Singapore
Completed: 2017
Type: Pedestrian bridge
Length: 44.5 m
Owner: Urban Redevelopment Authority

Main Contractor:

Hyundai Engineering & Construction / GS Engineering and Construction

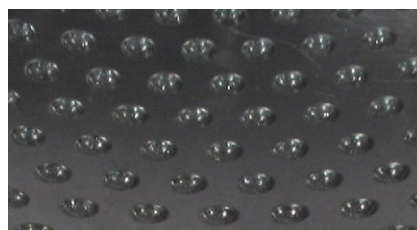
Architect:

Ingenhoven Architects

Singapore's concept "City in a Garden" will be supported by Marina One



ROBO®SLIDE high-grade sliding material offers far higher strength and durability than PTFE



The Skybridge after bearings' installation





Deya Sky Bridge (India)



Project description

Atmosphere is a luxury residential condominium in Kolkata, consisting of two 152.4 m high towers, that are 50 m apart. The towers comprise of 82 villas stacked on top of each other.

Hanging between the two towers at a height of 120 m is “Deya”, which means “cloud” in English. This suspended structure is not just a green roof spreading over 5,110 m², and spanning across four levels, but also accommodates a wide range of recreational facilities such as a squash court, a virtual golf course, a swimming pool, party decks, a conference room and a cinema.

The building clearly redefines luxury living, not just in Kolkata but probably also set a new benchmark for future projects in this part of the world.

mageba scope

To guarantee the safety of the structure, the connections of the sky bridge to the towers had to be designed and constructed to ensure that seismic forces will not be freely transmitted from one building to the other via the sky bridge.

In order to achieve this, ERADIQUAKE® seismic isolators were selected for use.

These bearings, developed by RJ Watson Inc., convert seismic (kinetic) energy into heat and potential (spring) energy, and dissipate it through friction.

Four of these isolators were required, one at each corner of the bridge, with a vertical load capacity of 36,000 kN each.

Highlights & Facts

mageba Products:

Type:	ERADIQUAKE® seismic isolators (in cooperation with RJ Watson Inc.)
Capacity:	Vertical load capacity of 36,000 kN
Installation:	2015

Structure:

City:	Kolkata
Country:	India
Type:	Multilevel sky bridge
Built:	2016
Length:	50 m
Owner:	Forum Projects Ltd.
Contractor:	Larsen & Tubro

The building is located in Kolkata, East India's commercial hub



An ERADIQUAKE® seismic isolator as fabricated



Installation of the ERADIQUAKE® seismic isolator



ITC One Colombo (Sri Lanka)



Project description

The 54 m long sky bridge sitting on the 19th and 20th levels connects the ultra-luxurious 49-storey Sapphire Residences and the 28-storey ITC One Hotel Tower, which are part of an ambitious mixed development project in Sri Lanka's vibrant capital, Colombo. The estimated cost of the entire project is \$300 Million.

The project is aimed to attract the rich and famous from across the world to Sri Lanka's budding and promising real estate market.

The multilevel sky bridge will house two full length infinity swimming pools at the topmost level that stretches towards the Indian Ocean on one side and a lake on the other.

The 54 m long bridge will also have restaurants, lounges, jazz bars and lotus ponds. The towers are connected via the sky bridge at a height of about 100 m. The total weight of this steel structure is about 3,000 t.

The building is located in Colombo, the capital of Sri Lanka



mageba scope

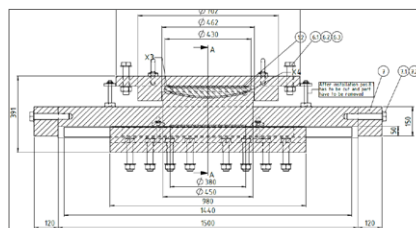
The unique manner in which the structural designer envisaged the operation of this bridge is the reason we were looking for a 'never before' solution.

Customised RESTON®SWIVEL bearings were designed to accommodate in plan rotation due to the out of phase movement of the two towers. In addition, bearings had to accommodate large movements of 560 mm while pivoting around a single fixed point.

The challenge was to propose an easily replaceable, durable (highly corrosive environment) and stable bearing system that has to operate on 2 levels, (20th and 21st floors) such that the bridge can function as a single unit.

The RESTON®SWIVEL is a multi-level bearing in which the component that accommodates the rotation is separated from the component transferring the eccentricity to the adjacent structure.

A cross section drawing of the installed bearings



Highlights & Facts

mageba Products:

Type: RESTON®SWIVEL bearings

Installation: 2019

Structure:

City: Colombo

Country: Sri Lanka

Type: Steel sky bridge

Length: 54 m

Owner: WelcomHotels Lanka (Private) Limited

Contractor: Larsen & Toubro Limited, Chennai Construction

Engineer: Sterling Consultant Services, Mumbai

One of the RESTON®SWIVEL bearings after production





Swan River Pedestrian Bridge (Australia)



Project description

Swan River Pedestrian Bridge also known as the “Matagarup Bridge” is a pedestrian crossing over the Swan River in Perth, Western Australia, that connects East Perth with the Perth Stadium and Sports Precinct on the Burswood Peninsula.

The bridge connects visitors to the Burswood Peninsula, including the Perth Stadium, with public transport and car parks in East Perth and the Perth Central Business District.

The expression of interest to design and construct the pedestrian bridge was initiated by the Western Australian State Government in February 2014.

Construction on the \$91.5 m bridge was initiated in late 2015 and the structure was completed in July 2018.

mageba scope

In 2018, mageba was selected for supplying 14 RESTON®POT bearings to ensure the controlled transfer of loads between the bridge and its substructure.

The maximum vertical load of the bearings is 2,250 kN each.

In order to meet the client's tight deadline, the installed bearings were manufactured locally in Australia, using an adopted galvanizing process which resulted in both, a quicker and a more economically efficient procedure, but provided the same protection level against corrosion.

The bearings were tested in mageba's NATA Lab in Australia and delivered to site within seven weeks.

Highlights & Facts

mageba products:

Type: RESTON®POT bearings
Installation: 2018

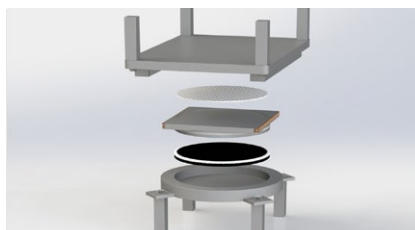
Structure:

City: Perth
Country: Australia
Type: Through arch pedestrian bridge
Completion: 2018
Length: 376 m
Owner: Western Australian State Government
Contractor: York Rizzani JV
Engineer: Mott MacDonald and Enigma

The project is located in Perth, Australia



The build up of a RESTON®POT bearing



Night view of the Swan River Pedestrian Bridge



Kids Bridge (Australia)



Project description

The Kids' Bridge, also named Koolangka Bridge meaning 'children' in Noongar (an aboriginal language in Australia), officially opened on 4 August 2021.

The bridge provides families and children using facilities at the Queen Elizabeth II Medical Centre with the opportunity to escape the rigours of their hospital stay by safely visiting Kings Park. Experts strongly agree that visiting green places has a positive impact on the overall wellbeing of the unwell children and their families.

The 3-metre wide, 217-metre long pedestrian bridge over Winthrop Avenue in the suburb of Nedlands connects the lawn area located between Perth Children's Hospital and the multi-story carpark on the Queen Elizabeth II Medical Centre with Kings Park. The Kids' Bridge has been made possible by a \$6.3 million funding commitment of the Perth Children's Hospital Foundation.

mageba scope

Due to their compact design and the higher characteristic strength of the elastomeric pads, mageba RESTON®POT HP bearings were selected for use.

The compact design reduces the weight of the high-performance bearing and makes it also easier to install them.

mageba supplied 14 RESTON®POT HP uplift bearings in total, with internal restraints, and with a maximum vertical load of 2,170 kN.

These bearings were locally manufactured in Australia and tested at mageba's NATA-certified laboratory (ILAC MRA) in Sydney and then delivered to site.

mageba was able to deliver the bearings in a record time of seven weeks in order to meet the client's tight deadline.

Highlights & Facts

mageba products:

Type: RESTON® POT HP bearings

Installation: 2021

Structure:

City: Perth

Country: Australia

Type: Steel pedestrian bridge

Completion: 2021

Length: 217 m

Owner: Perth Children Hospital

Contractor: Civmec Construction & Engineering Pty Ltd

Engineer: AECOM

The project is located in Perth, Australia



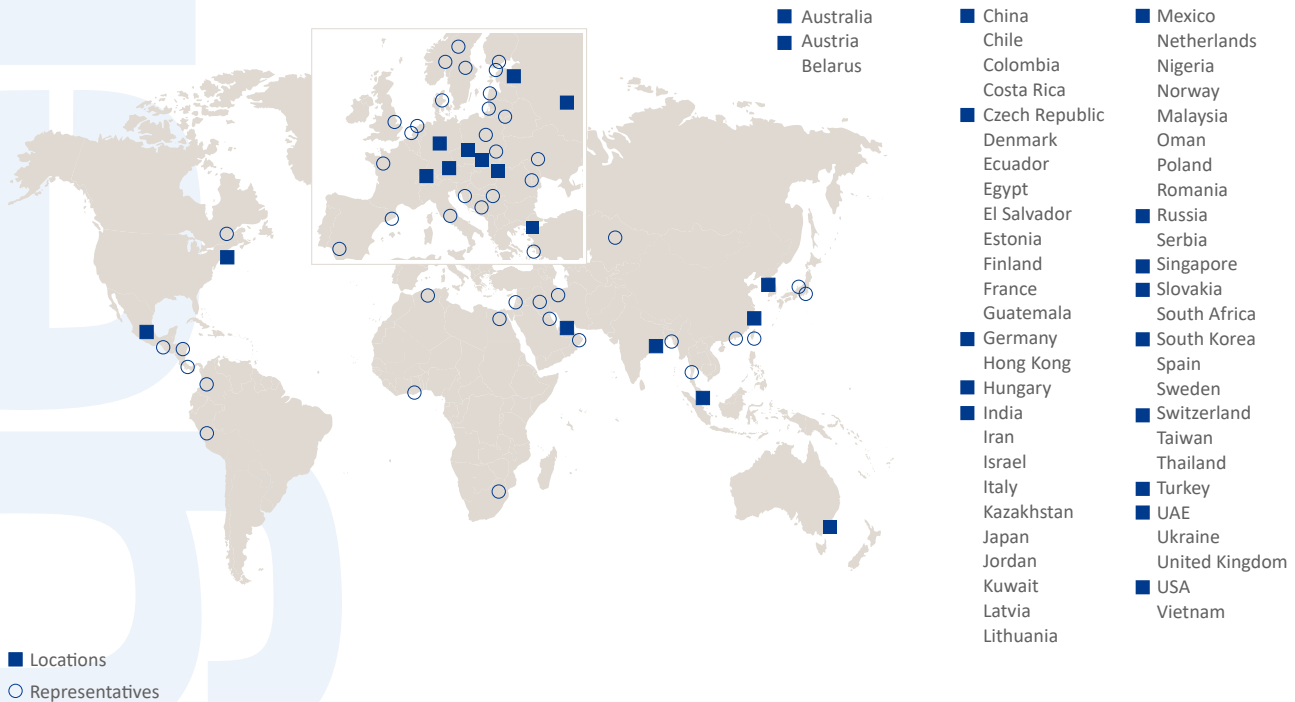
A RESTON®POT HP bearing during manufacturing



RESTON®POT HP bearings installed on the pylons of the bridge



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